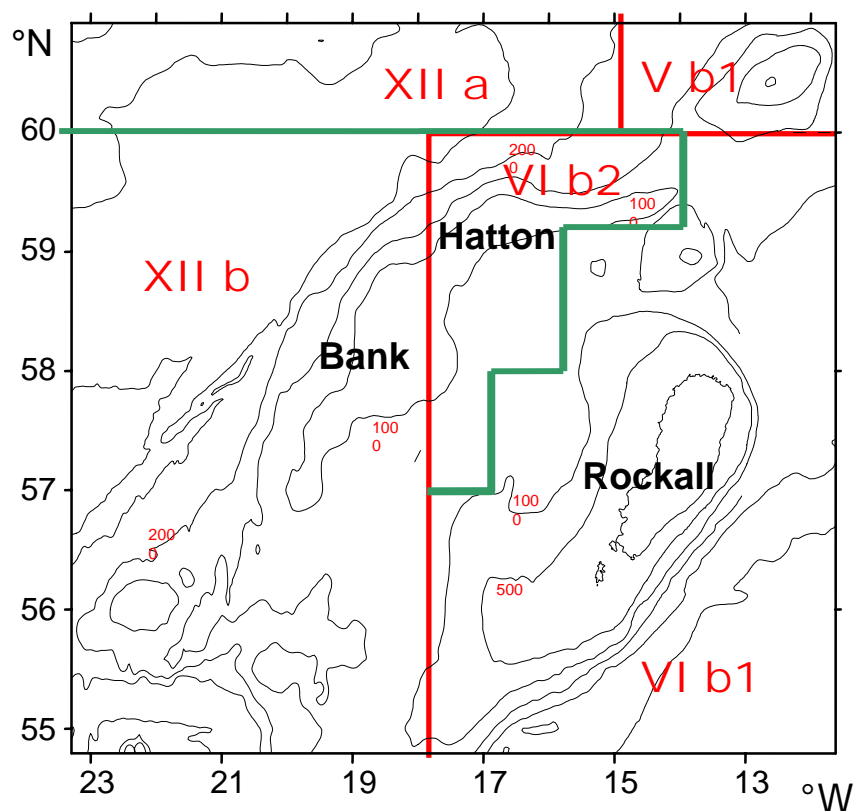
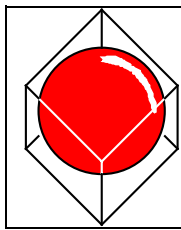


# Norwegian Commercial Fisheries on demersal species in the Hatton Bank area during 2003



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Ålesund, Februar 2004



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## RAPPORT

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### Sammendrag:

I løpet av 2003 landet Norske linefartøyer fisk som representerte en rund vekt på 746.6 ton fra Hatton bank området. Fire Norske linefartøyer deltok i fisket og tilbrakte 163 døgn i området. En økning på 20 % fra 2002.

Fangstene var dominert av blåkkeite og blå lange. Informasjon fra tidligere norsk aktivitet i området er begrensende, både med tanke på fangstrater og biologisk informasjon. Tolkninger av denne informasjonen er heller ikke uproblematisk og bør derfor behandles med varsomhet. Resultatene understreker behovet for å følge dette fiskeriet og eventuelle endringer i biologiske parametre i tiden som kommer.

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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## **Summary**

During 2003, Norwegian longliners landed fish representing 746.6 tonnes round weight from the Hatton Bank area. This year 4 Norwegian longliners reported catches from the Hatton Bank. The longliners spent 163 days in the area, which is an increase of approximately 20 % from 2002.

Landings by the Norwegian longliners from the Hatton Bank area were dominated by Greenland halibut and blue ling. In general, catch composition seemed similar to previous years. Also this year a marked variation in catch rates and species composition were observed between depth strata and vessels. This complicated comparison of catch rates between years.

Information from previous Norwegian longline fishery at Hatton Bank is limited, both regarding catch rates and biological aspects. Interpretation of this information is not strait forward and should therefore be handled with care. The results underline the need to follow the fishery closely in the years ahead.

## Introduction

Several Norwegian trial/exploratory fishing expeditions in new and deeper areas have been carried out during the last 20 years. Recently, particular attention has been directed to the Hatton Bank area (Langedal & Hareide, 2000; Hareide *et al.*, 2002). The fishery for Greenland halibut (*Reinhardtius hippoglossoides*) started in 2000, mainly in depths between 1200 and 1600 m. Since then, 16 Norwegian long line vessels have reported catches from the area.

The vessels also spent time in the shallower parts of the bank (500-1000 m), and species like blue ling (*Molva dipterygii*), tusk (*Brosme brosme*) and mora (*Mora moro*) were targeted. The marked difference between the two fisheries made it difficult to determine the actual catch rates within each fishery without a close follow-up of the vessels operating in the area (Fossen, 2003 a).

The aim of this report was to gather available information about the Norwegian fishery for demersal deep-sea fish species in international waters of the northeast Atlantic during 2003, with particular reference to the Hatton Bank area. Data from different sources were used to give indications of catch composition and catch rates. Also a brief sum up of parts of the available information previously gathered from the Norwegian fishery at Hatton Bank since 1999 is included.

## Material and Methods

As during previous years, close contact was established between Møre Research and the longline fleet, to keep an overview of the vessels operating in the Hatton Bank area during the 2003 fishing season (Figure 1). Contact with the vessels was established while the vessels still were fishing in the area, or as soon as they returned and had landed their catch.

### *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 from different ICES areas were made available from The Norwegian Directorate of Fisheries statistics department (last update 06/01-2004; data from 2002 and 2003 still preliminary). These numbers reflect total landings by Norwegian vessels and could include landings by foreign vessels in Norway, although this is unlikely with respect to the Hatton Bank area. Numbers from the Directorate were compared to numbers derived from the vessels, which were weighed at the port during unloading. Before comparison, weights reported by the vessels were recalculated to round weight by use of species-dependent conversion factors (Table I).

### *Total effort:*

Information regarding total effort in days divided in separate depth strata was collected from the vessels.

#### *Catch per unit effort:*

An indication of catch per unit effort was made available through logbooks from the longliners. The information available was total product weight of the different species per day. To be able to compare these numbers with previous information, the numbers were recalculated to round weight as mentioned above. To calculate kg round fish caught per 1000 hook (CPH) of a species, the average number of hooks per day estimated during the 2001 season were used (Table 3 in Hareide *et al.*, 2002). The estimated catch rates might therefore not reflect the actual catch rates and should be used as an indication only.

Average catch rates for individual vessels were weighed to the number of days each vessel had spent in a certain depth strata to estimate the overall average catch rates per species during the season.

#### *Biological information:*

Due to the lack of scientific personnel onboard the vessels the amount of biological information available from the commercial fishery are limited. The Institute of Marine Research (IMR), in Bergen Norway, do however have a close collaboration with a number of vessels, who carry out sampling of their catches on a regular bases. Currently three longliners are part of this “Reference Fleet”. Some of these longliners have carried out length registration of several species during fishing operations in the Hatton Bank area during the past three years. This information was made available for this work by the IMR.

## Results

### *The Fishery:*

During 2003 a total of 4 Norwegian longliners operated in the Hatton Bank area. Information was gathered from the longliners, which were the only Norwegian fleet group operating at Hatton Bank this year. The longliners targeted fish concentrations along the bottom in depths between 500 and 1 600 meters. As during previous years, species like blue ling (*Molva dipterygii*), tusk (*Brosme brosme*) and mora (*Mora moro*) were targeted in depths between 500 and 1 100 meter and Greenland halibut (*Reinhardtius Hippoglossoides*) at greater depths (Hareide, *et al.*, 2002; Fossen, 2003 a).

### *Official landings:*

The Hatton Bank area is divided by the ICES sub-area XII and division VIb; the north-eastern part of the bank being in the latter. The Working Group on The Biology and Assessment of Deep-Sea Fisheries Resources, within the ICES, suggested in their annual report of 2003 a further dividing of XII and VI b. This would allow the catches from the Hatton Bank to be separated from those caught at Rockall (VIb) and the Mid Atlantic ridge (XII). The suggested changes included the introduction of two new areas XII b and VIb 2 (Figure 1; ICES, 2003). Preliminary numbers of round fish, based on Norwegian landings of deep-water species, from ICES sub-area XII and division VIb are given in Table II.

Norwegian longliners landed a total catch reflecting 746.6 t round weight from the Hatton Bank area during 2003 (Table II). Greenland halibut dominated the catches in round weight (36.8%) followed by blue ling (20.6%), Portuguese dogfish (*Centoscyrnus coelolepis*) (16.5%) and mora (10.1%). Based on these numbers, approximately 24 % of the catches consisted of cartilaginous fish species, mainly Portuguese dogfish, rabbit fishes (mainly



*Hydrolagus affinis* and some *H. pallidus*) and skates (*Raja* spp.). The catch composition in 2003 was similar to 2002 although Greenland halibut made out the largest proportion of the catches again during 2003 (Table II).

At Hatton Bank blue ling, tusk and mora dominated the landings from area VIb 2 while Greenland halibut dominated in XII b. Similar catch composition can be found when looking towards the total reported landings from IV b and XII during the past 4 years (Table III). Landings from VI b are dominated by tusk and ling, mainly from the traditional longline fishery at Rockall. The main portion of blue ling caught in the area comes from the Hatton Bank. Greenland Halibut dominated the landings from area XII and a major part of this was caught at Hatton Bank (Table II and III). In the numbers from 2003, there is a large unexplained discrepancy, between the numbers collected from the vessels operating at Hatton Bank and the total number registered by the Directorate of Fisheries regarding Greenland halibut (Table II and III). The higher number of total landing of Greenland halibut from sub-area XII than what is reported from the vessels from the Hatton Bank, might indicate that there has been an increase in landings of this species from other areas within sub-area XII.

Since 2000, total Norwegian landings reported from area VI b and XII have varied from year to year (Table III). From VI b a marked reduction can be seen in the yearly landings from 2000 to 2003, mainly as a result of reduced catches of tusk and ling.

#### *Effort:*

Four longliners operated in the Hatton Bank area during 2003, mainly in the shallower parts and the westerly slope of the bank. A large portion of the fishery in the shallower parts of the

bank took place in ICES VI b2 while the main portion of fishery in the deeper parts took place in XII b, see above.

The effort directed towards the Hatton Bank during 2003 was approximately 20 % higher than during the 2002 season, with 163 and 135 fishing days respectively (Table IV). During 2003 effort were evenly divided between depth strata with 81 and 82 days in the shallower and deeper parts of the ridge, respectively (shallower and deeper than 1000 to 1100 m).

Pre 2000 the Norwegian effort in the Hatton Bank area where made up only by a few trial fisheries. Since 2000 a commercial fishery has been carried out although the yearly effort has been limited. The effort peaked during 2001 with a total of 10 longliners, a trawler and a gill netter operated on the bank (Hareide et al., 2002). During the later years 4 longliners has visited the bank each year. Since 2000 a total of 16 Norwegian longliners has reported catches from the Hatton Bank. About half of them visited the bank only once.

#### *Catch rates:*

An indication of average yearly catch rates is given in previous reports from trial and commercial fishery (Table V). For 2003, logbooks from the longliners participating in the fishery were used to give an estimate for expected catch rates, see above. For all years, the catch and effort was divided in two depth strata, deeper and shallower than about 1000 to 1100 m (Table V).

Portuguese dogfish was the only commercial species being caught in both depth strata but catches were generally higher in the deeper strata (Table V). In general, the data presented show a marked between year variation in catch rates for the different species. The results are

therefore difficult to interpret. When looking for patterns, for instance through the timing of the highest and lowest estimated catch rate for the individual species, no particular pattern could be observed. The only notable indication is that for several of the by-catch species, highest catch rates were recorded during 2001 when special attention was directed towards utilization of by-catch species, through the feasibility fishery (Kjerstad *et al.*, 2002).

#### *Discards:*

No direct information regarding discards is available from the 2003 season. However, the amount is expected to be on the same level as previous years (Hareide *et al.*, 2002).

#### *Biological information:*

The only available biological information from the commercial fishery at Hatton bank during the 2003 was length registrations carried out onboard longliners included in IMR's "Reference Fleet". Average lengths from these registrations are presented together with information gathered during previous Norwegian trial and commercial fisheries in the area. This measure seemed to be the most suitable information available in previous reports covering both several species and years (Table VI).

For the different species average lengths seemed to vary between years. Due to the lack of the underlying material, statistical tests were made difficult. However, when looking at mean lengths estimated from more than 500 registrations, mean lengths from 7 of 8 species might indicate a reduction during this time period (Table VI).

## Discussion

### *General:*

Data regarding landings from The Norwegian Directorate of Fisheries were preliminary and could therefore be incorrect. However, the numbers did fit well with the reported landings from the vessels operating in the Hatton Bank area during 2003 for most species, and are therefore expected to reflect the actual catches.

At Hatton Bank a fishery for Greenland halibut started during 2000 and this has been the most attractive specie for most of the vessels (Hareide *et al.*, 2002; Fossen, 2003 a). The only year the catches were not dominated by Greenland halibut was during 2002, when the total catch of blue ling was slightly higher than for Greenland halibut (Fossen, 2003 a). Experiences from previous years have shown that high concentrations of Greenland halibut might be difficult to locate. Most of the landed Greenland halibut during 2003 was probably caught in the locations previously found by the vessels. This is also indicated by the estimated catch rates, although they only give a rough estimate.

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). This has led to the splitting of the fishery at the bank in two different fisheries, one deeper than 1100 m and one shallower than 1000 m. The distinct difference between the two fisheries is mainly a result of the marked difference in depth, which has resulted in a narrow overlap in the species caught in the two fisheries.

Species composition has been relatively stable within specific fisheries, such as inside concentrations of Greenland halibut. The observed between years variation in the composition

of the overall landings is mainly a result of the species targeted by the vessels, and the number of vessels targeting the different species. Another important factor is the success of the vessels in finding concentrations of their targeted species.

To be able to use information regarding landing and effort directly from the Directorate of Fisheries, without a close following up of individual vessels, more precise reporting is needed. Species should be reported separately and not combined in larger groups and effort should be divided to each of the two different fisheries. Together with the difficulties in estimating catch rates without correct information on the effort, particularly some of the by-catch species might be reported wrongly or grouped. This has been the case for species like *C. squamosus* and *C. coelolepis*, and *H. affinis* and *H. pallidus* which are often pooled in the catches and reported as either one of the species or grouped in other categories.

#### *Effort:*

Norwegian longliners spent 163 days at the Hatton Bank (ICES VI b 2 and XII b) during 2003. This reflects a 20% increase from 2002 (135 days). However, it is lower than during the 2001 fishing season, when 10 Norwegian longliners operated in the area for 412 days. (Hareide *et al.*, 2002; Fossen, 2003 a; Tabell IV).

During 2003 the effort was divided evenly between the shallower and deeper fishery with 81 and 82 days of fishing respectively, and several of the vessels spent time both in shallower and deeper areas.

### *Catch rates:*

In general, catch rates varies considerably between the different fisheries at Hatton Bank and are sensitive to whether or not the individual vessel finds good concentrations of fish. 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 (Allen *et al.*, 2002; Fossen, 2003 b). The numbers should therefore be handled with care.

As during 2002, the vessels did spend most of their time in areas where high concentrations of fish previously had been found. This may explain why the catch rates seem to be higher for the primary target species during 2002 and 2003 compared to the feasibility fishery during 2001 (Table V). In general, the between year variation in catch rates are high and caused by several factors. At Hatton Bank one of the main causes are the patchy distribution of species, which force the vessels to spend time searching for higher fish concentrations. The catch rates within areas of high concentrations are known to be very different from catch rates outside these areas (Hareide *et al.*, 2002, Table V). Thus, the amount of time spent inside or outside these areas will affect the overall catch rates.

For the by-catch species, variation in catch rates are also strongly connected to the proportion of the catch actually produced by each vessel. This is partly related to the general workload and catch rates on board. Also between vessels variation in the effort put into processing of the by-catch species and the know-how related to this processing should be expected. Another important factor is the present price level of different products. The above mentioned factors are believed to have affected the estimates of catch rates and landings for species like roughhead grenadier, dogfish species and skates. For these species, estimated catch rates based on landings from commercial fisheries are expected to be a varying degree of

underestimates. Direct interpretation of varying catch rates are therefore made difficult (Gunderson, 1993).

#### *Discards:*

No information of the discard is available from the 2003 season. In general, this deep-sea fishery is a multi-species fishery where by-catch species often plays an important role. At present however, there seems to be no possible way to utilize a large portion of the actual catches (Langedal og Hareide, 2000; Hareide *et al.*, 2002, Kjerstad *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*). Particularly Portuguese dogfish has previously been discarded due to the workload involved in processing and the relatively low prizes (Fossen, 2003 a).

#### *Biological information:*

Historical information regarding the Norwegian effort in the Hatton Bank area is limited and much of it is collected during trial fisheries. As catch rates, biological information is also affected by variations in stocks structure both between areas and depths (see above, Gordon and Duncan, 1985; Fossen *et al.*, 2003). Therefore difference both between samples from different areas but also between samples from commercial and trial fisheries is expected. Direct comparisons between data from different sources and years are therefore difficult. The above underline the importance in the gathering of all the available information from this area.

To describe possible impact of fishing, several fish community indicators have previously been used. Among the more operational indicators are those which can easily be measured and where the effect of fishing on the indicators is relatively well understood. Average population length is among these measures, and has previously proven it self to be useful. (Rochet and Trenkel, 2003).

The data presented here were sampled over several years and were easily available in previous reports and from IMR. When looking at mean lengths the results indicated that in seven of eight species there might be a reduction in mean length with time. If not biased this would be a rather strong indication of changes in the fish community.

The indications of changes in average lengths might well be biased as mentioned above. Direct interpretation of the result is therefore difficult and should be handled with care. The indications should, however, still work as a reminder that the relatively limited fishery directed to some of the long lived deep-sea species might at least partly explain such a pattern. Effort should therefore be made to describe biological population characteristics, and possible changes in these should be followed closely.



## Acknowledgement

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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	Species	Gutted		Back
		Head off	Head and tail off	Skin off, with bone
Kode		Round cut		
		Manual	Japancut Manual	Machine
CYO	Portugese dogfish			4.17 *
MOR	Mora	1.40		3.69 *
USK	Tusk	1.40		
LIN	Ling	1.40		
BLI	Blue ling	1.40		
	Roughhead			
RHG	grenadier	1.40		
GFB	Greater forkbeard	1.40		
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** Norwegian landings of demersal deep-sea species from international waters in the North Atlantic during 2002 (from The Directorate of Fisheries, preliminary numbers) and landings reported from the Hatton Bank (from Norwegian longliners) during 2002 and 2003. Estimated round weight in tons.

**Tabell II** Norske landinger av bunnfiskarter fra internasjonale farvann i Nord Atlanteren (foreløpige tall fra Fiskeri Direktoratet) og landinger rapportert fra Hatton bank (rapportert fra norske linebåter). Beregnet rundvekt i tonn.

	International waters	Hatton Bank	
	2002	2002	2003
Greenland Halibut, <i>R. hippoglossoides</i>	269.1	268.7	274.9
Blue ling, <i>Molva dipterygii</i>	632.8	270.6	153.7
Ling, <i>Molva molva</i>	40.0	7.0	4.6
Tusk, <i>Brosme brosme</i>	168.3	47.8	32.2
Mora, <i>Mora moro</i>	163.1	80.6	75.5
Greater forkbeard, <i>Phycis blennoides</i>	24.5		18.4
Roughhead grenadier, <i>M. berglax</i>	8.2	3.6	5.7
Atlantic halibut, <i>Hippoglossus hippoglossus</i>	4.6	1.1	
Monk, anglerfish, <i>Lophius</i> sp			
Unspecified demersal	112.4	4.4	2.1
Rabbit fish, <i>Hydrolagus</i> sp.	-	55.3	38.9
Skates	25.5	3.4	17.3
Other elasmobranchs, mainly <i>C. coelolepis</i> and <i>C. squamosus</i>	53.3	46.5	123.2
<b>TOTAL</b>	<b>1 505</b>	<b>789</b>	<b>746.6</b>

**Table III** Total Norwegian landings of some demersal deep-sea species from ICES area VI b and XII during 2000, 2001, 2002 and 2003. Numbers in tons round weight from The Norwegian Directorate of Fisheries (6/1-2004). Numbers from 2002 and 2003 are preliminary.

**Tabell III** Samlede Norske landinger av noen dyphavsarter fra ICES område VI b og XII i årene 2000, 2001, 2002 og 2003. Rundvekt i tonn fra Fiskeri Direktoratet (6/1-2004). Tall fra 2002 og 2003 er foreløpige.

<u>Species</u>	<u>Vib</u>				<u>XII</u>			
	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
Blue ling, <i>Molva dipterygii</i>	183.7	256.3	273.2	101.8	21.1	152.7	9.4	39.8
Greater forkbeard, <i>Phycis blennoides</i>	60.3	34.7	25.4	75.4		9.0	2.3	8.2
Greenland Halibut, <i>R. hippoglossoides</i>	34.5	316.5	21.4	26.0	553.4	502.3	315.7	474.8
Ling, <i>Molva molva</i>	172.5	328.3	291.8	415.5		26.6	3.6	16.7
Mora, <i>Mora moro</i>	47.6	72.4	53.5	178.1		94.4	12.9	15.1
Roughhead grenadier, <i>M. berglax</i>	0.2	41.0	1.6	1.9	7.1	14.1	7.1	2.4
Roundnose grenadier ( <i>Coryphaenoides rupestris</i> )		31.3				1.4		
Tusk, <i>Brosme brosme</i>	932.7	475.9	519.7	356.2	4.6	56.6	27.4	82.7
Dogfish species ( <i>C. coelolepis</i> & <i>C. squamosus</i> )	41.1	147.3	19.0	40.6	77.4	172.4	24.7	28.1
Rabbit fish, <i>Hydrolagus</i> sp.		64.0	12.3	9.5	0.0	16.0	21.9	3.3
Totalt	472.3	1 703.8	1 205.7	1 195.6	663.6	1 029.5	405.4	667.8

**Table IV** Information on yearly effort in the Hatton Bank area from Norwegian longliners. Number of vessels (from The Norwegian Directorate of Fisheries) and estimated amount of round fish caught from landings (tons) and the total number of days fished and hooks used from this and previous reports. (Langedal and Hareide 1999, Hareide *et al.*, 2002; Fossen, 2003 a).

**Tabell IV** Informasjon angående årlig innsatts ved Hatton bank fra Norske linefartøyer. Antall fartøy (fra Fiskeri Direktoratet) og samlet mengde fisket rundfisk basert på landinger (ton), og totalt antall dager og kroker involvert fra denne og tidligere rapporter. (Langedal and Hareide 1999, Hareide *et al.*, 2002; Fossen, 2003 a).

<u>Effort / Year</u>	<u>1992</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
No. Longliners	1	1	7	10*	4	4
Estimated amount of round fish caught	69.9	78.4		2 908**	789	746.6
Total number of days	11	16,5		412	135	163
Hooks - millions	0.20	0.22		6.23		2.5

\* Also a trawler and a gill-net vessel operated in the area this year, \*\* and catches from these vessels are included (Hareide *et al.*, 2002).

**Tabell V** Catch rates, within two depth intervals, in the Norwegian longline fishery at Hatton Bank from 1992 - 2003. Data from 1992, 1999 and 2000, in shallower area, from Langedal and Hareide (2000, Table 7). For areas deeper than 1000 m averages were estimated from Table 4 in Langeland og Hareide (1999) and Table 5 in Langeland and Hareide (2000) (only the 100 m depth stratas where species were caught are included in these calculations). For 2001 number were recalculated based on Table 9 in Hareide *et al.* (2002), catch rates in areas deeper than 1000 m from Table 16 in Hareide *et al.* (2002). Data from 2002 from Fossen (2003 a). Both for 2002 and 2003 numbers are estimated based on information from logbooks made available from the vessels. The approximate number of hooks forming the base of each years estimates are included.

**Tabell V** Fangstrater, innen to dybdeintervall, i det Norske linefiskeriet ved Hatton bank for årene 1992 - 2003. Data fra 1992, 1999 og 2000, i områder grunnere enn 1000 m, er hentet fra Tabell 7 i Langedal og Hareide (2000). For områder dypere enn 1000 m ble gjennomsnittelig fangstrater beregnet fra Tabell 4 i Langedal og Hareide (1999) og Tabell 5 i Langedal og Hareide (2000) (bare de 100 m dybdestrata hvor hver enkelt art ble registrert inngår i beregningene). For 2001 ble fangstrater beregnet basert på Tabell 9 i Hareide *et al.* (2002), fra områder dypere enn 1000 m er ratene hentet fra Tabell 16 i Hareide *et al.* (2002). Tall fra 2002 fra Fossen (2003 a). Både for 2002 og 2003 ble ratene beregnet basert på informasjon fra loggbøker gjort tilgjengelig fra linefartøyene. Et overslag over antall krok som ligger til grunn for beregningene er også angitt i tabellen.

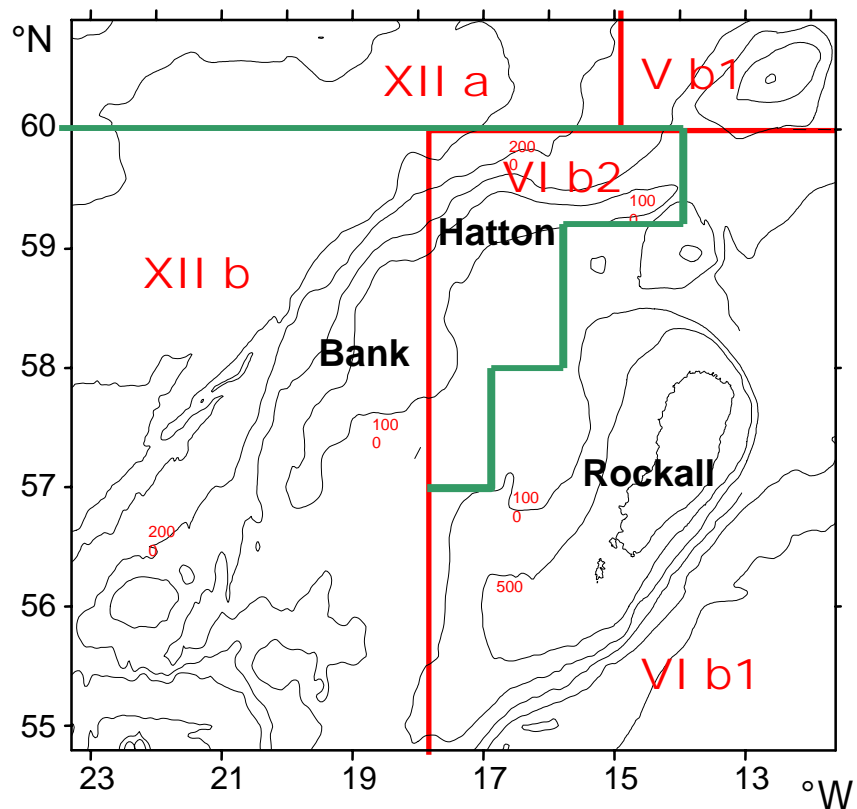
Species		1992	1999	2000	2001	2002	2003
<b>&lt; 1000 m</b>	N hooks * 1000	197	~62	~101	313.9	490	~1300
<i>Brosme brosme</i>		41	19	36	161.6	6	24.1
<i>Mora moro</i>		145	46	62	38.8	2	56.5
<i>Molva dipterygii</i>		65	19	119	60.7	149	115.0
<i>P. blennoides</i>					25.6		14.3
<i>Centrophorus squamosus</i>		38	138	14	2.0		
<i>Centrosymnus coelolepis</i>		23	28	9	8.8	20	7.4
<b>&gt; 1000 m</b>	N hooks * 1000		~161	~175	82.9	85	~1200
<i>Antimora rostrata</i>			1.2	0.6	5.7		
<i>Hydrolagus spp</i>			6.9		63.0	8	27.0
<i>Macrourus berglax</i>			1.4	10.6	22.2		4.8
<i>Reinhardtius hippoglossoides</i>			33.2	157.9	53.2	179	234.4
<i>Centrosyllium fabricii</i>			61.9	162.7	112.7		
<i>Centrosymnus coelolepis</i>			86.9	98.4	51.5	18	14.7
<i>Etmopterus princeps</i>			2.4	15.0	45.7		

**Table VI** Average length of some deep-sea species caught by Norwegian long liners at Hatton Bank from 1999, 2000 and 2001. Number of observation behind each average length in brackets. Data from Langedal and Hareide (1999; 2000) and Hareide et al., (2002). Similar data registered by the vessels included in IMR's Reference Fleet, currently including 3 long line vessels, for 2001, 2002 and 2003, in the lower part of the table.

**Tabell VI** Gjennomsnittslengder for noen arter fisket av Norske linefartøyer ved Hatton Bank i perioden 1999, 2000 og 2001. Antall observasjoner oppgitt bak gjennomsnittslengdene. Data fra Langedal and Hareide (1999; 2000) and Hareide et al., (2002). Tilsvarende gjennomsnittslengder fra noen av artene registrert fra linefartøyer som inngår i HI's referanse flåte for årene 2001, 2002 og 2003, i nedre del av tabellen.

Species \ Year	Average length, cm (N)		
	1999	2000	2001
<i>Antimora rostrata</i>			58.8 (43)
<i>Brosme brosme</i>	62 (208)	66 (788)	
<i>Macrourus berglax</i>	33 (81)	31.6 (160)	28.6 (186)
<i>Molva dipterygii</i>	92 (765)	90.6 (2677)	94.5 (12)
<i>Mora moro</i>	58 (506)	54.5 (1246)	
<i>Reinhardtius hippoglossoides</i>	86 (375)	86 (1372)	84.7 (797)
<i>Hydrolagus sp.</i>			113.5 (38)*
<i>Centrophorus squamosus</i>	104 (1319)	99 (714)	104.8 (12)
<i>Centoscyrnus crepidater</i>	78 (1192)	77.5 (802)	
<i>Centroscyllium fabricii</i>		71.2 (1620)	54.5 (652)
<i>Centoscyrnus coelolepis</i>	105 (646)	100 (926)	101.9 (279)
<i>Deania calcea</i>	86 (611)	86.6 (621)	
<b>Data from IMR's "reference fleet"</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<i>Brosme brosme</i>		61.42 (2365)	57.99 (2488)
<i>Molva dipterygii</i>		85.23 (3688)	91.27 (6188)
<i>Mora moro</i>		53.16 (7895)	52.74 (6500)
<i>Reinhardtius hippoglossoides</i>	85.35 (633)	85.82 (6177)	84.74 (2089)

\* dependent on the portion *H. pallidus* in the catches which varies. *H. pallidus*



**Figure 1** Map of the Hatton Bank and Rockall area with depth contours. Borders between the ICES areas, including the new VI b2 and XII b, are shown. Suggested new borders in green.

**Figur 1** Kart over Hatton bank og Rockall med dybdekonturer. Kartet viser også grensen mellom ulike ICES områder, inkludert de to nye VI b2 og XII b, som deler Hatton bank. Forslag til nye grenser i grønt.