

Deep-sea fisheries management: the approach taken by the European Union

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ABSTRACT

This paper outlines the approach taken by the European Union to the management of deep-sea fish stocks. An extensive range of measures was adopted in 2002, and implementation began in 2003. The scheme, which is binding on EU fishing vessels targeting deep-sea species in the North-East Atlantic, encompasses both input and output controls. In southern Europe and in the Mediterranean, deep-sea fisheries tend to be artisanal in nature, and in some cases of considerable antiquity. In northern community waters deepwater fisheries began in the 1970's. These diverse fisheries, in several regions create particular problems for fisheries managers. The approach taken by the European Union was to adopt catch restrictions, in the form of total allowable catches for a range of the key deepwater species in the ICES area. In addition, a capacity restriction has been imposed. This requires that vessels that want to land more than a very small amount of some specified deepwater species should hold a license issued by its flag state. The overall capacity (in kilowatts and in gross tonnes) of vessels that can receive licences is limited to recent levels. The capacity limitation scheme is accompanied by a requirement to implement a scientific observer scheme in order to improve the scientific data available for assessment purposes.

1. INTRODUCTION

The European Union (EU) consists of fifteen member states (MS); Italy, France, the Netherlands, Belgium, Luxembourg, Germany, United Kingdom, Denmark, Ireland, Greece, Spain, Portugal, Sweden, Finland and Austria. In 2004, this number will grow as seven more countries join. In order to understand the European Union's approach to fisheries management, it is necessary to highlight the three main political institutions:

- **European Commission** consists of commissioners appointed by Member States (MS) governments, subject to the approval of the European Parliament. The Commission is the only institution that can propose EU legislation. It is also responsible for implementation and enforcement of EU legislation, and it represents the EU at international organisations in areas defined by the European Treaties. The Commission has a permanent civil service of about 18,000 officials.
- **Council of the European Union** is the main decision making body. It represents MS, and its composition is variable according to the subject being treated. Normally, one minister from each Member State, in dealing with sectoral issues such as fisheries. The Council deals directly with issues such as setting annual TAC's.
- **European Parliament** is composed of members directly elected by the electorates of the MS. It has the power, along with the Council to pass legislation and control the EU budget. The Parliament has a role in supervising the Commission.

The EU has a Common Fisheries Policy (CFP) that is common to all member states (MS). There are four areas in the CFP, summarised as follows:

- **Conservation** – management of fisheries, control and enforcement of regulations.
- **Structures** – aids to the fishing and aquaculture.
- **Markets** - common organisation of markets.
- **Relations with third countries** - fisheries agreements at international level with countries outside the EU (third countries) within regional and international fisheries organisations.

Management of deepwater fisheries before 2002, was ineffective. European deepwater fisheries developed from the 1970's onwards. Two pieces of legislation, Council Regulations 685/95 and 2027/95 did impose upper levels on the effort that could be expended on four deepwater species, roundnose grenadier *Coryphaenoides rupestris*,

black scabbardfish *Aphanopus carbo*, orange roughy *Hoplostethus atlanticus* and Portuguese dogfish *Centroscymnus coelolepis*. However, this legislation was mainly aimed at the regulation of fishing for shelf-dwelling species, and was not an effective measure for deepwater fisheries. In addition, the European Union imposed minimum landing sizes for ling *Molva molva* (63 cm) and blue ling *Molva dypterygia* (70 cm) as part of Council Regulation 850/98, the legislation dealing with technical conservation measures (TCM's) for EU fisheries.

With regard to relations with third countries (outside the EU) annual negotiations dealing with the management of straddling stocks. Under such negotiations, quotas for deepwater fish are allocated to Norway and the Faroe Islands, whilst affording in exchange fishing opportunities to EU vessels in the waters of these states. In the northeast Atlantic, the body that coordinates regulatory measures for fisheries in international waters is NEAFC, the Northeast Atlantic Fisheries Commission. The EU is a contracting party to NEAFC, along with Russia, Norway, Denmark (representing the Faroe Islands and Greenland), Iceland, Poland and Estonia. Some management issues relating to deepwater fisheries have been discussed at NEAFC in recent years.

At present, the EU management regime covers the fisheries in the northeast Atlantic. In the Mediterranean, fisheries management within the CFP is less developed, and there is no special management system for deepwater fisheries. This paper presents the EU deepwater fisheries management regime in the northeast Atlantic, and points to future directions in the management of international waters fisheries.

2. THE FISHERIES

2.1 Fisheries in the ICES area

The International Council for Exploration of the Sea (ICES) defines deepwater fisheries as those in waters deeper than 400m – 500m. This definition does not distinguish what are commonly known as deep sea fish from more traditionally targeted shelf species. For example, demersal species such as monk and megrim are often caught in depths below 400 m and could be included. Conversely, ling is found on the continental shelf and in inshore waters, but the main international fisheries are in deep waters. Blue whiting, a species normally fished in depths of around 400 m is not usually considered as a deepwater species.

Deepwater fisheries have developed rapidly in recent years. This rapid expansion has been in response to the decline (or indeed collapse) of some traditional stocks. Some of these deepwater fisheries are long established, for example the Norwegian longline fishery for ling *Molva molva* and tusk *Brosme brosme* (Connolly *et al.*, 1999) whilst others are by now well established, for example the pelagic trawl fisheries for blue whiting *Micromesistius poutassou* and greater argentine *Argentina silus* (Gordon, 2001). Others have developed in the last 10 years, such as the French mixed-species trawl fishery (Charuau *et al.*, 1995) and the Spanish deepwater longline fisheries for sharks, forkbeard *Phycis blennoides* and mora *Mora moro* (Pineiro *et al.*, 2001). In most recent years further expansions of fishing to grounds such as Hatton Bank for Greenland halibut *Reinhardtius hippoglossoides*, blue ling *Molva dypterygia* and sharks (Langedal and Hareide, 2000; Pineiro *et al.*, 2001) have taken place. In southern parts of the ICES area, deepwater fisheries are mainly artisanal in nature. In Portugal longline fisheries for black scabbardfish and sharks have been in operation since the 1980s and in the Azores there has been an artisanal fishery for kitefin shark since the 1970's (Gordon *et al.* 2003). Detailed reviews of deepwater fisheries in Atlantic European waters are presented by Gordon *et al.* (2003) and Large and Bergstad (this proceedings).

2.2 Fisheries in other areas

There are extensive EU deepwater fisheries in other areas, both in European waters and elsewhere. A review of current knowledge of Mediterranean deepwater fisheries is presented in STECF (2001). The longest established deepwater fishery in the world is the Madeira (Portugal) artisanal fishery for black scabbardfish, that has been in operation for several centuries (Merrett and Haedrich, 1997). Elsewhere, there are fisheries for deepwater species off Mauritania (Fernandez *et al.* 2002). In the northwest Atlantic (NAFO area), vessels from the EU are involved in fisheries for Greenland halibut *Reinhardtius hippoglossoides* and redfish, *Sebastes* spp., with a bycatch of other deepwater species. There are fisheries for Patagonian toothfish *Dissostichus eleginoides* in the Southern Ocean. Little information exists on new developing fisheries outside the northeast Atlantic. However, this paper deals with the northeast Atlantic fisheries, because it is these that are subject to the new management regime, introduced in 2003. The scope of this paper does not extend to management of Greenland halibut and redfish however. This is because these have been managed by TAC for many years, and are generally caught in different fisheries.

3. SCIENTIFIC ADVICE AND THE PROCESS OF FRAMING MANAGEMENT MEASURES

In 2000 ICES produced a document discussing possible management options for deepwater fisheries. Advice for individual species was produced based on assessments carried out by ICES SGDEEP. For the individual species ICES provided advice for reductions in effort for ling, tusk, black scabbard and roundnose grenadier. For other species the ICES advice was that fisheries should only be permitted when they “expand very slowly, and are accompanied by programmes to collect data for evaluation of stock status” (ICES, 2001a).

In 2001, ICES ranked the deepwater species according to their vulnerability to exploitation, based on life-history characteristics. In addition two categories of species were defined, those that were “fully or over-exploited” and those that were taken in “developing, new fisheries”. In 2001, ICES revised the precautionary reference points, based on fishing mortality F , spawning stock biomass B and total exploitable biomass U . ICES also gave information on improvements that should be made in data collection (ICES, 2001b). In 2001, the Scientific, Technical and Economic Committee for Fisheries of the European Commission (STECF) convened a sub-group to deal with management options for deepwater species in the Atlantic and Mediterranean. This group defined management areas, and stated that effort control offered a better means of regulating these fisheries than catch control (STECF, 2001).

In 2002, ICES advice was to reduce effort by specified percentages on ling, tusk, roundnose grenadier and black scabbard that were classified as over-exploited in 2001. For orange roughy and blue ling, in areas where they were considered to be over exploited, the ICES advice was that there be no directed fishing. For the remaining species, taken in “developing, new fisheries” ICES advice was similar to that provided in 2000, that “fishing should not be allowed to expand faster than the acquisition of information necessary to provide a basis for sustainable exploitation.” In the absence of updated assessments, the ICES advice was in general, a reiteration of previous advice.

In response to the scientific advice that many stocks were overexploited the EU set about framing a management regime for deepwater fisheries. There were a number of consultations on the issue. There was an open hearing on the issue held by NEAFC in 1999 at which scientists and managers participated. In 2001, the European Commission hosted an open hearing for EU member states. Later in 2001, the European Commission announced its intention to propose a management regime.

The Commission highlighted a number of difficulties that it had in implementing the scientific advice directly identified with this advice:

Firstly, although ICES recommended some specific effort reductions, information was not available on the corresponding baseline effort from which effort should be reduced. Managers did not have available information adequate to regulate for any particular amount of fishing effort, deployed with any stated fishing gear, measured in any particular units, nor deployed in any particular area. The scientific advice was therefore not directly implementable without gathering a substantial amount of further information.

Secondly, some sections of the fishing industry stated that there was an allocation problem. In the EU, fisheries resources are conventionally allocated using fixed percentages of overall TACs. Applying an effort-based management system did not provide the resource allocation model that many parts of the sector were used to.

Thirdly, the scientific advice referred to some potentially sensitive areas requiring greater protection, such as sea-mounts for orange roughy and areas of spawning aggregations of blue ling. However, the scientific agencies were not able to provide precise locations where special conservation measures should be put in place.

Lastly, the very great spatial distribution of the fishery and its relatively low catch value did not justify, in the opinion of the Commission, extensive survey-based resource monitoring nor widespread vessel- or aircraft-based control and inspection systems.

Because of these issues, the Commission proposed a two-stage strategy to develop a management system. TACs were to be introduced in order to establish a resource allocation model and to assist conservation in the short term. Then a programme of actions aimed at developing a management system better tailored to the characteristics of

deepwater fisheries was to be introduced. This would be developed in consultation with scientific experts, but the following elements were identified at the outset.

- A limitation of fleet capacity to recent levels, in order to halt the expansion of a deep-sea fleet and diversion of effort from shelf species to deep-sea species while more detailed information was being collected.
- Improved monitoring, so that vessels would be prohibited from transshipping, and be permitted only to disembark deep-sea species at a number of designated ports
- Improved scientific data collection, implemented by a scientific work programme based on log-book reports and observer information. Due to the high cost of surveying extensive areas, the best use should be made of information gathered during commercial fishing activities.

The Commission explained that these obligations would be attached as conditions to a specific type of fishing vessel licence. The overall fleet capacity to which licences could be granted would be limited. Only vessels holding such licences would be allowed to land significant quantities of deep-sea species. Based on the information gained, it would then be possible to develop more effective conservation measures based on effort limitation. Vulnerable areas would then be candidates for local closures or possibly effort limitations. VMS was envisaged as a principal monitoring tool.

4. MANAGEMENT MEASURES

Extensive consultations took place before the legislation was finally adopted in 2002. Two new pieces of legislation apply to European deepwater fisheries. Council Regulation 2340/2002 sets TACs and quotas for Member States' vessels for a number of deepwater species in certain areas. These catch restrictions are binding in EU waters and waters not under the jurisdiction or sovereignty of third countries. The species and ICES areas (Fig. 1) covered are:

- | | |
|---|---|
| • Black scabbard <i>Aphanopus carbo</i> | I, II, III, IV, V, VI, VII, IX, X, XII |
| • Argentine <i>Argentina silus</i> | III, IV, V, VI, VII |
| • Tusk <i>Brosme brosme</i> | I, II, III, IV, V, VI, VII, XIV |
| • Roundnose grenadier <i>Coryphaenoides rupestris</i> | I, II, III, IV, Va, Vb, VI, VII |
| • Orange roughy <i>Hoplostethus atlanticus</i> | VI, VII |
| • Blue ling <i>Molva dypterygia</i> | II, III, IV, V, VI, VII |
| • Ling <i>Molva molva</i> | I, II, III, IV, V, VI, VII, VIII, IX, X, XII, XIV |
| • Red seabream <i>Pagellus bogaraveo</i> | VI, VII, VIII, IX, X |

This legislation provides for the allocation of fishing opportunities to MS, by way of quota shares of the TAC for the above species. Details of these TACs for EU vessels, along with the allocations by MS are given in Table 1. The TAC's do not cover all deepwater species in the ICES area, however. These TAC's are binding in EU waters and on EU vessels in international waters.

The second piece of legislation, Council Regulation 2347/2002 establishes a capacity and effort control system for deepwater fisheries. The definition of what constitutes a deepwater species is based on a list of "true" deepwater species, as far as possible those species that are found exclusively in deep water, see Table 2. Most relevant species are covered by this regulation but ling is excluded because it is caught extensively in shallow water fisheries too. A special deepwater permit allows access to catch and to land certain deepwater species, and any vessel landing more than 10 t of these species in a calendar year must carry a licence. Vessels landing less than 100 kg per trip and less than 10t per year of the deep-sea species are exempt from having a deepwater permit.

The capacity of this deepwater fleet (the vessels holding deep-sea licences) is restricted to the highest aggregate engine power and gross tonnage of vessels that had caught more than 10t of fish on the deep-sea vessel list in any one of the years 1998, 1999 or 2000. In addition, there is a requirement for member states to nominate designated ports, outside of which deepwater species may not be landed. There is also provision for the use of VMS. The regulation also requires that Member States deploy observers, to ensure that scientific data are collected. Borges et al. (this meeting) describe one approach to implementing this aspect of the regulation.

In addition to these regulations there is further legislation dealing with deepwater fisheries management. Under bilateral agreements quotas are decided for EU vessels in Norwegian and Faroese waters, and also to Norwegian and Faroese vessels in EU waters. The Council of the European Union sets out these allocations in the annual

fisheries management legislation agreed each year, after negotiations within the EU, between the “Coastal States” (Norway and the Faroe Islands) and the EU, and also within NEAFC. The current quotas are set out in Council Regulation 2341/02 (Table 3).

5. FUTURE DIRECTIONS

In 2002 and 2003, a series of meetings were held to discuss possible management measures for these species in the NEAFC regulatory area, i.e. the area beyond EEZ waters in the North Atlantic. The EU made a proposal in NEAFC to put in place a similar management régime to that described above for all the waters covered by NEAFC. This has been under discussion in NEAFC. So far, it has been agreed in NEAFC in 2002 and 2003 to recommend a temporary freeze on the effort that can be expended in fishing for deepwater species in international waters of the ICES area (the NEAFC Regulatory Area), as defined in Table 4. Effort must not exceed the highest level in previous years for each contracting party. Fishing effort was variously defined, by contracting parties, as aggregate power, aggregate tonnage, fishing days at sea or number of vessels which fished for these species.

There is a need for an agreed definition of deep-sea fishing activity to be restricted, an agreed measure of effort and standard baseline for the effort freeze. Further work to develop this policy is planned for 2004.

In 2003, NEAFC began the process of collating the effort data required to calibrate a management regime in international waters. This process was problematic due in part to the lack of agreed data definitions and structures. The issues were discussed at an Extraordinary Meeting of NEAFC in May 2003. Among the aspects of the regime that the EU put forward was the deployment of scientific observers to collect biological and fisheries data in support of scientific stock assessment. The EU also proposed a standard format for the exchange of data concerning catch and effort directed at deep-sea fishing. However the Contracting Parties have not yet been able to reach an agreement on such a format.

The process of agreeing management measures for EEZ and international waters will be a challenge for deepwater fisheries managers in the near future. It is still too early to evaluate whether the management regime that has been applied within the EU is successful.

In 2003, ICES has stated that most deepwater fish stocks were already severely depleted by 1998, and ICES suggested the use of the effort data for this year as a reference level for reductions for such stocks (ICES, in prep.). Given the urgency of the situation, it will be necessary to achieve a harmonised management system for deepwater fisheries in the northeast Atlantic, as quickly as possible.

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Table 1. TAC's and quota allocations, by member state, for deepwater fish as established under the new EU deepwater fisheries management legislation (Council Regulation 2340/02).

	TAC	BEL	DEN	FRA	GER	IRE	NETH	POR	SPA	SWE	UK	Others
BLACK SCABBARDFISH												
I, II, III, IV ⁽¹⁾	30			10	10						10	
V, VI, VII, XII ⁽¹⁾	3110			2,600	37	93			185		185	10 ⁽²⁾
IX, X ⁽¹⁾	4000							4,000				
GREATER SILVER SMELT												
III, IV ⁽¹⁾	1566		1,388	10	14	10	65			54	25	
V, VI, VII ⁽¹⁾	6247			10	476	441	4,971				349	
TUSK												
I, II, XIV ⁽¹⁾	35			10	10						10	
III ⁽¹⁾	40		20		10					10		
IV ⁽¹⁾	370		100	70	30					10.00	150	10 ⁽²⁾
V, VI, VII ⁽¹⁾	710			415	10	40			35		200	10 ⁽²⁾
ROUNDNOSE GRENADIER												
I, II, IV, Va ⁽¹⁾	20		2	14	2						2	
III ⁽¹⁾	1870		1,769		10					91		
V, VI, VII ⁽¹⁾	5106			4,396	10	346			86		258	10 ⁽²⁾
ORANGE ROUGHY												
VI ⁽¹⁾	88			58		10			10		10	
VII ⁽¹⁾	1349			1,019		300			10		10	10 ⁽²⁾
BLUE LING												
II, IV, V ⁽¹⁾	138		10	61	10	10					37	10 ⁽²⁾
III ⁽¹⁾	25		10		5					10		
VI, VII ⁽¹⁾	3678			2,788	39	10			122		709	10 ⁽²⁾
LING												
I, II ⁽¹⁾	45		10	10	10						10	5 ⁽²⁾
III ⁽¹⁾	136	10	76		10					30	10	
IV ⁽¹⁾	4666	30	467	260	289		10			20	3590	
V ⁽¹⁾	54	14	10	10	10						10	
⁽¹⁾	14966	56	10	4,397	204	1,102		10	4,124		5063	
RED SEABREAM												
VI, VII, VIII ⁽¹⁾	350			14		10			281		35	10 ⁽²⁾
IX ⁽¹⁾	1271							271	1,000			
X ⁽¹⁾	1136							1,116	10		10	
Total	51,006	110	3,872	16,152	1,196	2,372	5,046	5,397	5,863	225	10,683	85

⁽¹⁾ Community waters and waters not under the sovereignty or jurisdiction of third countries

⁽²⁾ May be taken in NAFO Divisions IF and 3K but shall be counted against the quota for V, XII, XIV within a total quota of 25 000 tonnes.

⁽³⁾ Community waters and areas beyond fisheries jurisdiction of other coastal States.

Table 2. List of defined deepwater species and additional species for which data must be collected under deepwater fisheries management legislation (Council Regulation 2347/2002).

List of species as defined in regulation		Additional species	
<i>Aphanopus carbo</i>	black scabbardfish	<i>Pagellus bogaraveo</i>	red seabream
<i>Apristurus spp.</i>	Iceland catshark	<i>Chimaera monstrosa</i>	rabbitfish
<i>Argentina silus</i>	greater argentine	<i>Macrourus berglax</i>	roughhead grenadier
<i>Beryx spp.</i>	alfinsino	<i>Mora moro</i>	mora
<i>Centrophorus granulosus</i>	gulper shark	<i>Antimora rostrata</i>	antimora
<i>Centrophorus squamosus</i>	leafscale gulper shark	<i>Epigonus telescopus</i>	cardinalfish
<i>Centroscyllum fabricii</i>	black dogfish	<i>Helicolenus dactylopterus</i>	bluemouth
<i>Centroscymnus coelolepis</i>	Portuguese dogfish	<i>Conger conger</i>	conger eel
<i>Coryphaenoides rupestris</i>	roundnose grenadier	<i>Lepidopus caudatus</i>	silver scabbardfish
<i>Dalatias licha</i>	kitefin shark	<i>Alepocephalus bairdii</i>	Baird' s smoothhead
<i>Deania calceus</i>	birdbeak dogfish	<i>Lycodes esmarkii</i>	Esmark's eelpout
<i>Etmopterus spinax</i>	velvet belly	<i>Raja hyperborea</i>	Arctic skate
<i>Galeus melastomus</i>	blackmouth catshark	<i>Sebastes viviparous</i>	small redfish
<i>Galeus murinus</i>	mouse catshark	<i>Hoplostethus mediterraneus</i>	Mediterranean roughy
<i>Hoplostethus atlanticus</i>	orange roughy	<i>Trachyscorpia crsitulata</i>	spiny scorpionfish
<i>Molva dypterygia</i>	blue ling	<i>Raja nidarosiensis</i>	Norwegian skate
<i>Phycis blennoides</i>	greater forkbeard	<i>Geryon affinis</i>	deepwater red crab
<i>Centroscymnus crepidater</i>	longnose velvet dogfish	<i>Raja fyllae</i>	round skate
<i>Scymnidon ringens</i>	knifetooth shark	<i>Hydrolagus mirabilis</i>	large eye rabbitfish
<i>Hexanchus griseus</i>	sixgill shark	<i>Rhinochimaera atlantica</i>	straightnose rabbitfish
<i>Chlamydoselachus anguineus</i>	frilled shark	<i>Alepocephalus rostratus</i>	Risso's smoothhead
<i>Oxynotus paradoxus</i>	sailfin roughshark	<i>Polyprion americanus</i>	wreckfish
<i>Somniosus microcephalus</i>	Greenland shark		

Table 3. Quotas for deepwater species as agreed the “Coastal States” agreements, as set out in Council Regulation 2341/02.

Species	Areas	Total	FRA	GER	UK	NOR	FAR IS	Notes
1 Ling, blue ling	Vb (Faroese waters)	3,240	950	2,106	184			See 2
2 Roundnose grenadier, black scabbardfish	Vb (Faroese waters)	1,080						Maximum allowed bycatch in 1 above
3 Deepwater sharks*	IV, VI, VII (EU waters)	NA				200		Longline only
4 Blue ling, roundnose grenadier, black scabbardfish	Vla north (EU waters), Vlb	NA					940	Trawl only
5 Ling	IIa, IV, Vb, VI, VII (EU waters)	NA				9,500		Interchangeable between ling and tuskup to 2,000, longline only. Provides for a bycatch of other species up to 3,000 t
6 Tusk	IIa, IV, Vb, VI, VII (EU waters)	NA				5,000		
7 Ling, blue ling, tusk	Vla N, Vlb (EU waters)	NA					800	Longline only. Provides for a bycatch of other species up to 75 t. Permitted bycatch in blue whiting fishery Unavoidable catches permitted against blue whiting quota (45,000 t)
8 Greater argentine	V, VIa N, VII (west of 12° W) (EU waters)	NA				500		
9 Greater argentine	V, VIa N, VII (west of 12° W) (EU waters)	NA					see note	
Total		3,240	950	2,106	184	15,200	1,740	^(see9)

* grey shark (sic)
black shark
birdbeak dogfish
leafscale gulper shark
greater lanternshark
smooth lanternshark (sic)
Portuguese dogfish
spurdog (catches also permitted in EU waters of IIa, IV and Vb)

Table 4. List of species to be considered for management in the NEAFC regulatory area.

Scientific name	Common name
<i>Aphanopus carbo</i>	Black scabbardfish
<i>Apristuris spp</i>	Iceland catshark
<i>Argentina silus</i>	Greater silver smelt
<i>Beryx spp.</i>	Alfonsinos
<i>Brosme brosme</i>	Tusk
<i>Centrophorus granulosus</i>	Gulper shark
<i>Centrophorus squamosus</i>	Leafscale gulper shark
<i>Centroscyllium fabricii</i>	Black dogfish
<i>Centroscymnus coelolepis</i>	Portuguese dogfish
<i>Coryphaenoides rupestris</i>	Roundnose grenadier
<i>Dalatias licha</i>	Kitefin shark
<i>Deania calceus</i>	Birdbeak dogfish
<i>Etmopterus princeps</i>	Greater lanternshark
<i>Etmopterus spinax</i>	Velvet belly
<i>Galeus melastomus</i>	Blackmouth dogfish
<i>Galeus murinus</i>	Mouse catshark
<i>Hoplostethus atlanticus</i>	Orange roughy
<i>Molva dypterigia</i>	Blue ling
<i>Molva molva</i>	Ling
<i>Pagellus bogaraveo</i>	Red Seabream
<i>Phycis spp.</i>	Forkbeards
<i>Reinhardtius hippoglossoides</i>	Greenland halibut

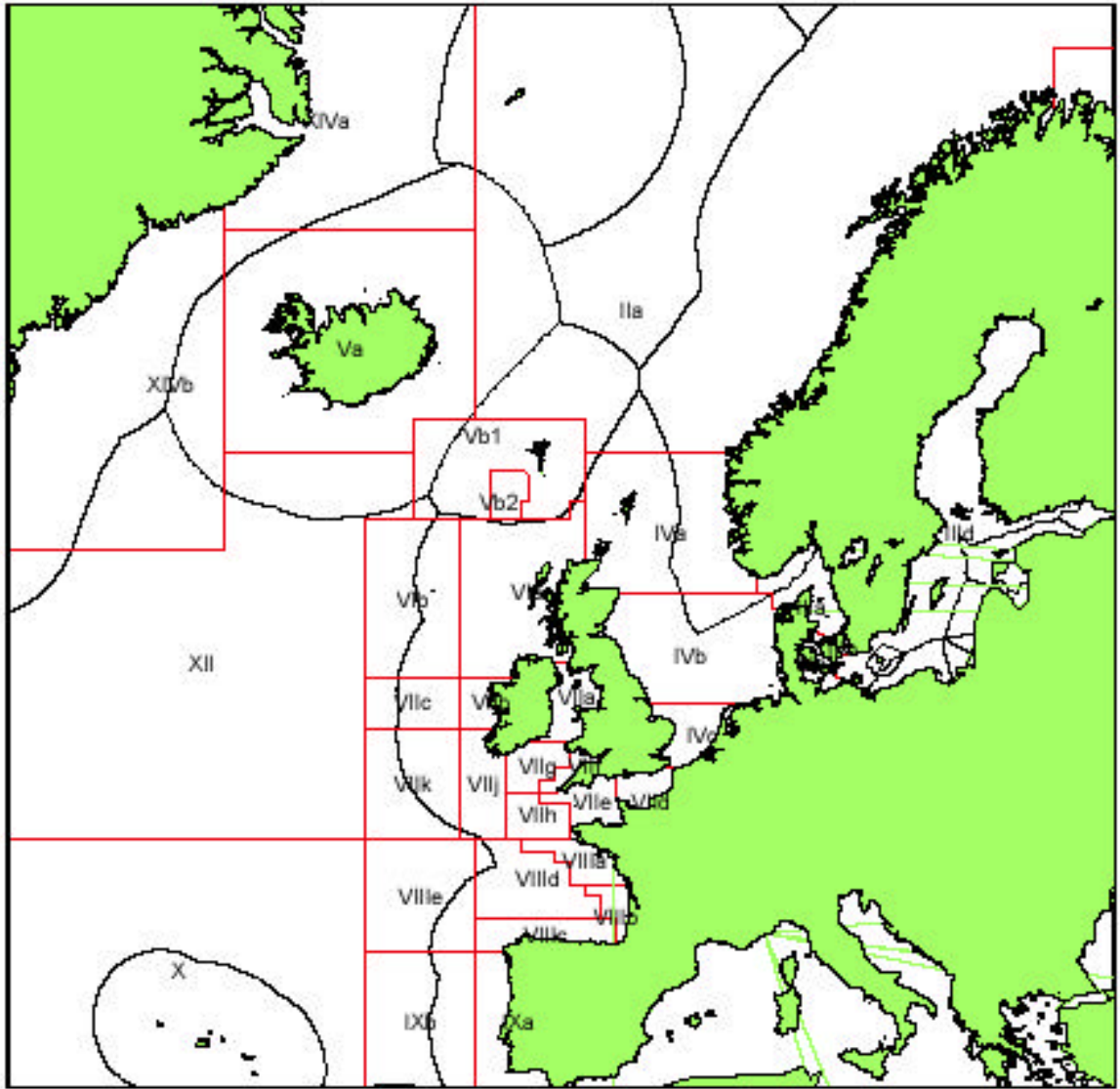


Fig. 2. ICES areas and Exclusive Economic Zones of coastal states in the northeast Atlantic.