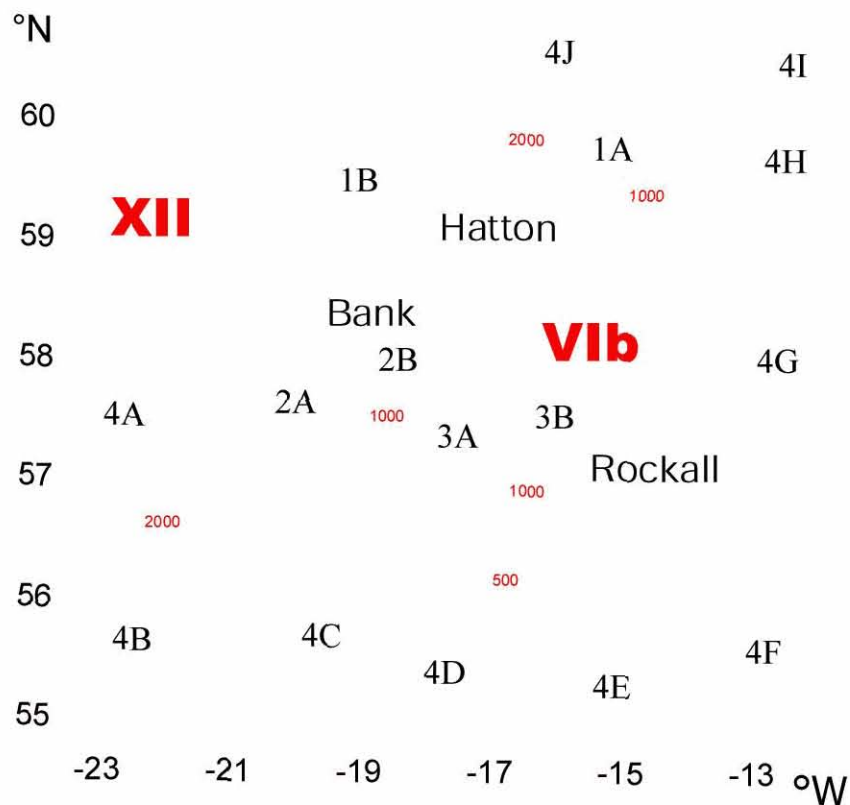


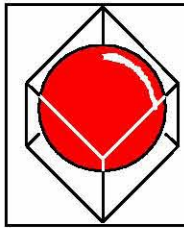


Rapport nr. Å0301

Norwegian Commercial Fisheries at Hatton Bank during 2002



Inge Fossen
Ålesund, Januar 2003



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RAPPORT

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Sammendrag:

I løpet av 2002 landet norske linebåter bunnfisk som tilsvarer en biomasse på ca 1 500 tonn rund vekt fra internasjonale havområder i nordøst atlanten. Av dette ble ca 60 % fisket ved Hatton bank. Enkelte fartøy gikk dit på tilnærmet hele turer mens andre bare forsøkte i korte perioder. Totalt ble det fisket i ca 135 dager ved Hatton bank i 2002. Noe som tilsvarer 33 % av innsatsen i løpet av 2001. Som under tidligere år varierte fangstsammensetningen betydelig mellom ulike fartøy. Andelen blåkveite (*Reinhardtius hippoglossoides*) i landingene var lavere i 2002 sammenlignet med 2001. Dette sees i sammenheng med at en økende andel av tiden ble rettet mot fiske etter blålange (*Molva dipterygia*), brosme (*Brosme brosme*) og mora (*Mora moro*). Reduserte priser, spesielt for blåkveite, antas å være den viktigste årsaken til den reduserte aktiviteten ved Hatton Bank i løpet av 2002. Rapporten er basert på et arbeidsdokument skrevet til et arbeidsgruppemøte i ICES "The Working Group on The Biology and Assessment of Deep-Sea Fisheries Resources". Rapporten foreligger av den grunn på engelsk med norske figur- og tabelltekster.

Emneord:

Hatton Bank, innsats, fangstsammensetning, fangstrater, CPUE, line.

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Norwegian Commercial Fisheries on Hatton Bank during 2002

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Summary

During the 2002 fishing season Norwegian longliners caught and landed approximately 1 500 metric tons (t), round weight, of demersal fish from international waters within the NEAFC region (Northeast Atlantic). About 60 % was caught in the Hatton Bank area. Some vessels went on whole trips (6 weeks) to Hatton Bank, and others fished for shorter periods. Norwegian longline vessels spent 135 days in the area during 2002, which is approximately 33 % of the effort spent during 2001. As during previous years the catch composition varied markedly between vessels. The proportion of Greenland halibut (*Reinhardtius hippoglossoides*) in the landings was lower in 2002, than 2001. This was a result of an increase in the portion of time being spent targeting blue ling (*Molva dipterygia*), tusk (*Brosme brosme*) and mora (*Mora moro*) in the shallower parts of the bank. Reduced prices especially for Greenland halibut seem to be the main reason for the reduced fishing intensity at Hatton Bank during 2002.

Introduction

During the past decades several Norwegian trial/exploratory fishing expeditions have been directed towards the Hatton Bank area. Many of these have been organized by The Norwegian Directorate of Fisheries (1991, 1998, 1999 and 2000) (Langedal & Hareide, 1999; 2000). A commercial longline fishery for Greenland halibut was established in 2000 and a feasibility fishery with four vessels was conducted during 2001 (Hareide et al., 2002; Kjerstad et al., 2002). A feasibility fishery was also planned for 2002 but was not carried out. Several longline vessels did fish in the area during 2002, although less than the year before.

The aim of this document was to document the Norwegian fishing activity in the Hatton Bank area (ICES VIb & XII) during 2002. The work was made possible through close collaboration with several longliners and data made available from The Directorate of Fisheries (satellite tracing system and statistics department). The work was financed by The Norwegian Fishery and Aquaculture Industry Research Fund.

Material and Methods

Close contact was established between Møre Research and the longline fleet to keep track of vessels fishing in the Hatton Bank area during the fishing season 2002 (Figure 1). Contact with the vessels was established while the vessels still was fishing in the area, or as soon as they returned and had landed their catch.

Total effort:

Total effort in days was made available from The Directorate of Fisheries satellite tracing system. This information was also used to ensure that the number of vessels registered in the area matched the number contacted.

Total catch:

Landings from the Hatton Bank area were followed through contact with vessels operating in the area. Information regarding total catch, species composition, production and general information about the fisheries, was gathered from the skippers.

Official landing figures (preliminary) from different ICES areas and summed for international waters were made available from The Norwegian Directorate of Fisheries statistics department (last time 23/12-2002). These numbers were compared to numbers derived from the vessels, which were weighed at the port during unloading. Before comparison, all weights were recalculated to round weight by use of species-dependent conversion factors (Table I). For all species official landing figures seemed to correspond with the numbers reported from the vessels, indicating that all catches were included in both datasets.

Catch per unit effort:

An indication of catch per unit effort was made available through logbooks by a longliner. Catch per hook, CPH, was calculated by dividing total amount caught of a species by total number of hooks in the specific fishery. The logbook described 24 days of fishing, approximately 575 000 hooks, in both shallower and deeper parts of the Hatton Bank. The vessel used 9 mm longlines and Mustad hooks No. 12 E/Z baited with squid and mackerel (2:1).

Biological information:

No biological data from 2002 were available, due to the lack of scientific field activity in the area.

Results

The Fishery:

During 2002 a total of 8 Norwegian longliners reported landings of demersal deep-water species from international waters in the northeast Atlantic (NEAFC area). Of these, 4 longliners had been operating in the Hatton Bank area. Information was gathered from the 4 longliners, which were the only Norwegian fleet group operating at Hatton Bank during 2002 (Figure 1). The longliners targeted fish concentrations in depths between 500 and 1 600 meters. As during previous years, species like blue ling (*Molva dipterygia*), tusk (*Brosme brosme*) and mora (*Mora moro*) was targeted in depths between 500 and 1 100 meter and Greenland halibut (*Reinhardtius Hippoglossoides*) at greater depths. Fishing occurred mainly in known areas, but was difficult due to unpredictable catch rates, low fish prices and the long time needed for steaming.

Official landings:

The Hatton Bank area is divided by the ICES sub-area XII and division VIb where the north-eastern part of the bank being in the later (Figure 1). Total Norwegian landings of deep-water species from ICES sub-area XII and division VIb are given in Table II.

Tusk, blue ling and ling (*Molva molva*) dominated the landings from VIb while Greenland halibut dominated in XII (Table II). Ling and tusk were mainly caught at Rockall, while Greenland halibut and blue ling were caught at Hatton Bank. Comparison of catches from different areas showed that approximately all the Greenland halibut landed from international waters were caught at Hatton Bank (Table II). However, for tusk and blue ling large portions are caught in international waters outside VIb and XII, mainly in Vb1. (Table II).

The total Norwegian catch (round weight) reported from ICES area XII and VIb was just below 1 600 metric tons (t). About 50 % of this was caught within the Hatton Bank area (Table II) and the remaining at Rockall. By November 2002 Norwegian longliners had landed a total of 1 505 t of demersal species from international waters in the northeast Atlantic (Table II). These landings were reported to be from Hatton Bank and further north, in the south-westerly corner of ICES Vb1.

The total landings from Hatton Bank reflect catches of 789 t fish (round weight) (Table II). Blue ling dominated the catches (30.8 %) followed by Greenland halibut (29.5 %), mora (10.2%) and tusk (6.1%). Approximately 13 % of the landings were from cartilaginous fish species, mainly rabbit fishes (*Hydrolagus affinis* & *H. pallidus*) and Portuguese dogfish (*Centoscyrnus coelolepis*). By-products (77.5 t), like Greenland halibut heads and liver from dog- and rabbit-fish species, were also landed.

Effort:

Within the area shown in Figure 1, which includes the Rockall and parts of Loucy Bank, seventeen Norwegian fishing vessels spent a total of 394 days in the period 01.01.02 –

07.11.02. Most of this effort was directed toward the Rockall area (square 3B and 4G in Figure 1). Four longliners (five trips) have been fishing in the Hatton Bank area during 2002, mainly along the south-western part of the Bank (area 1A, 1B, 2A, 2B, 4B and 4C in Figure 1). In total the vessels spent approximately 135 days in the area.

CPH:

In general catch rates varies considerably between fisheries and they are especially sensitive to whether or not the vessels found good fish concentrations. In fisheries made up by a limited number of vessels and fishing days, simple averages of catch rates may not give a good indication of overall trends in the fishery. Although both total catches and total number of days is available, both Greenland halibut and blue ling/tusk was targeted in separate depth strata. The lack of knowledge about how many days were allocated to different fisheries, together with the known variability in catch rate, makes it questionable whether such estimates would at all be informative. However, introduction of a new software setup at The Norwegian Directorate of Fisheries satellite tracing department might in the future allow for a separation of effort by depth strata.

An indication of catch rates is given based on the logbooks from one Norwegian longliner. Both the catch and effort was divided in two depth strata, deeper and shallower than 1 100 m (Table III). The catches were dominated by blue ling in shallower areas, where most of the effort was directed. Greenland halibut dominated at greater depths (Table III). Portuguese dogfish was the only commercial species being caught in both depth strata. Total catch rate (CPH) seem to be slightly higher in the deeper depth strata (Table III). However, the marked reduction in the total number of hooks hauled per day, due to the increased depth, resulted in higher daily catch rates in the shallower fishery.

Discards:

Portuguese dogfish was discarded in some instances due to labour intensive handling and low prices. No further information regarding discards is available.

Reported landings of deep-water by-catch species have varied markedly between years (Table IV). For the species shown in Table IV landings during 2001 were 3 to 5 times higher than during 2000 and 2002. This variability is believed to be a combined result of the increased effort during 2001, and that special attention was directed towards utilization of by-catch species, through the feasibility fishery (Kjerstad et al., 2002). Together with the indications regarding the Portuguese dogfish catches this year (mentioned above), the results suggest the possibility of an annual fluctuation in the proportion of the catch being discarded for several of the by-catch species.

Discussion

Data regarding landings from The Norwegian Directorate of Fisheries were dated 23/12 2002 and could therefore reflect only parts of the catches during 2002. However, by this time the last vessel operating in the Hatton Bank area had left. In general most longliners leave these areas during autumn due to the rough weather conditions and to take part in the cod fishery in the Barents Sea. Although the data must be regarded as preliminary, they are likely to be a good indicator for the total biomass of demersal deep-water species being landed from these areas by Norwegian vessels during the calendar year 2002.

The fishery for Greenland halibut was usually preferred by the longliners in the Hatton Bank area. During 2002, however, the total catch of blue ling was higher than for Greenland halibut. This was due to an increased portion of effort being directed towards shallower areas. Although few vessels were involved in the fishery this year, the increased portion of effort in shallower areas is believed to indicate a tendency in the fishery. Experiences from previous years have shown that Greenland halibut might be difficult to locate, and several vessels have failed in finding good concentrations. Catch rates are low during the searching phase, and spending a long time searching may be an economically unprofitable activity. Less demand for Greenland halibut in the market, together with discussions related to water content and flesh quality, has led to a marked drop in prices compared to previous years. During 2002 the price level of Greenland halibut was stable. Although prices varied between size groups, average price was 21-22 NOK kg⁻¹ (Japanese cut), which is a marked reduction compared to prices during the 2000 season.

The reduced fish price and unpredictable catch rates, combined with the long steaming time needed, were the main reasons why fewer vessels participated in the fishery at Hatton Bank during 2002. The alternative for the longliners was the traditional fishery for ling and tusk. In general, relatively few of the Norwegian vessels are rigged to fish optimally in the Hatton bank area. While 7 and 9 mm longlines are most commonly used by Norwegian longliners, experience has shown that 11 mm is needed to fish effectively at greater depths. New gear is expensive and low fish prices and other uncertainties make the vessel owners reluctant towards new investments.

Official landings:

The main difference from the 2001 season was a relative decrease in Greenland halibut and an increase in blue ling catches (Hareide et al., 2002). Catch rates in the shallower fishery might be smaller, but more predictable than fishing for Greenland halibut at greater depths (Hareide et al., 2002). The distinct difference between the two fisheries is mainly a result of the marked difference in depth. Previous experiences have shown that there is no profitable fishery between 1000 and 1200 meters. Here the catches almost entirely consist of species with low commercial interest such as *Centroscymnus crepidater*, *Centroscyllium fabricii* and *Etmopterus princeps* (Langedal and Hareide, 1999; 2000; Hareide et al., 2002).

The main by-catch species in the Greenland halibut fishery were rabbit fish (*Hydrolagus affinis* & *H. pallidus*), Portuguese dogfish (*Centroscymnus coelolepis*) and roughhead grenadier (*Macrourus berglax*). Reports from the fishermen indicated that parts of the Portuguese dogfish catch were discarded this year, due to the work intensive handling needed and relatively low prices. Portuguese dogfish is the only commercial species which is caught both in the shallower and deeper longline fishery (Hareide et al., 2002).

Effort:

In total the four vessels spent approximately 135 days in the Hatton Bank area. This is a marked reduction from 2001 when 10 Norwegian longliners operated in the area for 412 days (Hareide et al., 2002). As mentioned above the reduced fish price and unpredictable catch rates, combined with the long steaming time needed, were the main reasons why fewer vessels participated in the fishery this year.

CPH:

This year more time was allocated to fishing in known areas and less time was used for searching. This may explain why catch rates seem to be higher during 2002 compared to the feasibility fishery during 2001 (Hareide et al., 2002). CPH varies both with depth, area, time and vessel (This work; Hareide et al., 2002), and should therefore be treated with caution (Gunderson, 1993). Indications of catch rates given here might also be affected by the use of the less preferred 9 mm longlines. The main difference during fishing is the reduced hauling speed, and it is difficult to know how it may have affected the CPH data directly.

The Norwegian fishery at Hatton Bank is established although the effort directed to the area will continue to vary from year to year in the absence of regulations. Several factors will affect the total effort. The most important is believed to be quota levels and availability of traditional species together with changes in the marked situation for the various deep-water species. With the present situation, where knowledge on biology and abundance of deep-water species is scarce, biological sampling and catch statistics are of crucial importance. In the future such data may allow detailed stock descriptions, which may form the bases for assessment and management tools.

Acknowledgement

Thanks to The Norwegian Directorate of Fisheries, for making catch and effort data available, and to the commercial vessels for their cooperation. Thanks also to The Norwegian Fishery and Aquaculture Industry Research Fund for financing this work.

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Tables and Figures

Table I Conversion factors used to calculate round weight based on products reported landed by the Norwegian longliners (from The Norwegian Directorate of Fisheries (October 2002)).

Tabell I Omregningsfaktorer benyttet for å tilbakeregne produkter til rundvekt fra landinger rapportert fra lineflåten. Tabellen bygger på tall fra Fiskeridirektoratet (oktober 2002).

FAO Kode	Species	Gutted		Back	Fillet
		Head off Round cut Manual	Head and tail off Japancut Manual	Skin off, with bone Machine	Skin off, boneless Machine
CYO	Portugese dogfish			4.17 *	5.69 *
MOR	Mora	1.40			3.69 *
USK	Tusk	1.40			2.55
LIN	Ling	1.40			2.80
BLI	Blue ling	1.40			2.80
RHG	Roughhead grenadier	1.40			
HAL	Atlantic Halibut	1.35			
GHL	Greenland halibut		1.50		
HYD	Rabbit fish		3.20		
SRX	Skates/rays	1.5			

* Administrative (preliminary) conversion factors, in force until a complete dataset is established.

Table II Landings of demersal species by Norwegian longliners during 2002 caught in ICES area VIb, XII and summed. Included are also all longline catches reported from international waters and catch information derived directly from the longliners at Hatton Bank. Except from the latter all data are made available by The Norwegian Directorate of Fisheries. Preliminary numbers in tons.

Tabell II Landinger av bunnfisk arter fra norske linebåter i løpet av 2002 fra ICES områdene VIb og XII. Samlet landinger fra internasjonale farvann og fangster rapportert fra linebåtene ved Hatton bank inngår også i tabellen. Foreløpige tall i tonn.

	VIb	XII	Total	International waters	Hatton Bank
Tusk	467.8	27.4	495.2	168.3	47.8
Greenland Halibut	21.4	315.7	337.1	269.1	268.7
Blue ling	272.7	9.4	282.1	632.8	270.6
Ling	208.7	3.6	212.3	40.0	7.0
Mora	53.5	12.9	66.4	163.1	80.6
Haddock	39.1	2.4	41.5	3.2	
Greater forkbeard	24.2	2.3	26.5	24.5	
Atlantic halibut	1.6	1.1	2.7	4.6	1.1
Monk, anglerfish	2.6		2.6		
Roughhead grenadier	1.6	4.1	5.0	8.2	3.6
Unspecified demersal	33.7	23.4	57.1	112.4	4.4
Rabbit fish	4.5	13.0	17.5	-	55.3
Skates	35.6	3.6	39.2	25.5	3.4
Other elasmobranches	6.7	2.8	9.5	53.3	46.5
TOTAL	1173.7	421.7	1581.4	1505	789
By-product					77.5

Table III Catch rates, within two depth intervals, reported by a Norwegian longline vessel operating at Hatton Bank during 2002.

Tabell III Fangstrater fordelt på to ulike dybdeintervall for en linebåt ved Hatton bank i 2002.

	Kg/ 1000 hook	
	Depth <1100m	Depth >1100m
Portuguese dogfish	20	18
Hydrolagus spp	-	8
Mora	2	-
Greenland Halibut	-	179
Tusk	6	-
Blue ling	149	-
Total number of hooks	490 000	85 000

Table VI Norwegian landings of some deep-water by-catch species within ICES area VIb and XII during 2000, 2001 and 2002. Preliminary numbers in tons from The Norwegian Directorate of Fisheries (23/12-2002).

Tabell VI Norske landinger av enkelte bifangst arter rapportert fra ICES område VIb og XII i årene 2000, 2001 og 2002.

ICES area	VIb			XII			Total
	2000	2001	2002	2000	2001	2002	
Dogfish species (mainly <i>C. coelolepis</i> & <i>C. squamosus</i>)	41.1	83.3	6.7	77.4	156.4	2.8	367.8
Rabbit fish	0	50.7	7.5	0	16.0	12.8	87.0
Roughhead grenadier	0.2	41.0	1.6	7.1	14.1	7.1	71.1
Mora	47.6	72.4	53.5	0	94.4	12.9	280.8
Total	88.9	247.4	69.3	84.5	280.9	35.6	806.7

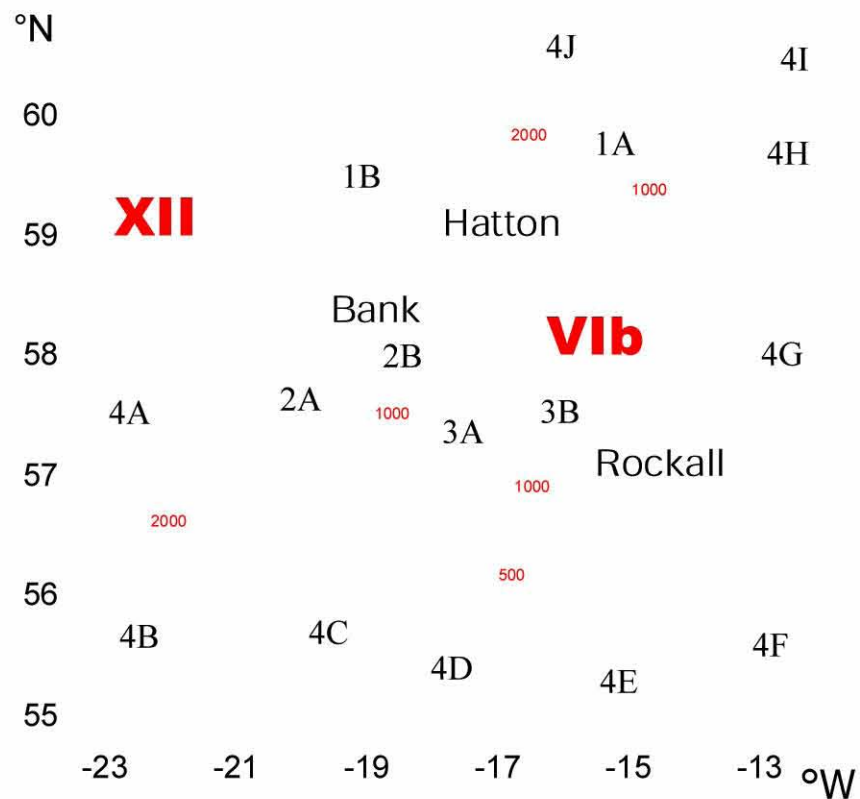


Figure 1 Map of the Hatton Bank and Rockall area with depth contours. Borders between the ICES areas which divide Hatton Bank are shown together with the subareas used in the Norwegian reports from the fishery during 2001 and 2002.

Figur 1 Kart over Hatton bank og Rockall med dybdekonturer. Kartet viser også grensen mellom ulike ICES områder som deler Hatton bank, og områdeinndeling benyttet i 2001 og 2002.