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A preliminary Investigation on Shelf Edge and Deepwater Fixed Net Fisheries to the West and North of Great Britain, Ireland, around Rockall and Hatton Bank.

By

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Abstract

Since the mid-1990s, a fleet of up to 50 vessels have been conducting a gillnet fishery on the continental slopes to the West of the British Isles, North of Shetland, at Rockall and Hatton bank. These vessels, though mostly based in Spain are registered in the UK, Germany and other countries outside the EU such as Panama. The fishery is conducted in depths between 200 and 1200 meters, with the main target species being monkfish (200-800 m) and deepwater sharks (800-1200m). These fisheries are not well documented or understood and they seem to be largely unregulated, with little or no information on landings, catch composition and discards.

Vessels currently participating in the fishery are reported to use up to 250 km of gear, and the nets are left fishing unattended and hauled every 3-10 days with trip lengths varying between 4 –8 weeks. The amount of fishing gear used in the fisheries, the lengths of the fleets, and the fact that the nets are unattended much of the time, make it very likely that a large quantity of nets are lost, while there is also evidence of illegal dumping of sheet netting.

The long soak times in these fisheries result in a high proportion of the catches being unfit for human consumption.

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Introduction

The gillnet fisheries in the slopes around the British Isles, Rockall and Hatton bank were developed in the mid-1990's, with a fleet of up to 50 mostly Spanish based vessels, registered in the UK, Germany and other countries outside the EU such as Panama.

The ICES Working Group on Deepwater Fisheries (Anon 2004) give a brief description of the NE Atlantic fisheries but pointed to little or no information being available. The ICES Elasmobranch Working Group (Anon 2004) has revised and updated landings statistics from these fisheries, but found the data very incomplete and totally unreliable. In fact that there is almost no relevant data available from this fishery meaning that the catch and effort data are largely excluded for stock assessments for the species involved. It is also evident there is little or no management of these fisheries and existing control and enforcement regulations have little or no impact. Essentially these fisheries remain totally unrestricted.

As a result of the serious implications of these conclusions the "Deepnet" project was set up. The main goals of the project were to produce an overview of existing information specifically about the deepwater set net fisheries in the NE Atlantic, to collect as much new data as possible and to make the case for a larger, international project.

Information gathering

Since so little is known about these fisheries, it was necessary to collect information directly from the industry and related businesses such as net makers, fish buyers etc. in order to get an overview of the current status, gear being used, number of vessels and level of effort. Two gillnet skippers, one agent, two net makers, eight harbour masters in British Ports, one Fishery Officer in an Irish port, three PO managers, eight Scottish trawl skippers, five Norwegian longline skippers and two Spanish longline skippers were interviewed. The interviewers had several years of experience as fishermen in addition to a scientific background and therefore were able to address technical issues relating to gear and fishing operations as well as biological data. The interviewees were guaranteed anonymity in all cases.

Data on vessels participating in the fishery were taken from the Fishing Industry for Britain and Ireland (Anon, 2002-2003), and personal information from Institut für Seefischerei (Germany), cross referenced with other information received from a variety of the before mentioned sources.

Data on landings and effort were collected from the various Marine Institutes and also from ICES. Logbook data from the fleet registered in Great Britain was provided by the Scottish Fishery Protection Agency, while The Irish Naval Service provided sightings data and limited VMS data on groups of vessels. VMS data was also received from the Norwegian Directorate of Fisheries and information from inspections of two British registered vessels in the Norwegian EEZ in 2003 was provided by the Norwegian Coastguard.

Description of the Fisheries

The set net fisheries can be divided into a deepwater fishery and an upper slope fishery. (Figure1) The deepwater fishery (800-1200 m) targets the Leafscale gulper shark or false "siki" shark (*Centrophorus squamosus*) and Portuguese dogfish or "siki" shark (*Centroscyllium coelolepis*). The upper slope fishery (200-600m) targets monkfish (*Lophiidae)* (Figure 1). By-catch in both fisheries include Forkbeard (*Phycis blennoides),* Blue Ling (*Molva dyptergia),* Ling (*Molva molva),* Rays (*Raja spp.)* and Deepwater red crab (*Chaceon affinis).*

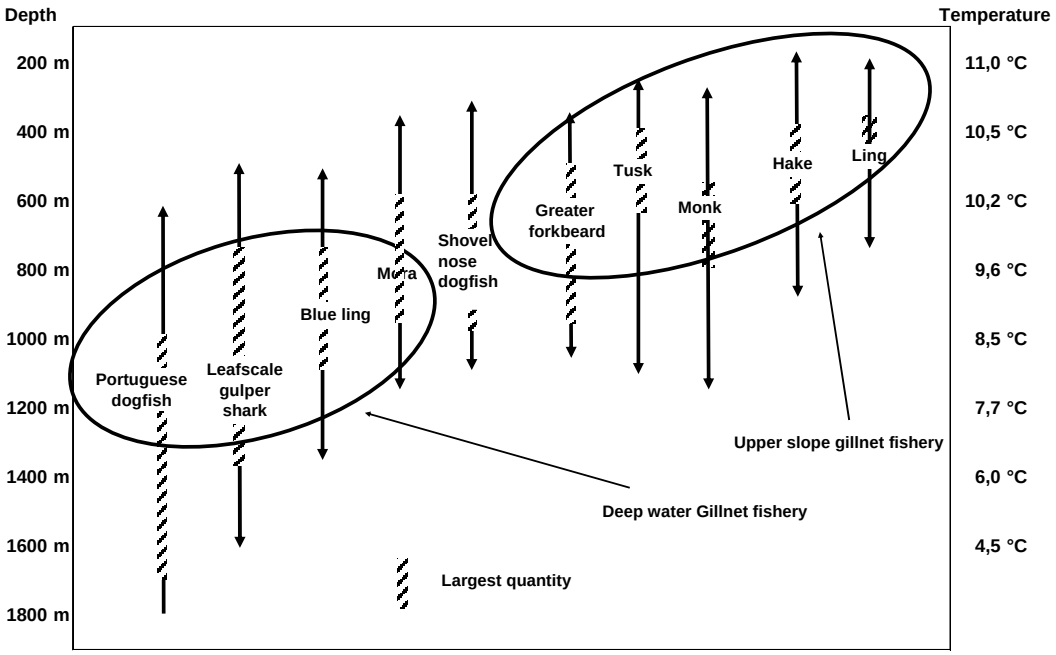

Figure 1 Distribution of fish species and gillnet fisheries by depth and temperature in the continental slopes to the west of The British Isles

Upper slope fishery

This fishery started in 1994-1995 in ICES Sub Divisions VIIb-k. Vessels were landing 3-400 tons of fresh monkfish per year and in 1995/96 about 15 vessels were participating in the fishery. All of the vessels were owned by Spanish companies but registered in the UK, Germany and other countries outside the EU such as Panama. In the first 2-3 years, vessels of 20-30 meters length were used, with the catch landed fresh. In the period 1996-1999 vessel size increased to typically 30-40m in length. Most vessels installed freezing facilities on board to allow increased trip length. These developments made it possible to work and carry more nets and to work more days at sea. The fishery expanded to areas VI and IVa from 1996 onwards and vessels also began fishing in international waters at Hatton Bank and west of Rockall. At its peak there were up to 50 vessels involved in the fishery. As fishing effort increased CPUE decreased to unprofitable levels and in 2000/01 approximately half of the

fleet moved to Brazil under private agreements between the Spanish owners and the Brazilian Government. There are currently around 16 vessels participating in the fishery, 12 UK registered and 4 German registered.

Deepwater fishery

This fishery started in 1992 in ICES Sub Division VII. Initially only the sharks' livers were landed, but a limited market for fresh shark developed for fish caught in the last days of a trip. Normal catch rates were 40 metric tonnes of deepwater sharks per week. Gradually the meat of the fish has become the main product and from 1999 all deepwater sharks were landed for human consumption, initially into the French market and more recently as frozen siki "backs" into the Spanish market that has developed. All the vessels are now freezers and normal trip length is 4- 6 weeks, or until the liver tanks or the fish hold is full. The number of participating vessels peaked at about 15 in 2000 but half the fleet (7-8 boats) left in 2000-2001. They are similar in specifications to the upper slope fleet, designed for long trips and being able to carry the maximum amount of nets on board with the same crew structure.

One of the main by- catches in this fishery has been the deepwater crab *Chaceon affinis*, and with the development of a market for frozen crab meat, two British and one German vessel have now changed from gillnetting to a directed fishery with pots for deep water crabs.

Fishing grounds and areas

The fisheries covered by this paper are conducted on the continental slopes between 150 and 1200 meters from south of Porcupine Bank (49 ° N) to Tampen (61°N) and the Rockall and Hatton Banks (Figure 2). The VMS data and sightings data from the Scottish and Irish Navy and logbook information have provided a good insight into the general fishing areas.(Figure 3, 4 &5) Sightings data showing the positions of UK registered vessels and also VMS data showing the movements of several German deepwater vessels are shown in (Figure3). Both of these datasets indicate that fishing is spread over the entire continental shelf area from North of the Shetlands to SW of Ireland. In The Faeroes, Shetland Channel and the Rockall Trough and Bank the target species are monkfish and ling in depths between 200 and 450 meters. In depths between 600 and 1200 meters the deepwater sharks and deepwater crabs are the main target species. At Hatton Bank the main target species is monkfish between 500 and 900 meters. Deeper than 800 meters the "siki" sharks are the main target species.

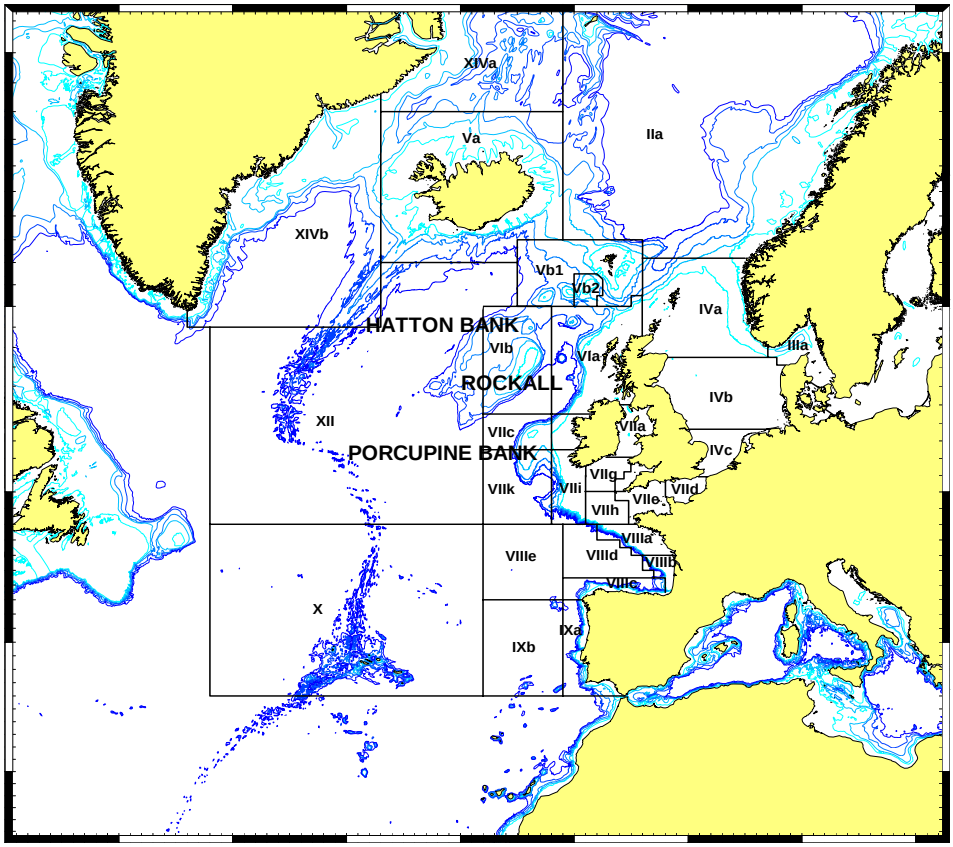

Figure 2. The North Atlantic

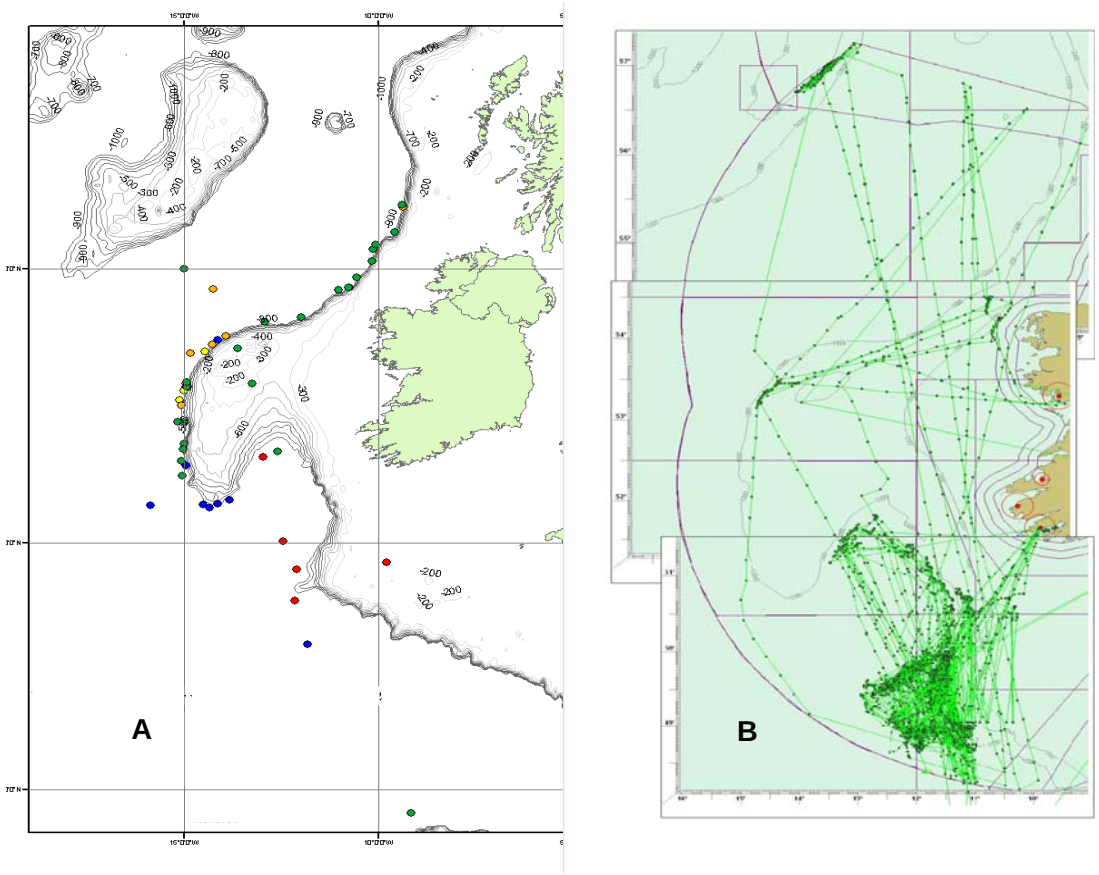

Figure 2. Sightings data for UK Registered deepwater vessels, 2002, 3(a) VMS Data showing German Deepwater gill netters (b), 2003 (supplied by Irish Naval Service)

Fishing Effort

Data on fishing effort has been collected for 2003 as a reference year. Taking all information, 29 vessels were reported to be active in the fishery in 2003, of these 23 were registered in the UK and 6 in Germany (Tables 1 & 2). Two Panamanian registered vessels "*North Sea Coast*" and "*Badminton*" were also reported to have fished in 2003 but there are no catch or effort figures available. One of the German vessels has reported only deepwater fishing with pots in 2003.

Table1. British registered gillnet vessels 2003 -2004

Vessel	D. Water	U. slope	Comb. Upper slope and deep	Crab pots
Arwyn		x		
Atalaya	x			
Ayr Dawn		x		
Blue Gate		x		
Brosme	x			
Cibeles			x	
Crystal	x			x
Eder Sands			x	
Greenwich	x			
Idena	x			x
Lady Laura		x		
Mar Azul			x	
Mar Blanco			x	
Maria H	x			
Meey		x		
Menorca	x			
Meridian	x			
Norte	x			
Persorsa Uno	x			
Shark[1]	x			
Suffolk Chieftain		x		
Tahume			x	
Yanez		x		
Total 23	11	7	5	2

1) Changed name from "Squalo" during summer 2004

Table 2. German registered gillnet vessels 2003 -2004

Vessel	D. Water	U. slope	Comb. Upper slope and deep	Crab pots
Rodas	x			
Lady Beatrice				x
Belen		x		
Pesorsa dos		x		
Nordsee		x		
Pesorsa tres		x		
Total 6	1	4		1

It is very difficult to quantify an exact amount of effort for these vessels given that the gear is left to fish unattended, activity straddles a number of jurisdictions (Ireland and UK) and much of the effort is outside EU waters in NEAFC areas. Estimated effort details for UK registered vessels fishing in Scottish waters based on recorded logbook effort are given in Table 3. This indicates total effort by the UK registered vessels of 1078 days for both fisheries in 2003.

Given that gear is not hauled every day clearly the actual effort will be in excess of the total number of effort days, and the actual number of effort days is estimated at least double the number of recorded days. Figure 4 and 5 provides a graphic display of effort days for each Statistical Rectangle for the 2 distinct fisheries.

Table 3 Effort details for UK vessels in Scottish waters, 2003

FISHERY	TOTAL EFFORT DAYS IN 2003	RANGE OF VOYAGE LENGTH (days)	ESTIMATED TIME BETWEEN GEAR HAULS (hours)	NUMBER OF VESSELS INVOLVED IN FISHERIES	NUMBER OF SFPA INSPECTIONS 2003
UPPER SLOPE	545	30 to 55	24 to 72	7	3
DEEP WATER	533	18 to 87	24 to 72	9	2

Data on effort from the German vessels were provided by the Institut für Seefischerei in Hamburg, for 2003 by ICES rectangles, as shown in Table 4. The effort is given in hours, which are calculated by the time between shooting and hauling of the gear. This is probably a fairly crude estimate of fishing effort but gives a total effort of 19,279 soak hours – equivalent to 803 days.

Table 4. German effort (hours soak time) by metier and ICES Sub Divisions

Metier	IIa	IVa	Vb	VIa	VIb	VII	VIII	Total
Crab					775	2583	977	4335
Monkfish	960	1222	144	1378	1166	5444		10313
Shark						4632		4632
Total	960	1222	144	1378	1941	12658	977	19279

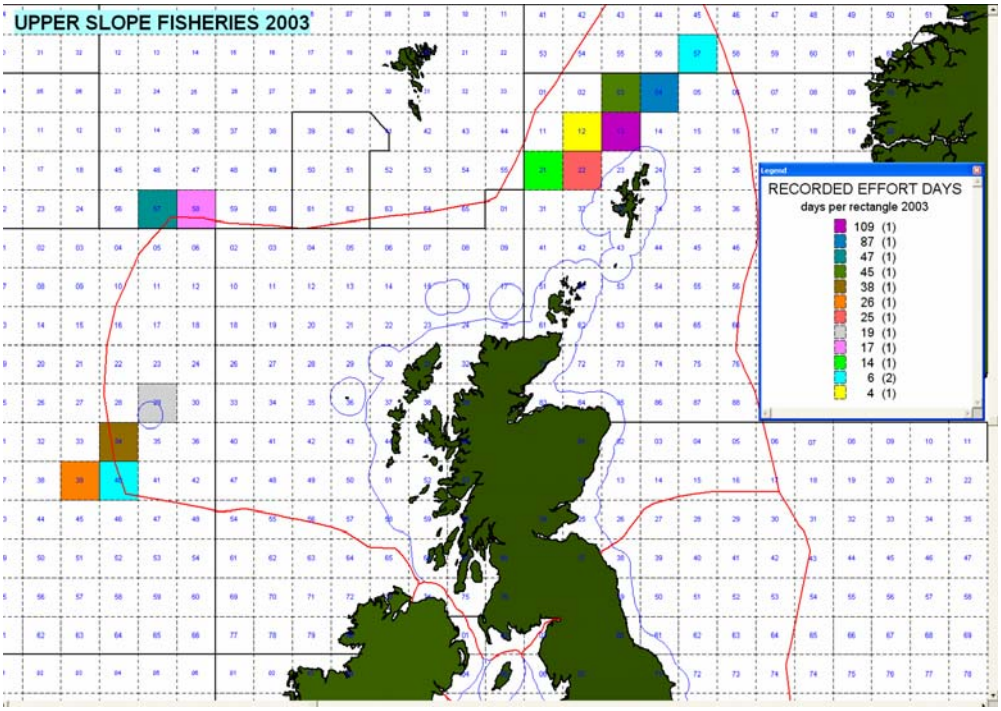

Figure4. UK registered deepwater gillnet vessels - Upper Slope (supplied by Scottish Fishery Protection Agency, 2003)

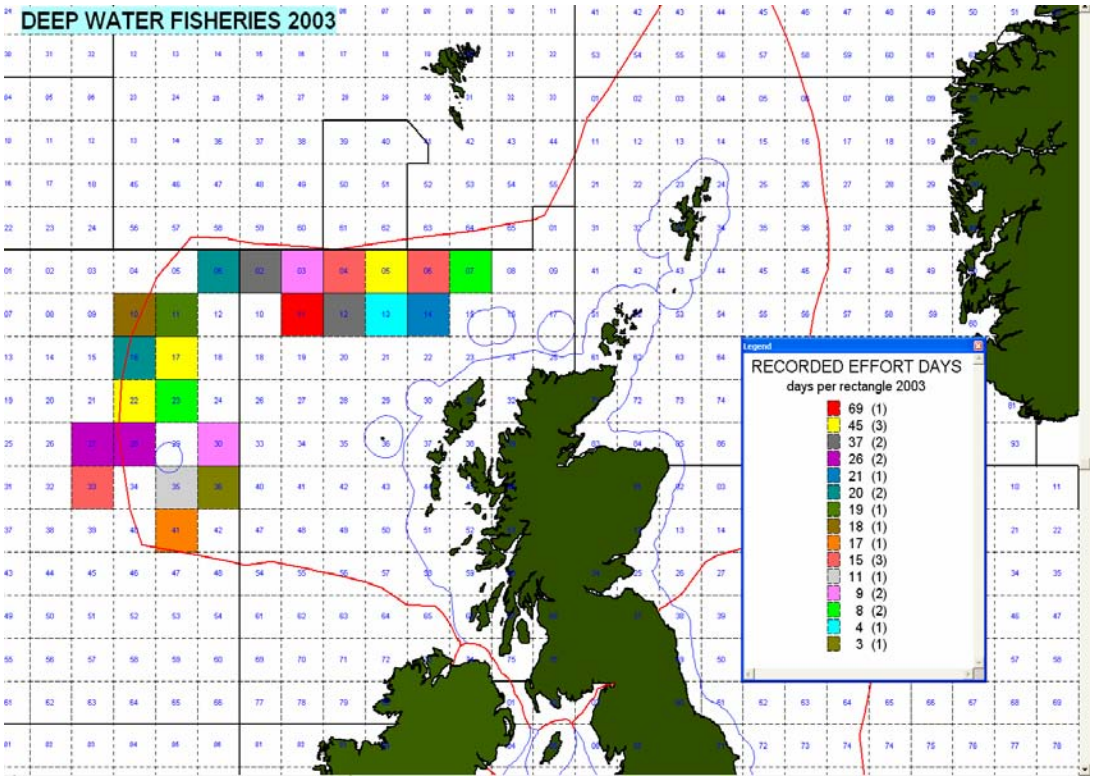

Figure 5. UK registered deepwater gillnet vessels – Deepwater (supplied by Scottish Fishery Protection Agency, 2003)

Taking the two figures from Tables 3 and 4 gives estimated effort in days of 1,881 days but this is felt to be a poor estimate of real effort. Alternatively in terms of nets being fished, if as reported from the skippers interviewed, these vessels have their nets deployed permanently, then taking the average amount of gear being fished as ~3,500- 4,000 (175-250km), a conservative estimate is there is something between 5800 and 8700 km (3600 – 5400 miles) of nets constantly fishing.

Discussion

Throughout the DEEPNET project information has been collected from as many reliable sources as possible to allow a general description of the fisheries and to provide estimates of fishing effort. It has been difficult however, to collect any meaningful data on catch levels, catch composition and discarding rates due to the lack of scientific observer data or port sampling and also access to landing and sales information.

Despite the regulations described both in EU and International waters, in reality there is little or no specific regulations that control the activities of vessels involved in the deepwater gillnet fisheries.

The gillnet fishery for deepwater shark represents a serious threat to the future of shark stocks that are recognised by ICES to be among the most vulnerable fish species known in the North Atlantic. The low fecundity and slow growth make these species very susceptible to heavy exploitation and the current level of effort seems far in excess of what could be considered to be sustainable. Due to the excessive soak times reported the levels of discarding in the fisheries are unacceptably high, given that most of the fish discarded are of a marketable size.

Conclusions

DEEPNET I has reviewed and identified a number of serious issues relating to the deepwater set net fisheries in the NE Atlantic and highlighted the need for closer examination of many aspects of these fisheries. In particular the study has shown that:

- there are large amounts of gear lost and also suspected widespread dumping of netting in this fishery;
- there is a need for retrieval surveys and mitigation measures to reduce the effects of ghost fishing; and
- excessive soak times and gear lengths in the fishery have been shown to lead to high discarding; so that
- the lack of effective management measures is reflected in declining catch rates and the poor stock status of the species being targeted.

The overriding conclusion from the study is that there is an urgent need to find a resolution to the challenges of managing these fisheries as the data collected indicated strongly that these fisheries are not being conducted in a responsible way.

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