



## Deepwater sharks: Siki

There are several species of deepwater shark, however only two species are routinely landed. These two species are, Portuguese dogfish and Leafscale gulper shark, often collectively called "Siki" by the French who are the main buyers. The livers of these and other species are of value for the oils present. These species are targeted by Spanish, Irish and Norwegian longliners and Spanish gillnetters. They are also caught as a by-catch in the French and Irish deep water trawl fishery. Landings of these species increased during the 1990s and peaked in 1997 at 6,224 tonnes west and north of Ireland. The official landings for this area was 4,800 tonnes in 2001. However not all countries report deepwater shark landings, but report them as "various sharks".

## Management of Deepwater Fisheries

There were no management measures in place for deepwater fisheries in the EU until very recently. In 2002 an effort control system was established. In 2003, TAC's were introduced for a number of deepwater species. There are no management measures in place for international waters where deepwater fisheries continue to develop. There are now serious concerns about the state of many deep water stocks and recent scientific advice has called for severe restrictions.

There are extensive areas of cold water corals on the European continental slopes and there are concerns about damage caused by deepwater trawling. In New Zealand there is a well established deepwater fishery where there are areas that have been closed off to fishing and other areas where fishing may take place. These areas have been established by scientists, managers, industry and other stakeholders working together:

The Marine Institute is committed to working with all stakeholders to examine if we can have a small viable deepwater fishery supported by a healthy deepwater ecosystem.

### The Fisheries Science Services Team

In order to ensure the sustainable harvesting of the fisheries resources, it is essential that management is underpinned by sound marine science that is clear, transparent, timely, impartial and inclusive.

The Marine Institute's Fisheries Science Service Team works closely with the fishing industry to provide this marine science through.

- Research Vessel Surveys (Acoustic, Groundfish, Egg and Larval Fish, Underwater TV)
- Surveys on Commercial Vessels
- Market Sampling of Landings
- Discard Sampling at Sea
- Analysis of Logbook Data
- Studies on the Biology of Fish
- Working with the Regional Advisory Councils (RAC's)
- Articles in the trade press
- Working with our international scientific colleagues
- Regular meetings with Industry Representatives and DCMNR
- Regular Meetings with EU

This information is essential to our understanding of the current state of the fisheries resources and the ecosystem in which they live.

More detailed information, as well as similar leaflets on related issues are available from

Marine Institute, Fisheries Science Services (FSS), Rinville, Oranmore, Co. Galway, Ireland. Phone: + 353(0) 91 387200

### Or your local Port Based Technician in

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| Dunmore East   | (051) 385011  |
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A DEEPER UNDERSTANDING...

# INTO DEEPER WATERS

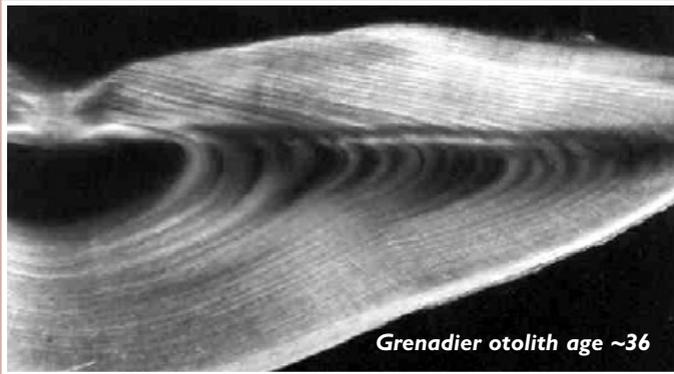


## FISHERIES SCIENCE SERVICES

Assessing, researching and advising on the sustainable exploitation of living marine resources in a healthy ecosystem



Marine Institute  
Foras na Mara



## Deepwater Fisheries

The term deepwater refers to fishing in waters greater than 400m depth. The main species taken in these deepwater fisheries are roundnose grenadier, black scabbard, orange roughy, greenland halibut, tusk and deepwater sharks. The fisheries take place in depths between 800m and 1200m on the slopes of the Porcupine Bank and in the Rockall Trough to the West of Ireland.

France was the first country to take an interest in deepwater stocks in the late 1980s. Since then Spain, UK, Norway, Faroes and Ireland have developed deepwater fisheries. On the slopes west of Donegal, Norwegian long-liners fish for ling and tusk on the shelf edge. On the slopes of the Porcupine Bank Spanish longliners and gillnetters fish for shark. Further out in the Atlantic trawlers from many countries fish the Mid-Atlantic Ridge and the Hatton Bank.

## Deepwater Fisheries Research

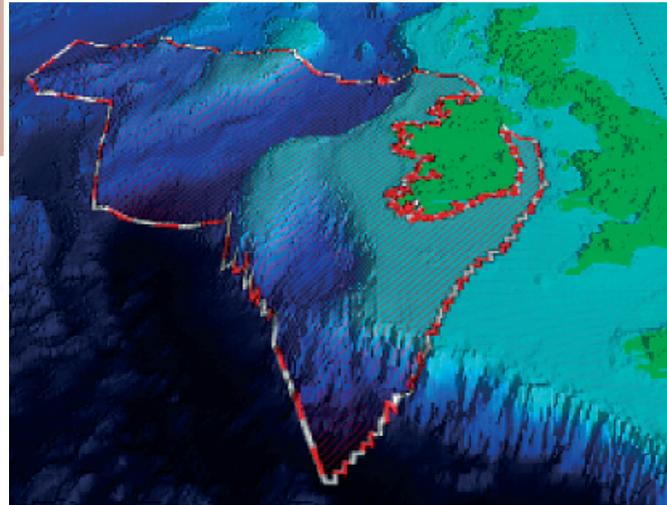
The Marine Institute began a deepwater research programme in 1992. Eight deepwater research surveys have been carried out on chartered trawlers and long-liners in the deepwaters to the west of Ireland. The purpose of these surveys were to collect samples for biological analysis and to provide valuable information on the abundance and distribution of deepwater species. The picture above is from a section from an otolith (earstone) of a 36 year old grenadier. Much of this work has been published in the scientific literature and has increased our knowledge on the biology of these fish and shows they have life-cycles that are very vulnerable to over fishing.

Deepwater fish live in a very different ecosystem to traditional shelf species like cod and haddock. At these great depths there

is little light, little food and the fish are long lived and slow to mature. These traits make deepwater fish very vulnerable to over exploitation. It is essential that scientists collect as much information as possible on these fish to provide managers with good advice on the state of the stocks.

## New Fishery

With the decline of traditional fish stocks and the increase in modern technology, new fishing vessels have the ability to fish deeper waters.

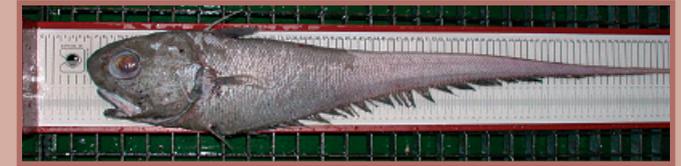


The map above shows the flat continental shelf around Ireland and the very steep continental slope where the deepwater fishing takes place. The dashed red line is Ireland's exclusive economic zone (EEZ).

Fishing vessels conduct three types of deepwater fishing in the waters around Ireland: trawling over mounds for orange roughy; trawling over flat grounds for mixed species (grenadier, black scabbard and shark); longlining for shark and forkbeard. Many boats switch between deepwater trawling and traditional trawling on the slope. For example the French deepwater trawlers also target black pollack in shallower waters.

## Roundnose grenadier

This species is found in the Rockall Trough from 600 to 2,000m. Highest catches are obtained at approximately 1,100m. This is the main species caught by the French trawlers with landings approx. 5,000 tonnes in most years. Landings from the Mid-



Atlantic and Hatton Bank have increased markedly in 1997 – 1998 years with as much as 12,000 t being caught in 1998. In the years between 1998 and 2004 the landings have been fairly stable at 7,000 – 9,000 tonnes per year.

## Orange roughy



This species forms very large spawning aggregations on sea mounts and other underwater features. Landings have declined since the early 1990s as the isolated stocks seem to have become exhausted. Some landings of this species are made into Irish ports, mainly by French vessels. In 2001 the Irish deep water trawlers started to target this species in the slopes of The Porcupine Bank which is the main fishing area for this species in the North East Atlantic. Since then (2001) the combined French and Irish accumulated landings have amounted to 8,500 tonnes. (end of 2003) In recent years total landings have declined dramatically indicating depletion of the majority of the stocks.

## Black scabbard



This is a valuable species and is found all along the eastern Atlantic from Iceland to Madeira. Black scabbard is caught by French trawlers in the Rockall Trough and by Irish trawlers in slopes of The Porcupine Bank. It is also an important species for fishermen in Portugal and Madeira.

## Greenland halibut

This species is found in the Faroe-Shetland Channel and on the Hatton bank, and very seldom in the Rockall Trough. Highest catch rates are taken where cold Arctic water meets warmer Atlantic water. Irish vessels have targeted this species in the Faroe-Shetland Channel in recent years. Irish landings were approximately 30 tonnes per year between 2001 – 2005.