

Annex I

to the Joint Recommendation for Offshore Fisheries

**Management on the International Dogger Bank under the
Common Fisheries Policy**

Background Document

The Hague, Bonn, London, 26 March 2019

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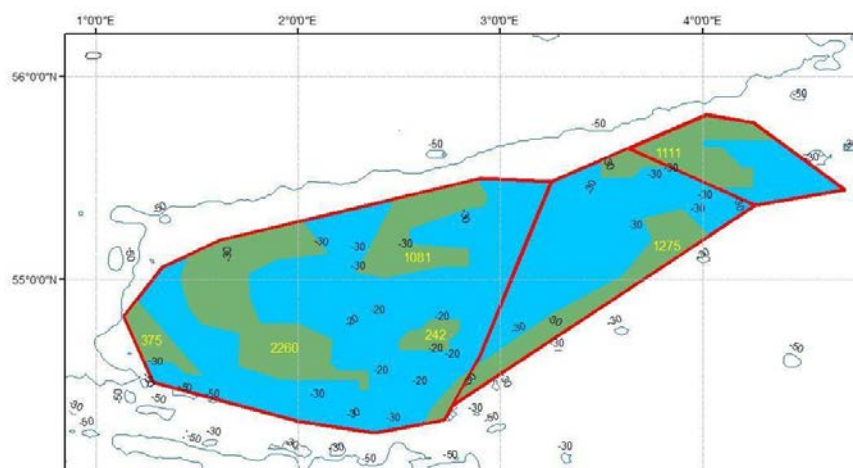
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1. Summary

This document provides the background information to the Joint-Recommendation for offshore Fisheries Management on the International Dogger Bank as provided for in art. 11 of Regulation 1380/2013 (EU, 2013). The Joint Recommendation contains a request to the European Commission to regulate fisheries in the Dogger Bank, Site of Community Interest (SCI), for the protection of habitat type 1110 (sand banks which are slightly covered by sea water all the time). The request has been drafted to enable the initiating Member States to meet their commitments under the Habitats Directive (EU, 1992), in accordance with the guidance mei 201 provided by the European Commission using the appropriate procedure under the Common Fisheries Policy (CFP) for proposing measures for the management of fisheries for this purpose.

This joint recommendation is initiated by the governments of Germany, the Netherlands and the United Kingdom (hereafter the initiating Member States) and agreed to by Belgium, Denmark, France and Sweden in the High Level Scheveningen Group meeting on 27 February 2019. This document deals with the three initiating Member States' SCI in the waters under their respective jurisdiction. It proposes the following measures for the three SCIs collectively:

- To establish a zoning system on the Dogger Bank SCI with management zones and open zones. All Management zones will be closed for the following gear types: beam trawl, bottom/otter trawl, dredges and semi-pelagic trawls. The German Management Zone will also be closed for demersal seines. Open zones are open to not otherwise prohibited gear types. The proposed management zones cover approximately one third of the combined SCI;



1 Legend: Blue figures represent depths, yellow figures represent surface of the protected zone in km²; Green areas represent future closed areas for bottom contacting fisheries, blue area represent open area.

- A procedure for authorizing derogation from this regime, but only after documentation supported by scientific and expert advice has been provided to

ensure that such derogation would not jeopardize the delivery of the conservation objectives;

- Establishment of alert zones adjacent to the management zones;
- To evaluate and review this proposed regime after 6 years;
- Procedures for compliance, control and enforcement of the measures.

2. Introduction

This document contains a proposal for regulation of fisheries activities, in the context of the CFP. The aim of such regulation is to ensure a key contribution to achieving Natura 2000 objectives for sandbanks (habitat type 1110) in the area of the *Dogger Bank*. The legal status under Community environmental law of the Dogger Bank is that it is a SCI in the Netherlands, Germany and the United Kingdom.

This document is submitted to the ad hoc working group of the Scheveningen Group by the three initiating Member States: Germany, the Netherlands and The United Kingdom, where Member States will make the best endeavors to agree a joint recommendation in a technical working group. Where such agreement is reached, final approval of the joint recommendation will be agreed by those Member States with a direct fisheries management interests in the “High Level Group” and submitted to the commission by the initiating Member States.

3. Legal framework

3.1 Common Fisheries Policy (CFP)

The European CFP is a key policy framework for the current proposal. Any regulation of fisheries in European marine waters must follow the principles, rules and procedures of the CFP. The basic rules are laid down in Basic Regulation EC 1380/2013 (EU, 2013), which is the umbrella policy framework of the CFP. European Commission guidance on the management of fisheries in a Natura 2000 site proposes a procedure by which appropriate fishery measures should be obtained. This procedure is explained and updated according to the revised Basic Regulation, in particular article 11, in paragraph 3.3.2 below. Using this guidance a Member State hosting a particular SCI, Special Protection Area (SPA) or Special Area of Conservation (SAC) should formulate a request for CFP measures to the European Commission. The European Commission will then adopt this proposal into EU law. The present document substantiates and underpins such a request for regulation of fisheries in light of the conservation objectives for habitat type sandbank (H1110) in the *Dogger Bank* area. It is appended to the Joint Recommendation for that purpose.

3.2 Habitats Directive in marine environment

The Habitats Directive (EU, 1992) was adopted in 1992 and is aimed at conserving (the natural habitats of) European wild flora and fauna. An important element of the Habitats directive is the designation and protection of SACs. SACs and SPAs (Birds Directive) jointly constitute an ecologically coherent network of conservation areas, the so-called Natura 2000 Network. The main objective of the Habitats Directive is to bring habitats and species listed on Annex I and II of this directive into “favourable conservation status”.

For a long time it was unclear whether the Habitats Directive was applicable outside territorial waters in the marine environment. In 2005 the European Court of Justice (ECJ) ruled that this Directive applies not only to the territorial sea, but also to areas beyond the territorial sea where Member States exercise sovereign powers (ECJ, 2005). Since then, the international effort to extend the Natura 2000 network into the marine environment has picked up momentum and has grown on an annual basis. Some of the most important milestones in this respect include the establishment of the 2007 guidelines for application of the Birds and Habitats Directives in the marine environment (EU, 2007) and the 2009 Biogeographical Seminar on the listing of marine SACs in the Atlantic region. The List of Sites of Community Importance was subsequently adopted by European Commission Decision of 22 December 2009 (EC, 2015). Since 2003 an European marine expert group has been active in facilitating the implementation of the Natura2000 network in the marine environment.

3.3 Reconciling nature conservation and fisheries policy

Proposing fisheries measures to the European Commission poses specific challenges, because both the rules and procedures of nature conservation policy (Birds and Habitats Directives) and fisheries policy (CFP) must be adhered to simultaneously. This is all the more challenging for a transboundary natural feature such as the *Dogger Bank*. For this purpose, the European Commission has provided specific guidance documents to Member States. Notwithstanding the revised CFP these documents have been at the basis of this background document.

3.3.1 Marine Guidelines (2007)

In 2007 the European Commission established the *Guidelines for the establishment of the Natura 2000 network in the Marine Environment. Application of the Birds and Habitats Directive (May 2007)*. (EC, 2007) This guidance document provides advice *inter alia* on selection criteria, boundary setting, and definitions of habitat types. These Guidelines have been used as the basic starting point for paragraph 7.1 of the present document.

3.3.2 Guidelines for requesting CFP measures in N2000 sites (2008)

In 2008 the European Commission Services published the guidance document called *Fisheries measures for marine Natura 2000 sites - A consistent approach to request for fisheries management measures under the Common Fisheries Policy (EC, 2008)*. This document provides guidance on how Member States should prepare and submit a proposal for fisheries measures in the CFP framework, for delivering Natura 2000 conservation objectives. It contains

- 11 information items which the Commission considers should be part of the proposal;
- The basic procedure for proposing measures in the territorial sea and Exclusive Economic Zone ((EEZ);
- The criteria that the European Commission will consider in taking the proposal forward in the CFP decision making context:
 - o Consultation with stakeholders (notably involvement of the relevant Advisory Council (AC)) and scientific underpinning;
 - o Proportionality (appropriate balance between sustainable exploitation of resources and the need to conserve important habitats, including a precautionary approach to fisheries management);
 - o Non-discrimination (equal treatment of Member States);
 - o Monitoring and control measures (avoid small and scattered areas, permit systems, zoning, VMS).

Article 11 Reg. 1380/2013 provides conditions for management measures affecting fisheries. Paragraph 3 of this article states the following:

The initiating Member State shall provide the Commission and the other Member States having a direct management interest with relevant information on the measures required, including their rationale, scientific evidence in support and details on their practical implementation and enforcement. The initiating Member State and the other Member States having a direct management interest may submit a joint recommendation, as referred to in Article 18(1), within six months from the provision of sufficient information. The Commission shall adopt the measures, taking into account any available scientific advice, within three months from receipt of a complete request.

Since the procedure mentioned above went into force very few Joint Recommendations have been submitted by the Member States and new guidelines have not been published by the European Commission.

Under the auspices of the High Level Scheveningen Group a Technical FISH-ENVI Working Group has been established. This group has adopted the terms of reference for the procedure of submission of a joint recommendation to the Scheveningen Group. The procedure for the adoption of this Joint Recommendation follows the terms of reference for the Scheveningen Group.

3.3.3 European Commission's clarification on legal obligations in a transboundary area

The transboundary nature of the Dogger Bank area poses specific legal challenges, especially regarding the approach to take for fisheries management in the area. Notably the question arises whether the international *Dogger Bank* should be treated as *one* ecological whole (and *one* area of interest to the fishing industry), or whether it should be treated as if it were made up of three separate areas (three individual European sites). In this respect the submitting Member States have posed questions to the European Commission regarding the acquittal of their legal obligations under European law in the context of a joint management approach.

By letter of 7 July 2012 the European Commission provided guidance (EC, 2012). The European Commission concluded that it agreed with the Dogger Bank Member States that an integrated approach to the entire Dogger Bank (rather than a Member State-by - Member State approach) is acceptable and preferable:

"The transboundary nature of the Dogger Bank implies indeed that the effective conservation of its benthic communities can best be achieved through the holistic view of the entire sandbank through cooperation of the Member States concerned, provided that the management measures that will be established in this way ensure that each individual Member States makes its full contribution to meeting the conservation objectives of the area and thus fulfils its share of obligations under the [Habitats] Directive"

"The key criterion for determining whether a Member State is fulfilling its obligations under the Habitats Directive is whether the measures taken adequately address the pressures on the occurrences of the protected habitat within the area under its jurisdiction and hence whether they meet the conservation objectives of the habitat. In the case of the Dogger Bank, variations of zoning and respective fisheries measures could be accepted if they are scientifically justified on the basis of pressures and conservation status of the habitat."

3.4 Legal status of the areas under European law

The situation as regards the various designations of the Dogger Bank (EC, 2012):

- The German site "Dogger Bank" was included in the list of Sites of Community Importance, pursuant to Art. 4(2) of the Habitats Directive, by Commission Decision 2008/23/EC of 12 November 2007;
- The Dutch site "Doggersbank" was included in the list of Sites of Community Importance, pursuant to Art. 4(2) of the Habitats Directive, by Commission Decision 2010/43/EU of 22 December 2009;
- The UK site "Dogger Bank" was included in the list of Sites of Community Importance, pursuant to Art. 4(2) of the Habitats Directive, by Commission Decision 2013/26/EU of 16 November 2012.

4. Process

4.1 Process of international cooperation on Dogger Bank

In 2008 the Member States took the initiative for a series of informal talks, to identify a common approach to protect the *Dogger Bank* area. This coincided with the view of North Sea Regional Advisory Council (now North Sea Advisory Council, NSAC¹) for the need of a joint approach. At first, this collaborative Member State effort was aimed at arriving at an understanding of the natural features, and at describing the commonalities in the approach to describe the conservation objectives. In the course of 2009 and 2010 various *ad hoc* meetings took place for this purpose. The Member States share a common view on stakeholder involvement and on scientific underpinning of policy. These contacts resulted in a common understanding on the conservation objectives for the benthic environment as contained in habitat type 1110 of Annex II of the Habitats Directive. The scope of the underlying fisheries management proposal concerns habitat type 1110 only, which is the only feature contained in the Annexes of the Habitats Directive, for which all three Member States have selected the site.

In the course of the process of cooperation the Dogger Bank Steering Group (DBSG) has been established (2011) and there was an increasing involvement of the NSAC. In 2011 the NSAC agreed to play a central role in the development of the proposal. The NSAC established a Focus Group under the chairmanship of the chair of the NSAC Spatial Planning Working Group. DBSG invited the NSAC Focus group to develop a draft proposal for a fisheries regime on the Dogger Bank – implementing the Natura 2000 programme - within the following parameters:

- The aim of the draft proposal is that the conservation objectives (ICES, 2011) will be delivered;
- Use a zoning concept with two zones:
 - Free Zone: all legal gears within the CFP are allowed;
 - Management Zone: Fishing is limited to fishing gears that do not cause deterioration of the natural habitats for which the site has been designated;
- Develop a fisheries management zone covering 25%-55% of the total SAC area;²
- Ensure representation of all (five) benthic communities (ICES, 2011);
- Take a holistic perspective of the entire Dogger Bank, rather than the portions belonging to individual member states;
- Take into account the German proposal (Germany, 2011);
- Take into account the Chair's conclusions of the Dublin stakeholders meeting;
- Avoid a patchy pattern of the fisheries management zones in light of enforceability;

¹ In the following the abbreviation NSAC is used also for situations where the NSRAC has acted.

² Discussions of the fishery regime for the SAC led to the question, how much of the Natura 2000 area of the Dogger Bank needs to be protected from fisheries impact in order to see an improvement on habitat conservation status for the entire SAC. To this end the Dogger Bank Steering Group commissioned a literature review. This literature review found that most recommendations suggest that a minimum of 20% and an optimum of 30%-50% of the area where that habitat type is present be set aside in reserves. Such a reserve size allows populations to remain large enough to produce sufficient offspring for maintaining themselves even when there is an additional exploitation mortality. The study came to the conclusion that in the protected area of the SAC conservation status should improve, while in the unregulated part of the SAC conservation two possibilities exist:

- if effort is displaced within the SAC: Unchanged - on the assumption that only the first hauls matter – and therefore additional effort is of no significance- or worse
- if effort is displaced outside the SAC: unchanged;

The combined effect is an improved situation within the protected area combined with an unchanged or worsened status in the 'free' zone. The combined effect is likely to be an improvement measured in absolute terms because the status is expected to be exponential decreasing with increasing fishing intensity, e.g. Schröder et al (2008).

- Use the existing data;
- Develop a preferred method for weighing economic and socio economic considerations.

4.2 NSAC process

Since May 2011 the NSAC had already been active in developing a common understanding amongst NGOs and the fishing sector on the required fisheries measures for the *Dogger Bank*.

The Focus Group included observers from the four Member States and also representatives of the European Commission. This group met several times in the Netherlands in an intensive process between December 2011 and February 2012 and had GIS expertise available at the meetings.

On April 10th 2012 the NSAC presented its position paper to the DBSG. Despite considerable effort from all involved the NSAC had been unable to deliver a common proposal for a fisheries regime on the Dogger Bank to the DBSG. Rather, a position paper was presented with 2 separate annexes: one fishing sector proposal and one NGO proposal (NSAC, 2012).

4.3 ICES advice

Upon receiving these two separate proposals from the fishing industry and from the NGO community DBSG requested the ICES secretariat to develop a methodological framework for a third option, based on the two proposals, and based on all previous preparatory work in the EMPAS and FIMPAS projects and the DBSG. This work was completed over the summer of 2012, after which the DBSG presented three options (fishing sector proposal; NGO proposal; DBSG third option) to ICES ACOM for scientific advice on September 4th 2012 (International DBSG, 2012).

ICES was requested to advise on the degree to which the implementation of the (three sets of) proposed fisheries measures would contribute to the achievement of the established conservation objectives, taking into account the wish of the Dogger Bank Member States to consider the Dogger Bank as one single ecosystem. In preparing its response ICES was asked to advise on the changes that can be attributed solely or primarily to the implementation of the proposed fisheries measures.

ICES presented advice to DBSG on 23 November 2012 (ICES 2012). This advice is contained in the Annex II of the present document.

On 12 October 2012, the fishing sector presented an updated position paper (Fishing industry, 2012). ICES was unable to include this paper in the comparative analysis of its review, due to the fact that the paper was presented too late for the advisory process. However, the updated information from the sector was available to the Advice Drafting Group within ICES. In addition, the DBSG had a new fishing industry proposal (as reviewed by the School of Ocean Sciences of University of Wales, Bangor) at its disposal, together with the ICES advice.

May 2013 agreement was reached between the initiating Member States and Denmark, as a member of DBSG, on a set of management measures the aim of which was to protect the Dogger Bank against the adverse effects of fishing with bottom contacting gear.

The total body of information gathered in all of the processes described above has been incorporated in the current proposal to the European Commission.

4.4 Methodology used for the identification of protected areas

This section explains the methodology that was followed to arrive at the management measures (as described in section 7.2), based on scientific and policy considerations (as described in section 7.3).

Step 1: Establishing, attributing and prioritising Csquares

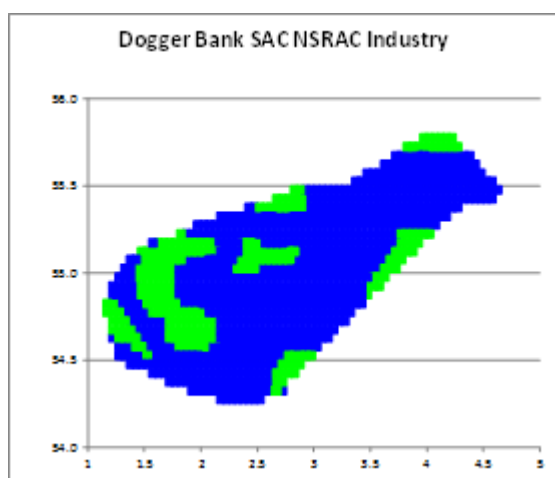
As a first step, the total Dogger Bank SCI is divided into 1058 Csquares³. They can be attributed to the five benthic communities as described in chapter 7.1.3. They can also be attributed to the industry proposal and to the NGO proposal (NSAC, 2012).

With the exception of the concerns that have been expressed by the Dogger Bank Member States (policy consideration 6 in chapter 7.3) all Csquares within a habitat type are assumed to be of equal ecological value.

It is assumed that the potential loss to the industry can be minimised by selecting those Csquares that have the lowest landing value from affected gears (i.e. trawls). This assumption may be biased because there are differences in the cost required to generate 1 € worth of landings between gears. However, these possible differences are not documented. In the following any reference to 'gross landing value' means the value of the landings for 2007-2009 or as otherwise indicated.

Step 2: Take the Industry map as a basis for agreed closure areas.

The original industry map, as contained in its position paper of 10 April 2011 is the basic starting point for the zoning proposal. This means that the first 22% of the SCI is "filled up" with Csquares, as covered by the initial industry proposal.



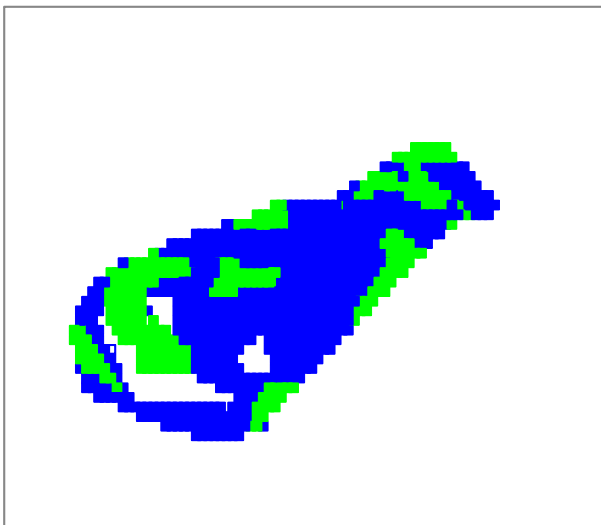
2 Legend: Green areas: proposed closed areas for bottom contacting gear; blue area is open zone.

Step 3: Add National and Fishing sector concerns

This industry map is supplemented by:

³ C-square is defined as 0.05 degree latitude * 0.05 degree longitude which at latitude 55 N (approximately the Dogger Bank) is about 17.7 sq. km ($0.05 \times 60 \times 1.852 \times 0.05 \times 60 \times 1.852 \times \cos(55/180 \times \pi)$)

- The two areas that are suggested by The Netherlands to cover localized features. These areas are among those suggested by the NGOs
- Windmill park concerns (as brought forward by the fishing industry) are partly met by adding to the closed areas those Csquares which have been proposed by the NGOs and which are in either Tranche A or Tranche B.
- The area to be closed in the German EEZ preferably shall be around 50% of the German SCI area. The Csquares in the German EEZ that are already suggested by the industry are supplemented with Csquares that have been suggested by the NGOs. The basis for selecting among the NGO proposed Csquares are to select those Csquares with minimum landing value. The industry proposal suggests that about 60% of the Northern habitat be closed and for this reason to obtain a balance of closures among habitat Csquares that belong to this habitat type are excluded from being selected.
- A proportion approximately equal to the overall closure of the shallow areas (less than 20 m depth) shall be closed as a minimum. Csquares from these areas were added to the list using the same procedure as for the German sector, i.e. including from the NGO proposal in the shallow areas with minimum landing value.
- The resulting map from this step is:

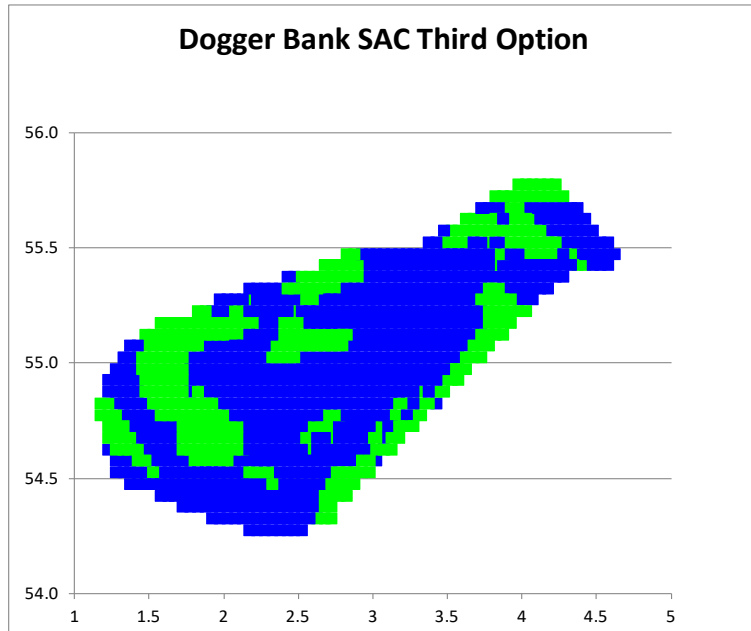


3 Legend: Green areas: proposed closed areas for bottom contacting gear; blue area is open zone.

Step 4: Add further areas from NGO proposals until 1/3 is reached

Based on the need to ensure a key contribution to delivering the conservation objectives, and also taking into account the ICES advice as requested by the DBSG, the Dogger Bank Member States came to an agreement on a common approach that would result in a closure of around 1/3 of the combined SCIs in total, while recognising the individual

approaches of the Member States.⁴ In this step therefore, further Csquares are added to reach 1/3 coverage of the overall SCI. This is done by including Csquares from the NGO proposal under two further constraints: 1) only selecting Csquares from benthic communities that are underrepresented compared to the overall closure rate and 2) selecting the Csquares with lowest landing value. The resulting map from this step is:

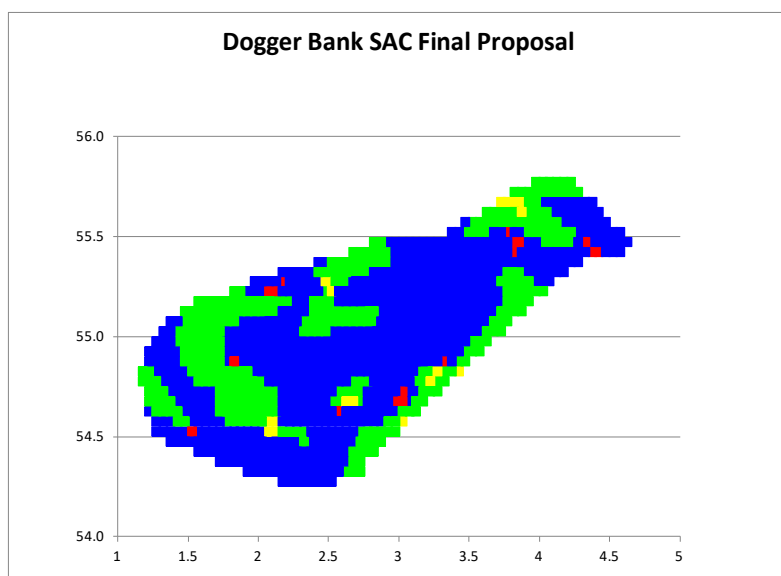


4 Legend: Green areas: proposed closed areas for bottom contacting gear; blue area is open zone.

Step 5: Remove isolated Csquares

Isolated Csquares are in this step swapped to improve connectivity of the proposal (red for yellow). The resulting map from this step is

⁴ In comparison, the initial industry map included a 22.0% closure while the NGO map indicates 44.7 % of the SAC area should be closed. The amended industry proposal covered approximately 30% closure

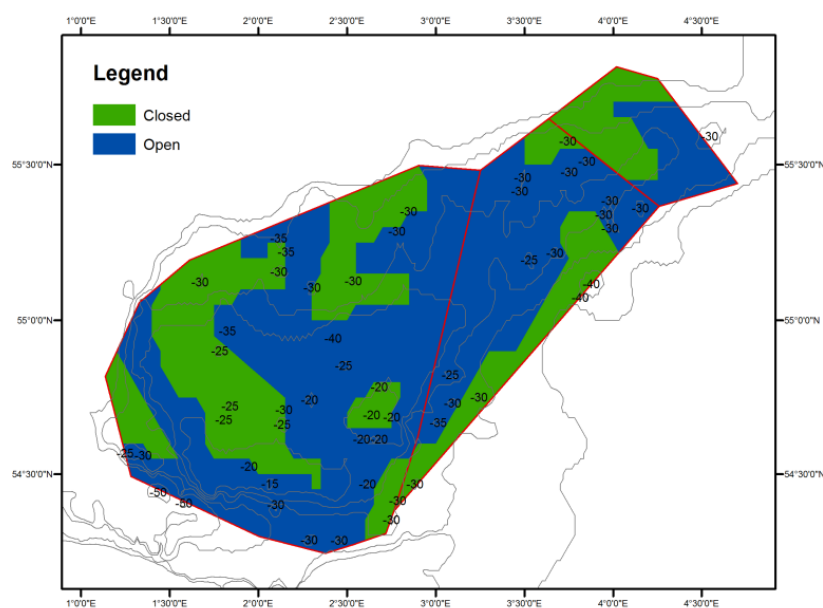


5 Legend: Green areas: proposed closed areas for bottom contacting gear; blue area is open zone; red areas: removed isolated squares; yellow areas: areas filled with the surface of the removed isolated squares.

Step 6: Smoothing the boundaries

The boundaries of the map presented in step 5 were amended:

1. The SCI boundaries which are approximated by C-squares were replaced by the SCI boundaries as notified by Member States (see chapter 3.4).
2. The closed area boundaries were then amended to follow the amended industry proposal from 2012 as closely as possible but respecting the concerns as introduced in step 3.
3. The final proposal that resulted from this step, is presented below.

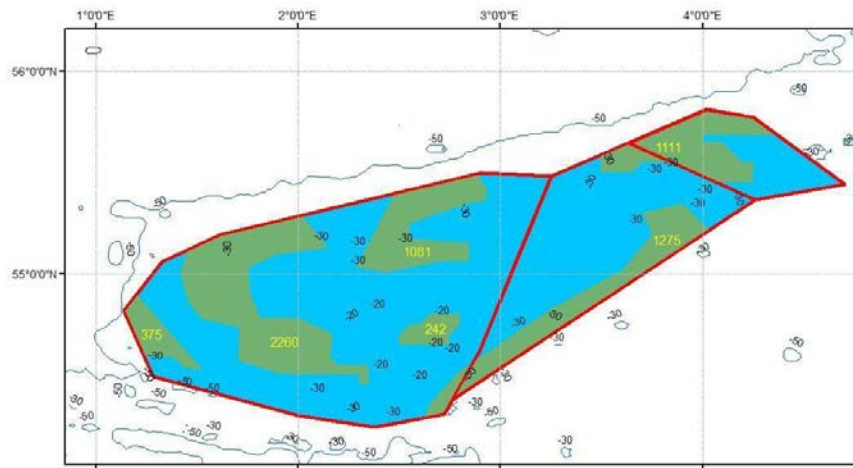


6 Legend: Blue figures represent depths, yellow figures represent surface of the protected zone in km²; Green areas represent future closed areas for bottom contacting

fisheries, blue area represent open area; red lines are maritime delimitations between UK, Netherlands and Germany.

Step 7: Final proposal

The total coverage of the management zone, resulting from this step, is 33,8%. The final result is as follows (the size of the individual zones (km²) are shown in yellow):



5. Regionalisation

In accordance with art. 11 Basic Regulation the initiating Member States have started a process of regional consultation. A first informal meeting of the Scheveningen ad hoc Group on Dogger Bank was held in The Hague, on 13 June 2016. A second meeting was held on 3 November 2016, followed by a fourth informal meeting on 17 January 2017. The fourth informal meeting was held in Bonn on 31 January 2017. On 27 February 2019 in the meeting of the High Level Scheveningen Group agreement was reached on the Joint Recommendation by Belgium, Denmark, France and Sweden. The initiating Member States sent the Joint Recommendation and the Background document to the European Commission on XX-XX-XXXX.

XXXX = will be added after the Scheveningen Group procedure has been finalised.

6. Applicable Principles

The following principles are at the heart of the cooperative process:

1. *Sound scientific basis*

The process is centred around a scientific approach, notably through the involvement of ICES. ICES held the secretariat of the workshop series and ensured the scientific input into the workshops by commissioning literature reviews and data compilations. In the final stage, the ICES scientific Advisory Committee ACOM was requested to present formal scientific advice on the proposed fisheries measures.

2. *Stakeholder involvement*

An important feature of the process is the involvement of key stakeholders in the process, starting from the very early stages. The EMPAS, FIMPAS, DBSG and NSAC processes (throughout the years 2006-2013) all invited participation from four key communities: fishing industry; science; environmental/nature organisations and government. Invitations and participation in the meetings were well balanced across these sectors. There was considerable effort to allow for the participation of these communities. In the course of the DBSG-NSAC process, the Member States provided financial resources and meeting venues to facilitate the participation by stakeholders. This pertains not only to the Member States directly cooperating in the proposal (Netherlands, UK and Germany), but also to the Danish and Irish⁵ governments, the European Commission and ICES.

June 2016 the Scheveningen process for the Dogger Bank under article 11 of Reg. 1380/2013 has started with an informal meeting of the ad hoc group. Stakeholders have been invited to attend this process. This invitation has been addressed to the NSAC which has responded positively. The presence of stakeholders at these meetings contributes to the transparency of the process. If necessary the results of bilateral discussions between Member States will also be communicated to the meetings of the ad hoc group.

3. *Multilateral coordination*

The DBSG approach essentially is a process of multilateral consultation to arrive at a coordinated fisheries proposal for a transboundary ecological feature. This was not only recommended by the European Commission guidance, but it was also requested by the fishing industry sector, which favours the establishment of one fisheries management regime, rather than separate proposals from individual Member States. The multilateral coordination under the application of Reg. 1380/2013 now takes place in the framework of the Scheveningen Group.

4. *Transparency*

Member States want to be absolutely transparent: transparent on the data being used, on the steps being taken and on the methodology which is used. Hence, the involvement of stakeholders.

5. *Proportionality*

An approach was sought that would deliver a proposal that delivers a key contribution to the achievement of the conservation objectives while minimising the effect on the fishing industry. A key safeguard in the process to deliver such an outcome was to follow the European Commission guidance in this regard, which described a proportional approach towards balancing sustainable exploitation of resources and the need to conserve important habitats, including a precautionary approach to fisheries management. Another way of delivering a proportional outcome was by involving both nature conservation organizations and fishermen in the process (see principle 2).

6. *Non discrimination*

The proposal will need to ensure that measures are not applied in a discriminatory

⁵ The Irish government put at the disposal of the process the services of dr Paul O'Connolly to chair the FIMPAS process.

manner. A coordinated approach between initiating Member States is the only way of ensuring non discrimination for fleets affected by the proposed measures. Ultimately, a proposal is presented to the European Commission for regulation in the framework of the CFP, thus ensuring a level playing field for the fishing sector affected.

7. Proposal

7.1 Description of site

The Dogger Bank is the largest sandbank in the North Sea. It stretches from the southwest to the northeast over a length of approximately 300 km (Kröncke and Knust, 1995) and covers approximately 25.000 km². The surface area covers 4,3 % of the total North Sea (575.000 km²). It is a shallow area between the shallow Southern Bight and the deeper northern part of the North Sea. The 40 m isobath approximates the shape of the Bank. The Bank crosses the borders of the EEZs (or equivalent) of the UK, the Netherlands, Germany and Denmark (Fig. 7.1).

In the UK area, the bank rises up to a depth of approximate 15 m. The shallow and flat top occupies a large proportion of the bank and regularly experiences turbulent hydrodynamic conditions. Due to its central position in the North Sea, the Dogger Bank acts as a stepping stone or crossroad for species of similar habitats in more coastal areas (van Moorsel, 2011). Its location, between the Southern Bight being influenced by the Channel region and the northern North Sea with Boreal/Arctic elements, results in a large range of species. Although clean sands strongly dominate the area, muddy and stony grounds are present as well. Next to its central position, the range of habitats also explains the high biodiversity of the Bank (Rachor, 2006). In contrast to most coastal sand-dominated areas, clear water enables sub-surface phytoplankton blooms and benthic photosynthesis. Benthos is locally enriched due to the presence of hydrographic fronts. Compared to the coastal zone, seabed life is more constant in density and biomass. The high biomass constitutes a year-round source of food for fish, birds as well as marine mammals up to the size of minke whales (van Moorsel, 2011).



Figure 7.1. Location of the Dogger Bank (a) satellite image (NASA), (b) EEZ borders

The flat top of the Dogger Bank is dominated by small characteristic endobenthic species, well adapted to disturbances. Larger epibenthic species also occur in this part of the bank, but these are ubiquitous in the southern North Sea.

Lesser sand eel *Ammodytes marinus* is especially abundant in sandy areas on the slopes. These fish are caught by industrial fisheries, but also serve as staple food for several (commercial) fishes, birds and marine mammals.

At the shallow top of the Dogger Bank, two of the top-10 species in two studies from the fifties (Ursin 1952 and Birkett 1953) have disappeared: *Ophelia borealis* and the suspension-feeding *Galathowenia oculata* (both bristleworms, polychaeta). Juveniles of ocean quahogs (*Arctica islandica*) are present at the borders of the whole Dogger Bank

(Witbaard and Bergman, 2003), but adult specimens are hardly found. The Dutch MWTL program indicates that *Macra stultorum* (rayed trough-shells) and *Iphinoe trispinosa* (small crustacean) have virtually disappeared. New species in the eighties as well as in the most recent period were *Spiophanes bombyx* (bristleworm, polychaeta), *Amphiura filiformis* (brittle star belonging to the family amphiuridae) and *Phoronids* (horseshoe worms, a separate phylum) representing a shift towards short-living and opportunistic deposit feeders. Thornback ray (rocker, *Raja clavata*) has become rare at the Dogger Bank (ICES, 2011). Historically, the Dogger Bank has been in the centre of distribution in the North Sea of the thornback ray (Olsen, 1883).

Typical species for the Dogger Bank include: *Lanice conchilega* (sand mason worm), *Acrocnida brachiata* (brittle star), *Arctica islandica* (quahogs), *Buccinum undatum* (whelk), *Macra corralina* (rayed trough shell), *Ammodytes marinus* (sand eel), *Trachinus vipera* (lesser weever), *Raja clavata* (thornback ray) and *Pleuronectes platessa* (plaice).

7.1.1 Depth contours

In the UK part of the North Sea the Dogger Bank is broad and shallow; it rises up to a depth of 15 m at Lowest Low Water Spring. The shallowest part of less than 20 m (the 'Western Shoal') is in the southern end of the UK area. To the northeast (GER part), the Bank narrows down and gets deeper (the 'Tail End'). The majority of the Dogger Bank is a flat area between 25 and 30 m depth.

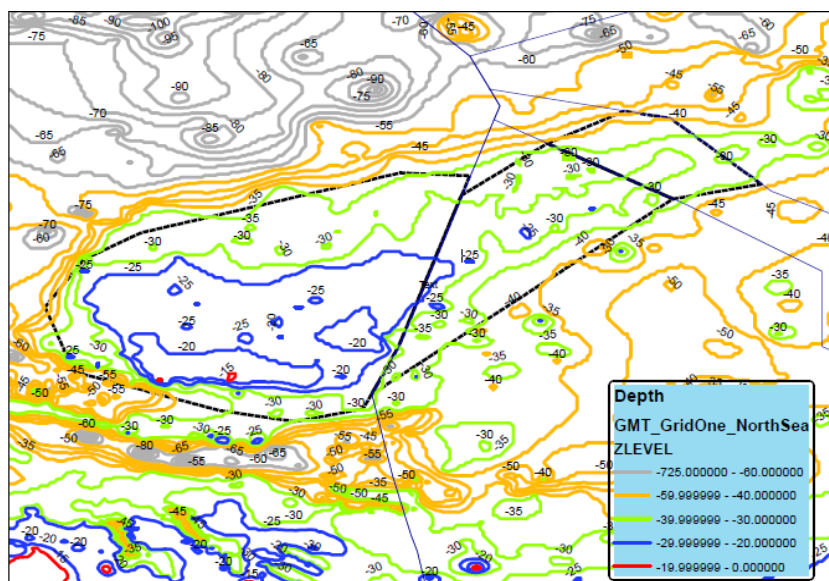


Figure 7.1.1. Water depth contours (International DBSG, 2012).

7.1.2 Sediment type

Diesing *et al.* (2009) found that there is a clear distinction between infaunal groups supported by coarse sediment and those found in fine sand and muddy sand. This indicates that substrate type (grain size) has a major influence on the associated infauna. Biological zones are, however, less clearly reflected by the infaunal groups, displaying significant overlap. This indicates that depth-related changes in infaunal groups are transitional rather than sharp.

7.1.3 Benthic communities

Figure 7.1.3 indicates the benthic communities on Dogger Bank based on the map of the endobenthic communities from Wieking and Kröncke, 2003, as depicted by van Moorsel (2011).

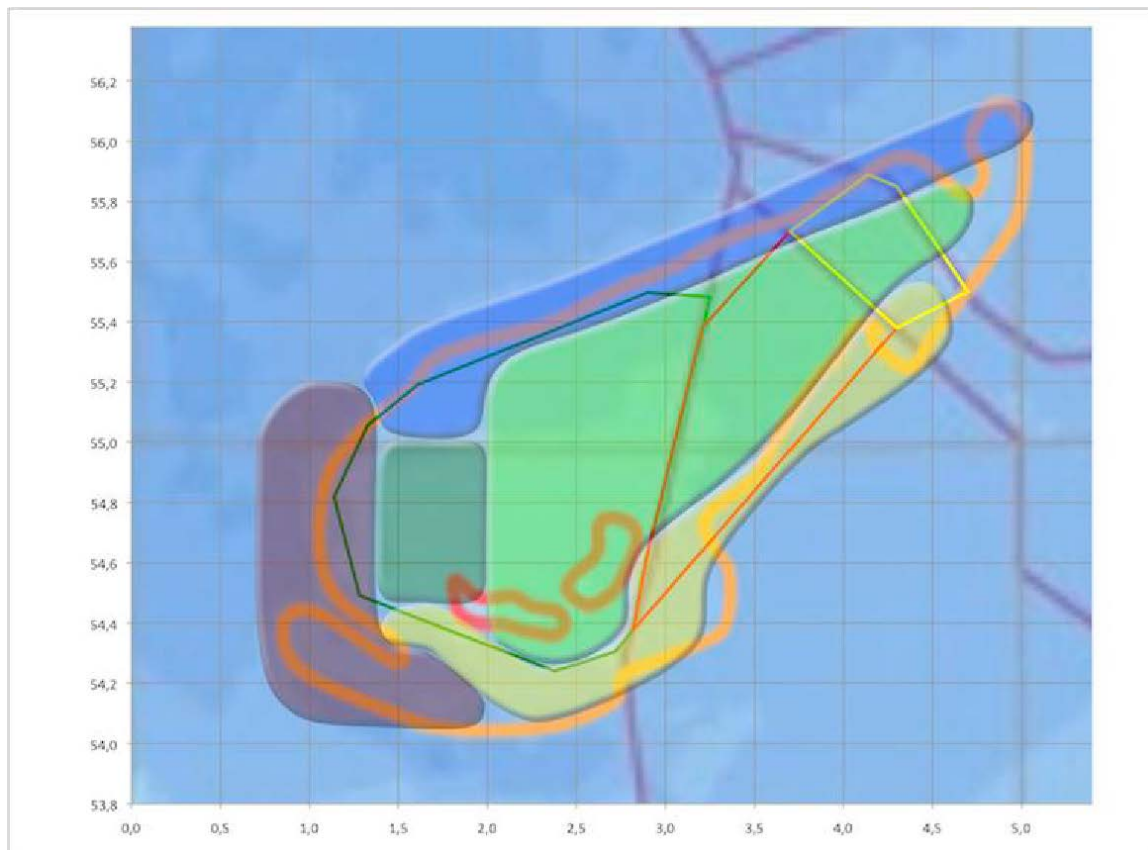


Figure 7.1.3. Habitats at the Dogger Bank, based on the map of the endobenthic communities from Wieking and Kröncke (2003), adapted by van Moorsel (2011). Green: Bank community; dark green: Bank sub-community; yellow: Southern community; purple: Western community; blue: North-eastern community. 20 m (red) and the 40 m (orange) isobaths.

Bank community

The shallow part of the Dogger Bank is inhabited by a *Bathyporeia-Tellina* community. Water turbulence causes this community to remain in a stage of early succession. It is characterized by interface feeders: the polychaete *Spiophanes bombyx* and the ophiuroid *Acrocnida brachiata*. *S. bombyx* constructs protective sandy tubes, and *A. brachiata* buries relatively deep into the sediment, hence they are well protected against sediment mobility. Other characteristic species are subsurface feeding amphipods: *Bathyporeia elegans* and *B. guilliamsoniana*. These small amphipods feed by removing benthic diatoms off sand grains ('sand lickers'). The importance of *Bathyporeia* in the shallowest parts of the Dogger Bank hints at a considerable contribution of benthic primary production to the nutritional and energetic needs of the benthic community on top of the bank.

Bank sub-community

At the shallow western side (18-23 m depth) a subgroup - the Southwest patch - can be discerned (Fig. 7.1.3) with the lowest species number and abundance. Here, *Bathyporeia elegans* is the most abundant species. The bivalve *Donax vittatus* and the polychaete *Nephtys cirrosa* show their highest abundances in this sub-area of the Bank community (Wieking and Kröncke 2003a).

Most species in Table 7a are small (< 5 mm) opportunistic species. The bivalve *Tellina fabula* may also be characterized as such, but it grows to a length of 20 mm. The bathyporeid amphipods and the long-armed *Acrocnida brachiata* are amongst the most characteristic species of the Bank community (Lindeboom *et al.*, 2008).

Table 7a Ten dominant species of four Dogger Bank communities. W&K: densities (n/m²) from 1996-1998, sample size 0,4 m² (Wieking and Kröncke, 2001); MWTL: densities (n/m²) from 1995-2009. Names updated according to WoRMS.

Bank Community	W&K	MWTL	Southern Community	W&K	MWTL
<i>Spiophanes bombyx</i>	320	273	<i>Amphiura filiformis</i>	640	505
<i>Bathyporeia elegans</i>	207	343*	<i>Kurtiella bidentata</i>	127	361
<i>Bathyporeia guilliamsoniana</i>	152	107	<i>Spiophanes bombyx</i>	300	173
<i>Tellina fabula</i>	67	126	<i>Pholoe baltica</i>	66	97
<i>Magelona johnstoni</i>	52	67	<i>Magelona johnstoni</i>	38	42
<i>Euspira pulchella</i>	40	27	<i>Euspira pulchella</i>	13	17
<i>Acrocnida brachiata</i>	43	56	<i>Nucula nitidosa</i>	61	77
<i>Urothoe poseidonis</i>	20	137	<i>Echinocardium cordatum</i>	10	6
<i>Perioculodes longimanus</i>	22	21	<i>Phaxas pellucidus</i>	11	12
<i>Owenia fusiformis</i>	22	46	<i>Bathyporeia tenuipes</i>	11	7
mean species number/sample	44			48	

Western Community	W&K	Northeastern Community	W&K
<i>Amphiura filiformis</i>	541	<i>Scoloplos armiger</i>	70
<i>Spiophanes bombyx</i>	179	<i>Spiophanes bombyx</i>	138
<i>Pholoe baltica</i>	39	<i>Bathyporeia elegans</i>	90
<i>Kurtiella bidentata</i>	50	<i>Cerianthus lloydii</i>	74
<i>Diplocirrus glaucus</i>	28	<i>Euspira pulchella</i>	16
<i>Phaxas pellucidus</i>	11	<i>Edwardsia</i> spp.	25
<i>Phoronis muelleri</i>	12	<i>Chaetozone</i> sp.	12
<i>Edwardsia</i> spp.	10	<i>Perioculodes longimanus</i>	15
<i>Nucula nitidosa</i>	50	<i>Dosinia</i> spp.	13
<i>Echinocardium cordatum</i>	5	<i>Nephtys assimilis</i>	10
mean species number/sample	51		53

*A recent analysis (Verduin *et al.* in prep.) showed that in the MWTL Bank community 30% of *Bathyporeia elegans* actually belonged to *B. nana*.

Southern community

The deeper southern part of the Bank harbours an *Amphiura* community. The polychaete *S. bombyx* is again abundant, but here the ophiuroid *Amphiura filiformis* and its commensal bivalve *Kurtiella bidentata* also dominate in numbers. They prefer muddy sediments. Other common species: the small scale worm *Pholoe baltica* and the bivalve *Nucula nitidosa*. Like the Bank community, most dominant species are small (< 5 mm) but the deep-burying echinoid *Echinocardium cordatum* and the bivalve *Phaxas pellucidus* reach larger sizes.

Western community

The western part of the Bank has a similar *Amphiura* community but its diversity is somewhat increased due to the presence of northern species such as the bivalve *Lucinoma borealis* and the holothuroid *Leptopentacta elongata*. This community extends into the heterogeneous Outer Silver Pit, where several large and long-lived species were found such as *Acanthocardia echinata* and the echinoid *Brissopsis lyrifera* (Wieking and Kröncke, 2003).

Northeastern community

The northern and northeastern part of the bank, bordering the northern North Sea is inhabited by a community with lower densities but with the highest number of species. The tube-inhabiting velvet anemone (*Cerianthus lloydii*) and the small echinoid

Echinocyamus pusillus occur at high densities in the shallower part. The ophiuroid *Amphiura filiformis*, the bivalve *Abra prismatica* and the polychaete *Scoloplos armiger* are more common in the deeper part. The community has a high number of rare northern species and the diversity is highest of all four communities.

All five benthic infauna habitats are considered essential parts of the Dogger Bank-H1110 biotope complex for which conservation objectives need to be developed.

Epibenthos

The epibenthic community of the Dogger Bank combines species of the southern as well as the northern North Sea. Although northern species predominate, a similarity analysis shows a similarity of the epibenthic community with the southern part of the North Sea, as was the case in the endobenthic community. In recent years, an increase of southern species takes place (Sonnewald and Türkay, 2011).

Especially the top of the bank is dominated by generalist mobile species known to be ubiquitous in the North Sea (Frauenheim *et al.*, 1989). Biodiversity is enhanced in the presence of hard substratum. The species composition is possibly influenced by fisheries. Vulnerable sessile and large species are mainly present at the northern border of the Dogger Bank.

7.1.4 Fish community

On the top of the Dogger Bank, three flatfish species were by far the most common: dab (*Limanda limanda*) and the small non-commercial omnivorous generalists solenette (*Buglossidium luteum*) and scaldfish (*Arnoglossus laterna*). Other common species were the lesser weever (*Echiichthys vipera*) and common dragonet (*Callionymus lyra*), grey gurnard (*Eutrigla gurnardus*), sand goby (*Pomatoschistus minutus*) and plaice (*Pleuronectes platessa*). At the western part of the bank at shallow, gravelly areas the lemon sole (*Microstomus kitt*) was found. Zühlke (2001) also reports some of these species as frequently occurring at the Dogger Bank, but since she also reports on the deeper edges of the Bank, other species are reported as well, e.g. the northern long rough dab (*Hippoglossoides platessoides*). Sonnewald and Türkay (2011) found an increase of 'temperate oceanic' species: *E. vipera* (lesser weever), *Mullus surmuletus* (striped red mullet) and *Trisopterus minutus* (poor cod).

High species numbers were especially found along the borders of the Dogger Bank (Callaway *et al.*, 2002). In 2-m beam trawls, high fish diversities were found along the southern and western border of the Bank. Otter trawls showed a high fish diversity being present along the northern border. The 2-m beam trawl samples demonstrated two different fish communities. The centre of the Dogger Bank was similar to the Southern Bight, characterized by whiting (*Merlangius merlangus*), grey gurnard (*Eutrigla gurnardus*), dab and scad (*Trachurus trachurus*). At the western and northern edge as well as at the Tail End the fish community was similar to the adjacent northern part of the North Sea. Otter trawling resulted in a somewhat different pattern with most of the Dogger Bank harbouring a community similar to the Danish offshore area.

Fish species that are widespread are plaice (*P. platessa*), sand eel (*Ammodytes sp.*), sole (*Solea solea*), sprat (*Sprattus sprattus*), cod (*Gadus morhua*), herring (*Clupea harengus*), and whiting (*Merlangius merlangus*).

7.2 Conservation objectives and status for habitat type 1110

The fisheries management proposal concerns habitat type 1110 (sandbanks) only. This is the only natural feature contained in the Annexes of the Habitats Directive, for which all three Member States have selected the site. This proposal does not exclude the possibility of additional management proposals for other conservation objectives which

may be proposed by Member States outside this process. These proposals will comply with the requirements of Reg. 1380/2013.

Each Member State has defined similar conservation objectives and has independently assessed the conservation status of habitat type 1110 at the site to be unfavourable (DBSG, 2011). The purpose of fisheries measures is to reduce the pressure on the benthic habitat from bottom contacting fishing gear with a view ensuring a key contribution to achieving the conservation objectives and to ascertain that the integrity of the site will not be adversely affected, in keeping with Article 6.3 of the Habitats Directive.

The approach for the three Member States entails the following elements:

- The conservation status of habitat type 1110 is currently assessed as unfavourable, due mainly to the quality of the habitat and disturbance of the biological community which result from impacts to sediments;
- These assessments mention significant habitat disturbance as a result of (mobile bottom-contacting) fishing, and that fishing has distorted the species composition – towards smaller and short-lived species;
- Therefore the Member States want to decrease human pressure on the habitat as a result of mobile bottom-contacting fishing gear, with the aim to improve the quality of the habitat (NL); restore the habitat to favourable condition (UK); conservation and restoration of a favourable conservation status of the habitat type (1110) including its typical and threatened communities and species (GER);
- In doing so, they want to establish a more natural situation in which conditions will allow the
 - physical structure (the shape, form and composition of the habitat and its substrata),
 - diversity (the number of different biological communities or number of species within a given community),
 - community structure (e.g. age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility) and
 - typical speciesto be restored.
- UK, GER and NL want to maintain the surface area and the extent of the habitat, improve the abiotic preconditions and the physical structure, reduce the disturbance of the benthic communities including infauna and epibenthic species, and improve the habitat quality by natural processes so that the benthic communities will be characterized by long-lived species in natural proportions of size and age. It is agreed that the requirements of a good structure and function can be applied to both benthic communities and typical fish species. If possible, individuals of all typical occurring species (fish, benthos) should be present in natural proportions of sizes and ages. Typical species include: *Lanice conchilega*, *Acrocnida brachiata*, *Artica islandica*, *Buccinum undatum* (common whelk), *Macra corralina*, *Ammodytes marinus* (sand eel), *Echiichthys vipera* (lesser weever), *Raja clavata* (Thornback ray), *Pleuronectes platessa* (Plaice).

As restoration objectives are distinguished:

- 1) For abiotic and biotic factors in the area to achieve a state which enables benthic communities to reach and maintain a good state of preservation;
- 2) Benthic communities should be characterized by, in particular, long-lived species. Of all typical occurring species, individuals should be present in natural proportions of sizes and ages;

- 3) Characteristic fish species should be present in characteristic population structures and of all typical species in natural proportion of sizes and ages.

Trawling on the Dogger Bank began in the 1880s and there is little data that can be related to Dogger Bank communities not affected by fishing. Scientific literature suggests that the closures to mobile bottom contacting fishing gear on the Dogger Bank SCI are likely to contribute to improving the conservation status of the benthic habitat including its typical species and communities. In particular, closures should lead to increased average age and occurrence of long-lived benthos species typically of the Dogger Bank such as Ocean quahogs and Rayed trough-shell which are both assessed to be in unfavourable conditions (see summary by van Moorsel, 2011). Other long-lived species include sea-pens for which there is no assessment. Among the more mobile species, the Thornback Ray has become rare on the Dogger Bank (Fock H.O. 2014). Restoring the habitat to favourable conditions could create the environment for these species to be present in more natural proportions of sizes and ages. It is therefore important we find out as much about the species as possible if populations are to be preserved at a healthy level.

In the following a description of the proposed fisheries management measures can be found. The measures should be proportionate to their impacts on the protected features and the level of impact may vary regarding the sensitivity of the features to the activity. In this respect the level of natural disturbance compared to human disturbance has to be taken into account in the measures proposed

According to the document “OVERVIEW OF SENSITIVITY, INTERACTIONS AND IMPACTS OF COMMERCIAL FISHING METHODS ON MARINE HABITATS AND SPECIES PROTECTED UNDER THE EU HABITATS DIRECTIVE” (requested by the European Commission (DG ENV), produced by the N2K group and available here:

<http://ec.europa.eu/environment/nature/natura2000/marine/docs/Fisheries%20interactions.pdf>.)

impact associated with the use of particular types of fishing gear can be less significant or negligible compared to the same activity in low energy environments’, but the document does neither give a definition for “high energy environment” nor a method for quantification of its effects. Reliable scientific information on the relative quality and quantity of human and natural disturbance is not available.

In the ICES advice of 2012 this question was addressed as follows:

In relatively high-energy environments, characteristic species and communities are all adapted to some frequency of natural disturbance. Hence, for time periods longer than six years there will continue to be an increase in the number of species that re-establish self-sustaining populations, but there will be diminishing gains over longer time periods. However, that is not cause to suspend restrictive management after six years. In general, the fisheries management measures suggested will reduce the pressure on the benthic habitats from bottom-contacting fishing gears, although the scale of this effect and consequences to the status of the habitats are not possible to predict.

Since we are not sufficiently aware of the influence of natural disturbance a balance has to be struck between closing the whole of the Dogger Bank site and not closing it. In the extensive stakeholders’ consultations which have taken place it appears there is no flagrant non-proportionality which has been assessed. Furthermore, the monitoring programmes and ensuing research will have to shed more light on this question in the future.

7.3 Description of the proposed fisheries management measures

The management measures for ensuring a key contribution to the delivery of the conservation objectives for H1110 (as described in paragraph 7.2 above) in the combined SCI (as described in paragraph 3.4 above) and which are designed to contribute significantly to the overall favourable conservation status of habitat type 1110 are as follows:

- A zoning system will be established, dividing the area in six management zones and one (continuous) open zone. The management zone is green, the open zone is blue on the map in Figure 7.3

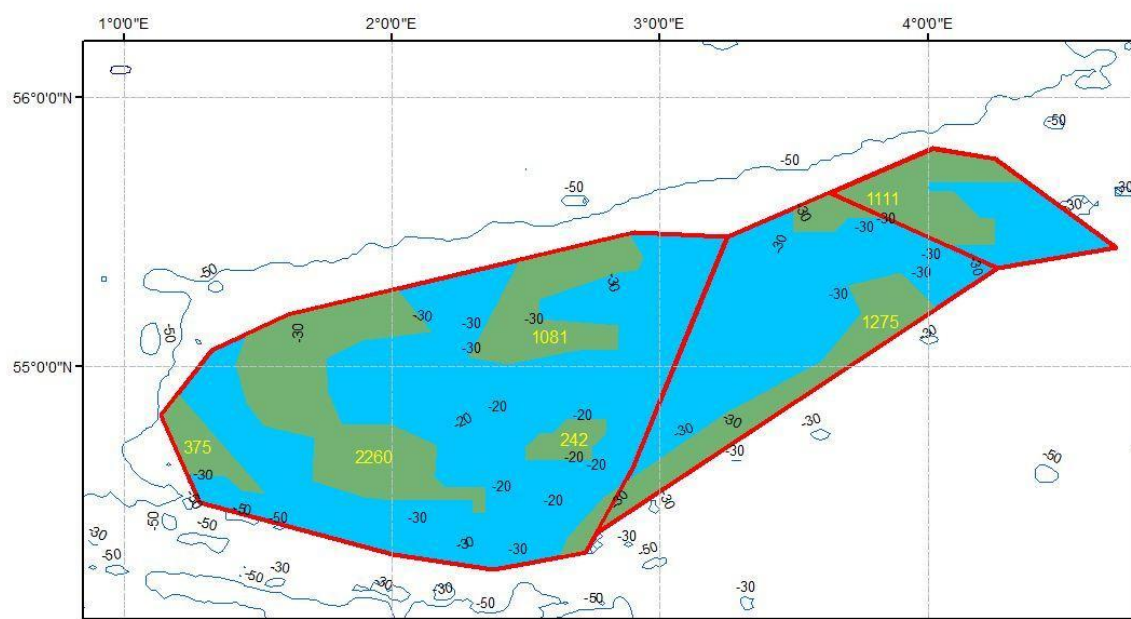


Figure 7.3 Map of the SCI area on the Dogger Bank showing the DBSG proposal with a closed zone (Green) and an Open zone (Blue). Table 3.7.1 shows the size of the total area in units of C-squares (approx. 17.7 sq km).

- The full details/coordinates of the closed zones are attached in Annex I
- All management zones will be closed to the following mobile bottom contacting gear types (see table 7b for gear codes):
 - Beam Trawl
 - Bottom Trawl/Otter trawl
 - Dredges
 - Semi-pelagic trawls.

The German part of the management zone will additionally be closed for demersal seines for a period of three years, whereafter it will be lifted. (see Table 7b for gear codes), i.e. for all mobile bottom contacting gears. The closure will be supplemented by monitoring the development of this area to compare it with the other managed areas and by a targeted study in a specifically defined "seines impact research area" (SIRA) within the

German Natura 2000-site of the Dogger Bank to verify the predicted impact of seines on habitat 1110 (see Chapter 8.5)

- The closure of the German management zone will apply for a period of 3 year, whereafter it will be lifted. This three years period will start from the moment of the entry into force of the delegated act by which the said rules will be integrated in Community law.
- The remaining area is open to all not otherwise prohibited fishing gears.
- Adjacent to each management zone an alert zone will be established. The zone will measure 4 nautical miles from the outer limit of each management zone. In the alert zone there are no restrictions to fishing activities. Its aim is to alert enforcement authorities that a vessel is in the alert zone thus enabling these authorities to warn the vessel that it is near a management zone.
- New and/or modified mobile bottom contacting gears can obtain a derogation from the ban of mobile bottom contacting gears where the use of such gears in the management zones will not jeopardize the delivery of conservation objectives.
- Requests for a derogation will be submitted to the three initiating Member States (United Kingdom, Germany and the Netherlands). The submitting party has to provide scientific documentation showing that the delivery of the conservation objectives will not be jeopardized.
- The three initiating Member States will assess the information received and, in line with article 11 of Regulation 1380/2013, will inform and consult the Member States with a direct management interest and, upon their approval, submit a Joint Recommendation for a derogation.
- After an initial period of 6 years after the entry into force of the delegated act the initiating Member States will review these measures to inform decision making on whether to change or retain this regime and how this would enter into effect. This review will be based on all available new scientific data, including the results of the monitoring.

Table 7b Gear codes for the banned mobile bottom contacting gear types.

Gear groups that are banned in all closed zones	Gear Code Annex XI in EU Regulation 404/2011	International Standard Classification of Fishing Gears (ISSCFG)
Beam trawl	TBB	03.1.1
Bottom Otter Board Trawl	OTB, OTT, PTB, TBN, TBS, TB	03.1.2 , 03.3.0, OTP (?), 03.1.3, 03.1.9
Dredges	DRB, HMD	04.1.0, 04.2.0, DRM (?), DRX (?)
Semi-pelagic trawls	Classified as 'Bottom otter board trawls-	TSP (?)
Gear Groups that are only banned in the German closed zone		
Demersal Seines	SDN, SSC, SPR, SX, SV	02.2.1, 02.2.2, 02.2.3, 02.9.0, 02.2.0

Specific gears, not falling under the proposed ban, may under specific circumstances, have an adverse effect on the habitat. This raises the question in respect of enforcement of the ban. This question will be addressed in section 8.3.

7.4 Purpose of the proposal, assessment of adequacy, proportionality and the precautionary principle

The management measures as described in the previous chapter 7.3 have been developed in an intensive process of international coordination, as described in chapter 4. Several key policy considerations were taken into account in the development of the proposal:

- 1) The measures are designed to make a key contribution to the delivery of the conservation objectives, (as described in chapter 7.2) of the site which are designed to contribute significantly to the overall favourable conservation status of habitat 1110. This pertains to (a) Physical Structure (shape, form and composition of habitat and its substrata), (b) Diversity (number of biological communities; number of species within a given community), (c) Community Structure (age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility). Notably a community shaped by characteristic long-lived species in natural proportions of sizes and ages, and (d) Typical Species. All typical species (both fish and benthos) should be present in natural proportions of sizes and ages.
- 2) The measures have been built around a zoning concept with three zones (an unrestricted zone, an alert zone and a management zone), in order for the measures to be controllable and enforceable in a cost-effective manner. In addition, for the same reason, and in line with EC guidance, the zoning would have to avoid a scattered pattern and areas which are too small. A limited number of management zones is considered appropriate in this respect. In designing the management zones, control, compliance and enforcement considerations have been included. This is further explained in chapter 8.3.
- 3) The total surface of the management zones shall be large enough to make a key contribution to the delivery of the conservation objectives of the site which are designed to contribute significantly to the overall favourable conservation status of habitat 1110.
- 4) The management zone has to include all benthic communities. Overall approximately the same proportion of each benthic sub-habitats (benthic communities) has to be protected, but the share that is protected may vary between each Member State.
- 5) The measures take a holistic perspective of the entire Dogger Bank, rather than the portions belonging to individual member states. This is in line with EC guidance letter in chapter 3.3.2.
- 6) The measures take into account specific considerations required by individual Member States. This means:
 - a) Germany: that a 50% closure of the German SCI has been proposed by German scientific institutions (BfN/TI) to achieve a favourable conservation status of the habitat type 1110;

- b) UK : that adequate coverage of the shallowest part of the Dogger Bank was to be achieved, in light of the EC Guidelines and interpretation manual which puts a special focus for habitat type 1110 on sandbanks up to 20 m depth;
 - c) Netherlands: that areas with localized habitat features, as contained in the Van Moorsel report (2011) , are to be included in the management zones. This pertains especially to areas of known higher densities of long-lived benthic species, such as quahogs (Witbaard and Bergman 2003), since they would be especially important in light of the conservation objectives.
- 7) The measures would take into account stakeholder input, including the Chair's conclusions of the Dublin stakeholders meeting, position papers of the NSAC, Fishing Industry and NGOs (which were used as major building blocks) and observance at the member states meetings;
- 8) The measures are built on existing data, meaning that best available data is used, while the absence of clarity does not lead to postponement of management. This is in line with the precautionary approach in the EC Guidelines "absence of adequate scientific information should not be used as a reason for postponing of failing to take measures" (chapter 3.3.2);
- 9) The measures take into consideration economic and socio economic factors in a proportional approach. The initiating Member States want to ensure a key contribution to the achievement of the conservation objectives, while, as far as possible, minimizing impacts on the fishing industry. This leads to a proportional approach seeking the least potential cost locations, within the boundaries of environmental constraints. Chapter 8.1.6 contains a table showing the maximum possible economic consequences of the zoning proposal in terms of catches and values. Furthermore, the Member States looked at a proportional and fair distribution of impacts across different fleet segments.
- 10) Mindful of windpark developments. For the fishing industry this meant that they wanted to consider potential synergies between area closures for windpark development (especially Tranche A and B of FOREWIND) and closures for delivering conservation objectives. Such consideration would be without prejudice to any decision on consents for these proposals by the UK authorities.
- 11) An adaptive approach comprising a review of the regime 6 years after the entry into force of the delegated act and a procedure for the treatment of new and/or modified gears.

8. Restriction of fisheries within the site

8.1 Fleet activity and type of fisheries, target species and annual trends

8.1.1 Validity of the dataset

In the section below relevant fleet statistics for the years 2010-2015 are provided as requested by the European Commission guidance. This is a harmonized dataset construed at the outset of the process described in chapter 4, based upon a formal Call for data. It should be noted that historic value data cannot be used as an indication of the potential value of areas for the fishing fleet. This is true for any three year dataset, as requested by the Commission guidance. Such a data set reflects rather the relevant context of that time period, notably TAC/quota, fishing day constraints and fuel prices.

By looking at the relevant data in the period 2010 - 2015, the Member States qualitatively assessed the trends and development of the fleet sizes, the spawning stock and recruitment of the most important fish stocks, and the landings and values of fish.

Overall, the fisheries have changed since the early 2000s as a result of changes in fishing conditions, for example fuel prices and the introduction of ITQ6 systems in various forms. Fishing fleets have reduced in number of vessels and fishing effort has decreased. However, the major fishing grounds as identified by the fishing data for 2007-2009 are unchanged and their relative importance generally remains. Fishing opportunities are dictated by stock status, market conditions, fuel prices and technological opportunities. In addition policy decisions on alternative use of the marine habitat, sustainable exploitation and environmental policies will influence fishing opportunities.

On the basis of this assessment the Member States agreed that the 2010-2015 dataset is representative of the contemporary fisheries carried out in the area and valid for the purpose of underpinning the current proposal. Member States noted the drop of fish caught in the sand eel fishery and the increase of the plaice stock. LEI (2012) analysed the Dutch flat fishery inter alia with respect to the temporal dynamic of the Dogger Bank fishery and pointed to a number of variables that influence the dynamic of the fishery system including first hand landing prices and fishing costs (e.g. oil prices). The fisheries system is dynamic and sound judgement is required when using the data.

In addition, the actual state of the stocks fished at the Dogger Bank, mainly plaice and sole is in an extraordinary state. This implies that the fishing industry has a multifold of possibilities to fish the TAC / quota. Against this background the interest of protecting the Dogger Bank should outweigh the interest of the industry to fish at those specific management zones.

8.1.2 Information on Landings, fishing effort on the Doggerbank and potential economic effects of the closures.

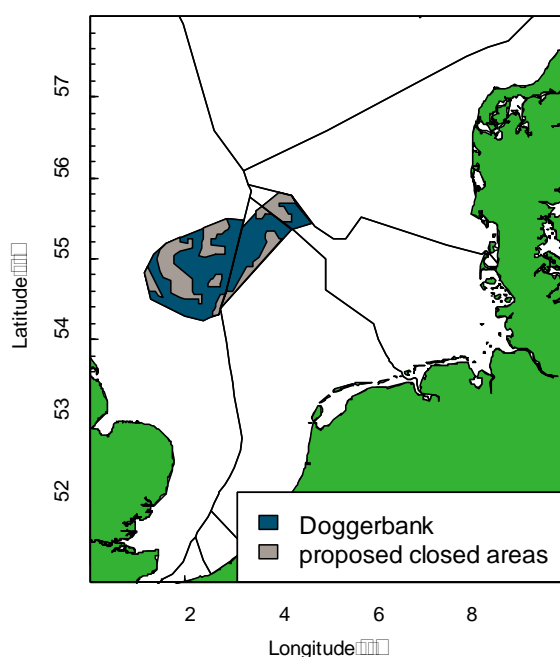
The flatfish fisheries (beam and bottom otter board trawl) include a number of other species as by-catches (e.g. cod, lemon sole). Where these species are landed these are

⁶ Individual transferrable quota.

included in the total gross landing value statistics. There are bycatches that are not landed and there are no systematic statistics available for these components of the catches.

In 2016 Wageningen Economic Research (Netherlands) addressed a data call to relevant North Sea countries, members of the Scheveningen Group, with a view to update the fisheries information of this Background document.

This exercise was undertaken for all bottom trawling fleets for the period 2010-2015. Fishing activities in the areas were quantified in terms of effort, landings volume, landings value and contribution to the Gross Value Added (GVA). The GVA is especially important as this metric indicates the value of the fishing activities to society: the returns on the invested capital (fishing vessel) and labour by the crew. The analyses is restricted to the fishing activities inside the closed areas and not beyond. The report of WER is annexed to this background document (Annex III). In the WER study several data sources were used: Vessel Monitoring System (VMS) data, catch data from logbooks (Fish Registration and Information System), Fleet data from the Netherlands Register of Fishing Vessels (NRV), and Data on landings value and economic performance of all fleets that were obtained from the database of the Annual Economic Report of the EU fishing fleets (STECF, 2016). For a full account of the methodology used reference is made to chapter 2 of the full report. Furthermore it should be borne in mind that to evaluate the relative importance of the proposed closed areas on the Dogger Bank, WER defined fishing activity in the proposed closed areas and on the total Dogger Bank separately (**Fehler! Verweisquelle konnte nicht gefunden werden.XXXX**). The results are presented as a percentage of the total Dogger Bank area. WER also investigates the fishing opportunities in the rest of the Dogger Bank and the possibility to displace effort to other areas by comparing the catch-rates per unit of surface for a number of key species inside and outside the proposed closed areas.



Figuur 7 Map of the Dogger Bank and the proposed closed areas; map was taken from the WER Report.

8.1.3 Fleet activity by state

Over the 2010-2015 period the amount of fishing activities has been quite different in the proposed closed areas on the Dogger Bank from year to year with no clear trend. For all countries the coverage rate of VMS data was above 97%. This result permits to focus more on the dataset where VMS and Logbooks are linked and provide greater spatial and temporal resolution.

When using only the combined VMS-logbook information, it appears that the effort in the area has varied from year to year with different patterns for the different countries but without a clear trend. Over the period, the Dutch and British effort was on average 188 and 235 days at sea respectively, about 6 times more than the German effort (31 days at sea) and more than 20 times the effort of Belgium (8 days at sea) and Sweden (6 days at sea). The effort of Denmark lies in between at 134 days at sea. France bottom fishing vessels had no activity in the areas during the 2010-2015 period. The landings amounted to 4.579 tonnes in average for Denmark, 1.297 tonnes for Great Britain, 839 tonnes for the Netherlands, 324 tonnes for Germany, 35 tonnes for Belgium and 407 tonnes for Sweden, representing a value of 1.331 k€ (Denmark), 2.326 k€ (Great Britain), 2.004 k€ (the Netherlands), 578 k€ (Germany), 60 k€ (Belgium) and 90 k€ (Sweden) and a GVA of 904 k€ (Denmark), 604 k€ (Great Britain), 785 k€ (the Netherlands), 126 k€ (Germany), 23 k€ (Belgium) and 56 k€ (Sweden).

Table. 1 Overview of effort, landings and values and gross value added of the fishing sector in the proposed closed areas of the Dogger Bank of the different fleets (VMS and logbook merged data only)

Country	2010	2011	2012	2013	2014	2015*	Average
Effort (days at sea)							
Netherlands	69	161	285	224	110	281	188
Great Britain	189	285	219	262	209	247	235
Denmark	107	127	92	167	212	100	134
Germany	49	53	11	22	26	28	31
Belgium	6	2	1	29	3	6	8
Sweden	5	6	0	6	12	7	6
France	0	0	0	0	0	0	0
Landings (tonnes)							
Netherlands	278	658	1,275	1,077	408	1,340	839
Great Britain	1,035	1,799	1,230	1,435	977	1,303	1,297
Denmark	8,785	7,401	471	4,116	4,837	1,862	4,579
Germany	564	817	44	208	92	219	324
Belgium	3	5	0	163	11	30	35
Sweden	476	360	6	379	735	488	407
France	0	0	0	0	0	0	0
Value (1,000 euros)							
Netherlands	729	1,680	2,888	2,385	937	3,405	2,004
Great Britain	1,901	3,205	2,443	2,176	1,632	2,601	2,326
Denmark	2,247	2,089	240	1,491	1,369	546*	1,331
Germany	898	1,562	97	337	148	424	578
Belgium	6	14	0	218	27	97	60
Sweden	116	80	2	111	134	97	90
France	0	0	0	0	0	0	0
Gross Value Added (1,000 euros)							
Netherlands	271	553	984	887	453	1,560	785
Great Britain	601	806	614	483	467	652	604
Denmark	1,634	1,455	143	1,094	785	311	904
Germany	166	284	43	127	40	95	126
Belgium	3	6	0	92	8	29	23
Sweden	99	39	1	71	72	52	56
France	0	0	0	0	0	0	0

*)2015 GVA data are based on the 2014 GVA factors, 2015 value of landings for Denmark is based on 2014 factor.

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2015), processed by WUR, CEFAS, TI,DTU, ILVO, SLU and IFREMER.

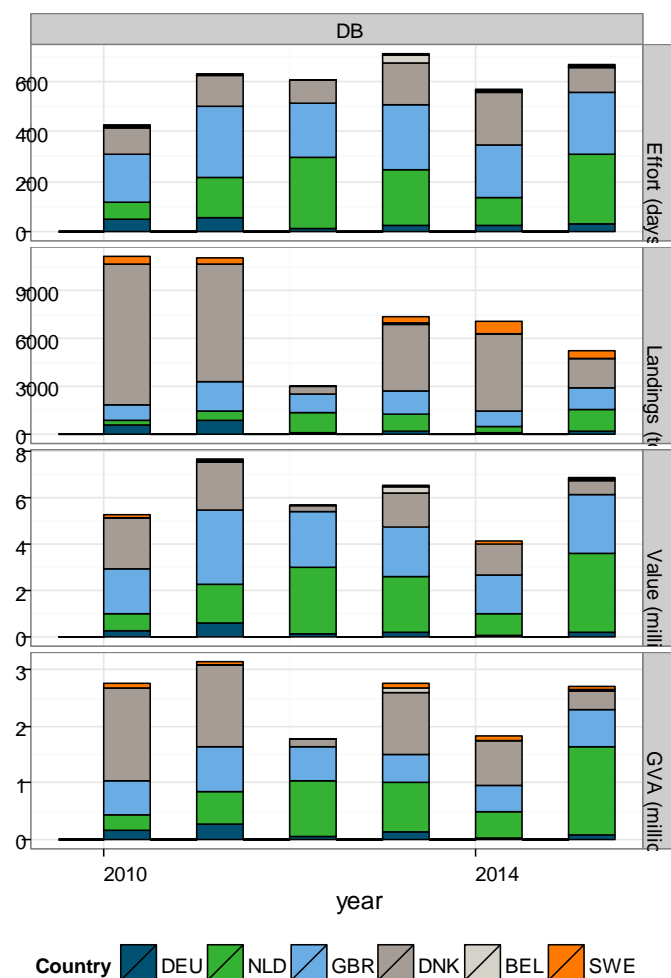


Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument..1 Historical trend of the fishing activities by the different fleets in the proposed closed areas of the Dogger Bank. Effort, landings, value of landings and GVA are given by country. Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2016), processed by WUR, CEFAS, TI,DTU, ILVO, SLU and IFREMER.

8.1.4 Fleet activity by gear (landing values)

The gear groups of major importance in terms of effort and economic importance (value) include (1) Beam trawls directed at demersal fish (flatfish), (2) Otter board bottom trawls for demersal fish (3) otter board bottom trawls for sand eel. Also seines have some relevance regarding effort, but minor economic relevance. Fishing for these species occurs all over the central and southern North Sea and Dogger Bank is important in line with a much larger area in the North Sea.

The majority of the fishing activities on the Dogger Bank by Dutch and British vessels is carried out by beam trawls and otter-board trawls. For the German and Danish fleets, demersal trawls and seines (mainly otter-board trawls for the German vessels and otter trawls and Danish seines for the Danish fleet) are most important in the area (Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument..2). The Belgian fleet operates with Scottish seines and the Swedish fleet with otter-board trawls.

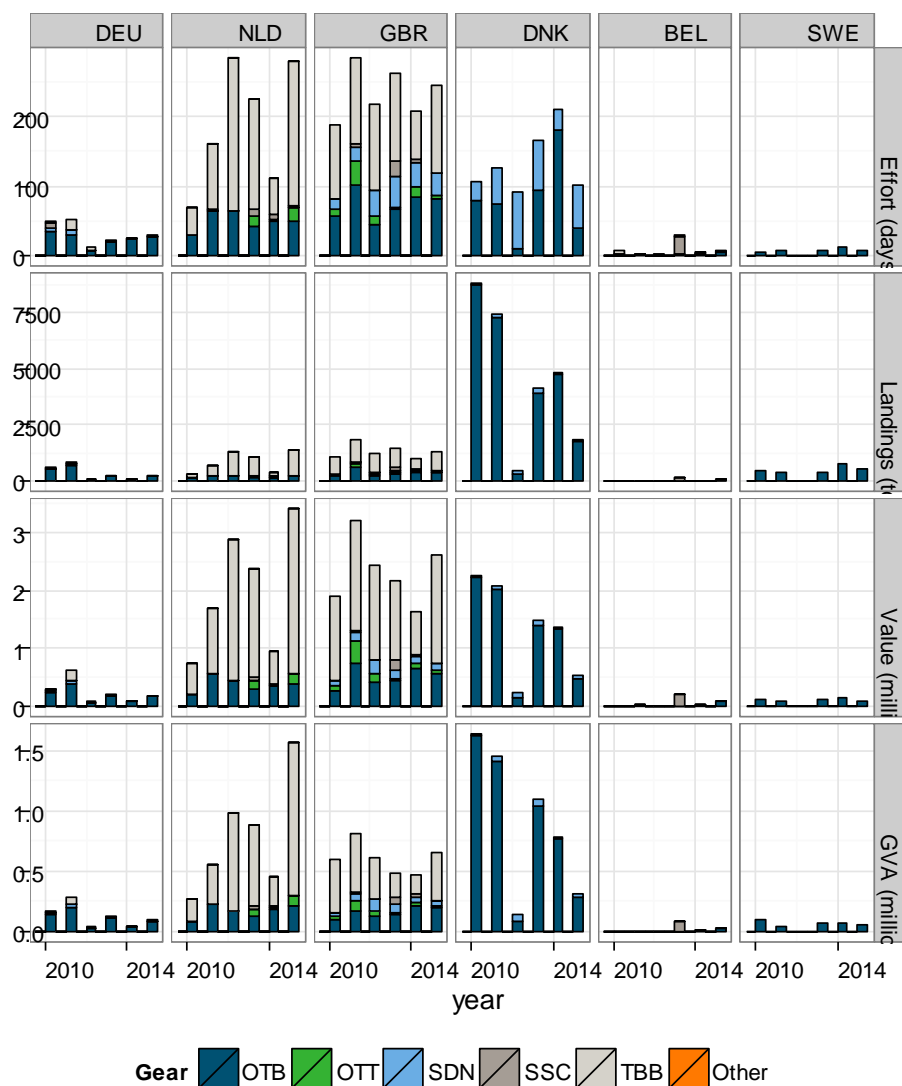


Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument..2 Historical trend of the fishing activities with different gears in the Dogger Bank area for the different countries. Effort, landings, value of landings and GVA are given by country. Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2016), processed by WUR, CEFAS, TI, DTU, ILVO, SLU and IFREMER.

8.1.5 Fleet activity (KWhrs) by gear group - Geographical distribution

The geographical distribution of the fishing effort (KWhrs) in Division IVb for the four major gear groups are shown in figure 8.2 For flatfish (Beam trawl and bottom otter board trawl - Demersal fish) the Dogger Bank SCI area is part of fishing grounds that stretches well beyond the Dogger Bank. The sand eel fishery is concentrated in the Dogger Bank area and adjacent waters.

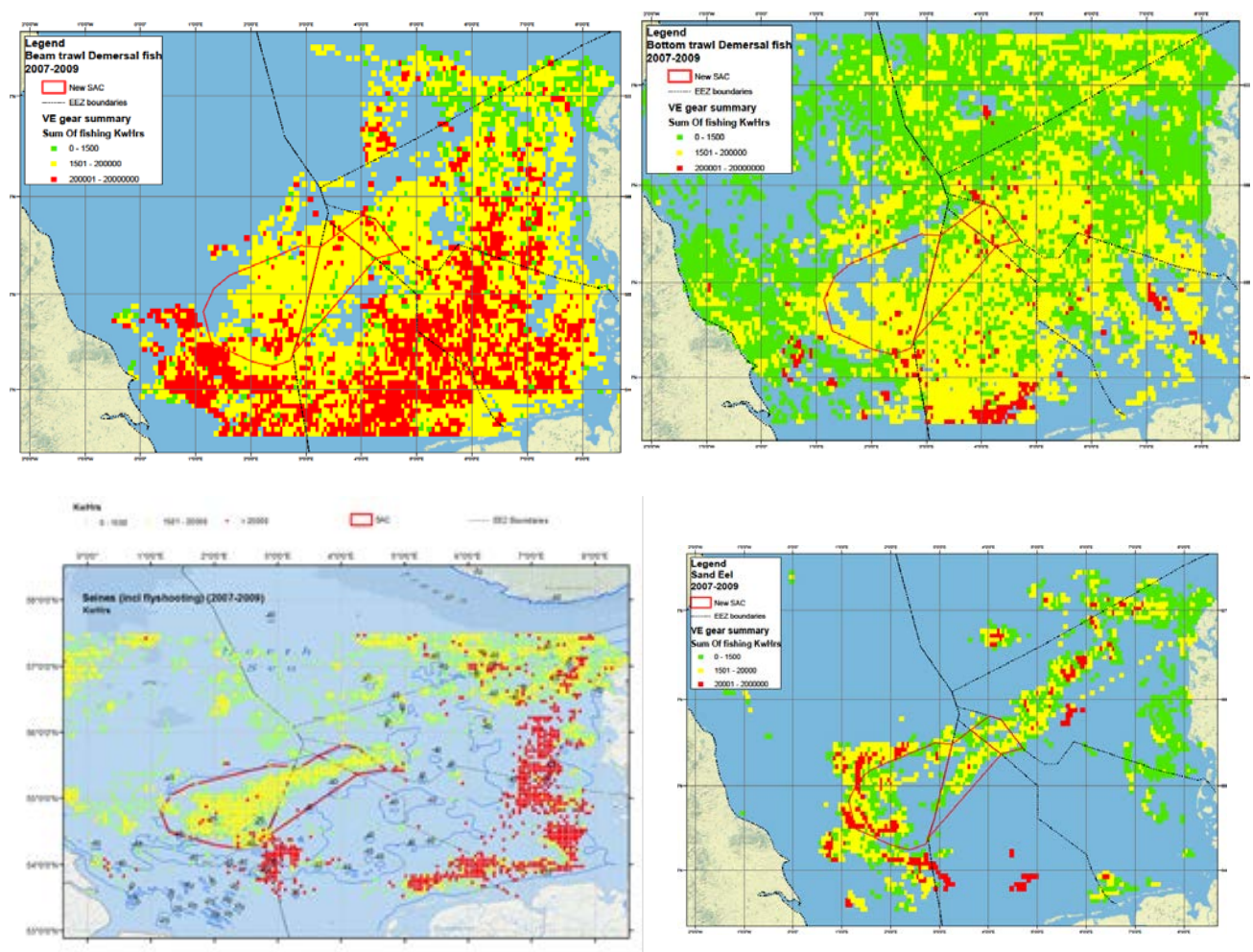


Figure 8.2 Effort (KWhrs) distribution for the three major gear groups in Division IVb (Central North Sea) in 2007-2009. Clockwise: Beam trawl (demersal fish), Bottom Otter Board trawl (Demersal fish), Sand eel trawl and Seines (incl. Flyshooting).

The two main species targeted on the Dogger Bank are sandeel for the German, Danish and Swedish demersal trawls and seines, and plaice for the Dutch and British beam trawl and otter-board fleet and Belgian Scottish seiners. All other species have much lower landings (Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument..3). The 2012 drop in Danish activity and sandeel landings comes from a sudden decrease of the sandeel TAC for the area for that year.

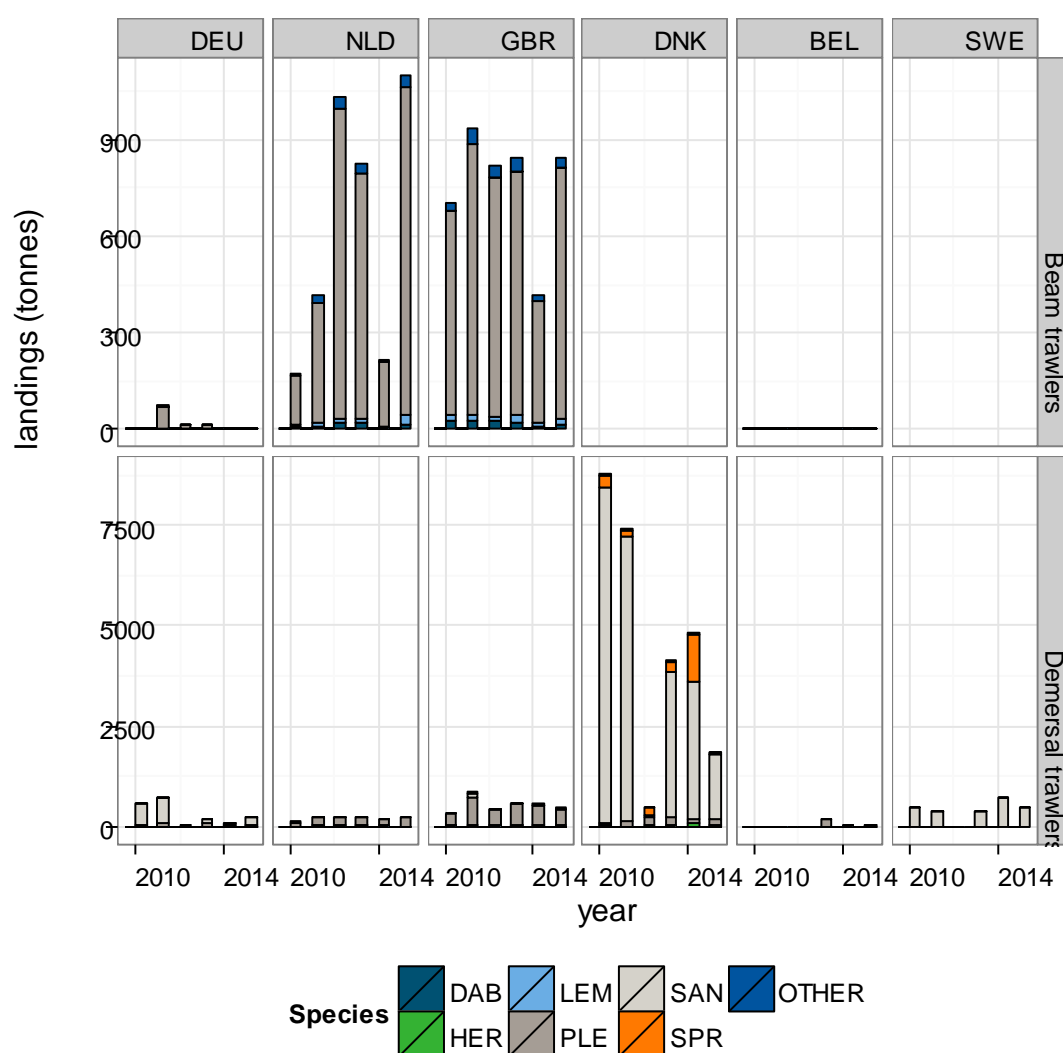


Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument..3 Landings in tonnes for the top 5 species per country on the proposed closed areas of the Dogger Bank for bottom contact gears. Source: Logbook data processed by WUR, CEFAS, TI, DTU, ILVO, SLU and IFREMER. DAB=dab, HER= herring, PLE= plaice, SAN= sandeel, SPR= sprat

8.1.6 Relative importance of the proposed closed areas

The proposed closed areas represent 6.712 km² or about 33,8% of the total Dogger Bank area. The fishing activity in the proposed closed areas for the different countries represent on average 23-24% of the total effort on the Dogger Bank for the German, Dutch and British fleets, around 20% for the Belgian fleet about 17% for the Danish fleet

and less than 8% for the Swedish fleet (Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument..4). In terms of landings, the proposed closed areas represent 24% of the total Dogger Bank for the Netherlands, 22% for Great Britain, 17% for Germany and Belgium, 15% for Denmark and 8% for Sweden.

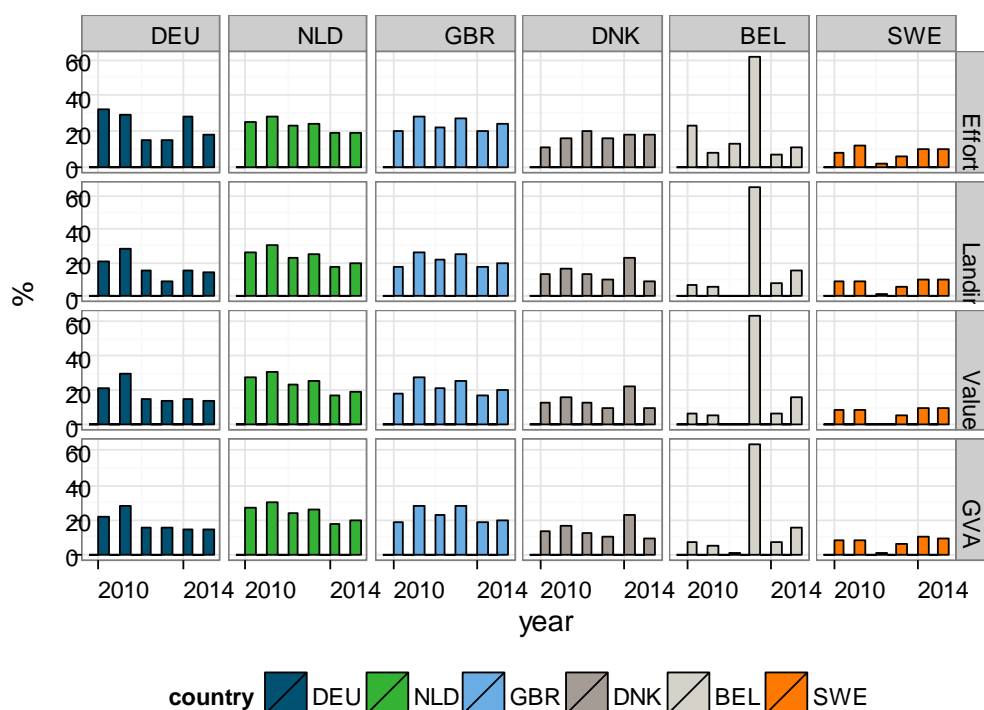


Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument..4 Relative importance of the proposed closed areas expressed as the percentage of effort, landings, value and GVA in the proposed closed areas compared to the total Dogger Bank area

The fishing opportunities have been higher in the proposed closures than in other parts of the Dogger Bank for Danish herring and sprat fisheries (2011 – 2014) and for Belgian dab and plaice (2013) (Table Fehler! Kein Text mit angegebener Formatvorlage im Dokument..2). For all other years, fleet and species, the importance of the proposed closed areas is proportionally lower than in the areas of the Dogger Bank that remain open.

Table Fehler! Kein Text mit angegebener Formatvorlage im Dokument..2 Ratio of landings per unit of surface inside and outside the proposed closed areas of the Dogger Bank

COUNTRY	species	2010	2011	2012	2013	2014	2015
DEU	DAB	0.45	0.53	0.32	0.71	0.48	0.25
NLD	DAB	0.53	0.51	0.46	0.75	0.44	0.54
GBR	DAB	0.38	0.68	0.39	0.67	0.35	0.54
BEL	DAB	0.26	0.03	-	1.10	0.36	0.15
DNK	HER	0.36	1.19	2.10	1.33	1.43	0.22

DEU	PLE	0.64	0.93	0.32	0.53	0.34	0.28
NLD	PLE	0.68	0.81	0.55	0.61	0.37	0.43
GBR	PLE	0.42	0.76	0.50	0.69	0.39	0.53
DNK	PLE	0.21	0.39	0.63	0.65	0.28	0.65
BEL	PLE	0.12	0.07	0.00	3.45	0.13	0.35
DEU	SAN	0.47	0.67		0.12	0.31	0.30
GBR	SAN	-	0.22		0.03		-
DNK	SAN	0.28	0.34	0.05	0.17	0.44	0.17
SWE	SAN	0.17	0.16	0.02	0.11	0.19	0.19
DNK	SPR	0.44	11.09	2.04	4.66	1.77	0.42

8.1.7 Seines in the German part of the Dogger Bank

The fishing activity in the German part of the proposed closed areas with seines is limited, only a few countries have been active with Seines in the areas and show irregular effort contributions. The GVA is comparatively low.

Table 3 Overview of effort, landings and values and gross value added of the fishing sector in the German part of the proposed closed areas of the Dogger Bank of the seines/SDN and SSC) only (VMS and logbook merged data only

Country	2010	2011	2012	2013	2014	2015*
Effort (days at sea)						
Netherlands	-	-	-	-	-	-
Great Britain	-	3.2	-	0.4	0.6	-
Denmark	0.2	2.3	1.2	4.9	-	-
Germany	-	-	-	-	-	-
Belgium	-	-	-	0.4	-	-
Sweden	-	-	-	-	-	-
France	-	-	-	-	-	-
Landings (tonnes)						
Netherlands	-	-	-	-	-	-
Great Britain	-	19.2	-	1.2	2.2	-
Denmark	0.1	1.4	1.9	5.2	-	-
Germany	-	-	-	-	-	-
Belgium	-	-	-	1.3	-	-
Sweden	-	-	-	-	-	-
France	-	-	-	-	-	-
Value (1,000 euros)						
Netherlands	-	-	-	-	-	-
Great Britain	-	26.3		1.4	3.3	-
Denmark	0.0	0.7	1.0	2.8	-	-

Germany	-	-	-	-	-	-
Belgium	-	-	-	1.7	-	-
Sweden	-	-	-	-	-	-
France	-	-	-	-	-	-
Gross Value Added (1,000 euros)						
Netherlands	-	-	-	-	-	-
Great Britain	-	8.7		0.5	1.3	-
Denmark	0.0	0.3	0.5	1.5	-	-
Germany	-	-	-	-	-	-
Belgium	-	-	-	0.7	-	-
Sweden	-	-	-	-	-	-
France	-	-	-	-	-	-

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2015), processed by WUR, CEFAS, TI,DTU, ILVO, SLU and IFREMER. *2015 GVA data is based on the 2014 GVA factors, 2015 value of landings for Denmark is based on 2014 factor; no seine fishing in the German site in 2015.

8.1.8 Effects on downstream industries

The effects on the downstream industries (such as processing and marketing) are expected to be fairly small as the SCI regulations do not affect the TACs, i.e. it may be possible to catch the lost amount of fish elsewhere and in close proximity to the SCI area leaving costs largely unaffected. Although overall the effort affected is low, the proposed measures can affect individual fishermen who would need to gain detailed knowledge of alternative trawling grounds.

ICES (2012) indicates that displacement (see section 8.2 for a discussion on displacement) of the sand eel fisheries will be fairly small while there will be some displacement in the flatfish effort. Sand eel catches are localized (Figure 8.2 for Division IVb) and for this fishery displacement of fishing effort may be a problem; however, there has been no substantiated claim on the possible scale of this problem. The flatfish fishery (see Figure 8.2 for Division IVb) occurs throughout the Central and Southern North Sea and there has been no indication that compensation is possible. The relative amounts that are taken in the SCI area are small and first hand prices are not expected to be significantly affected.

8.1.9 Conclusion fisheries information

This text has been copied from the WER Report. Some slight editorial adaptations have been made. These do not change the meaning of the conclusions of the WER report.

The fishing intensity in the proposed closed areas on the Dogger Bank has shown large variations over the 2010-2015 period, driven mainly by fishing opportunities for plaice for the Dutch and British fleets and sandeel for the Danish fleet. Belgian Germany and Sweden are also active in the area but at a lower level and France had no recorded activity in the proposed closures of the Dogger Bank for the period 2010-2015. Despite large variations in landings themselves for the different countries, the total value of landings has remained relatively stable on the Dogger Bank ranging from about €4.2m in 2014 up to €8.6m in 2011. While sandeel represents most of the catch in volume, plaice makes for most of the value of landings from the area. Price variability, although present, is not the driver of the varying landings.

The proposed closed areas represent 8 to 24% of the fishing activity on the Dogger Bank depending on the fleet considered, but 36% of the Dogger Bank surface. They are therefore on average less fished than the rest of the Dogger Bank.

No clear trend in fishing could be identified in the proposed closed areas of the Dogger Bank for the period 2010-2015. When we extend the period of analysis with the early reports from Oostenbrugge and Hamon (2014a, 2014b) on the activity of the Dutch fleet in the Dutch and German parts of the Dogger Bank, two periods can be identified : 2006-2010 when the activity was low and stable, 2011-2013 when the activity of the Dutch fleet in the Dutch and German Dogger Bank increased. For the Netherlands, the lowest level of activity of the current time series is also 2010, about 1.6 to 4 times lower than the rest of the time series meaning that the activity in the past 5 years is higher than 5-10 years ago. Unfortunately, no additional information is available for the other countries and none of them show the same pattern (2010 much lower than any other year), so we cannot assume that they follow the same trend as the Netherlands.

The reported values of the areas of interest do not necessarily reflect the value of these areas for the fishing sector in the (near) future. The value of an area results from the combination of quota, available fish and the effort applied in an area. If one of these factors changes, the value of such an area changes as well. Nevertheless the decision for choosing lesser fished areas for closures was based on the best available data. When fishers move their effort from closed areas to different locations, the future commercial value of the closed areas will decline (due to the ban on fishing in that area). Fishing on the different locations may partly or wholly compensate for the loss of revenue from the now closed areas. We assume that fishers move their effort to other locations in case of area closures. The effects of moving effort to another location (displacement) on catch and revenue are less well understood and are not necessarily negative. Further research in the field of displacement is therefore necessary. If effects are small at the scale of the fleet, this does not imply that individual fishers will not be affected substantially by a closure of a specific area at sea. The effects of closing a specific area are generally thought to have less effect fleet wide than on specific individuals or fishing companies.

8.1.10 Seasonal Distribution of fisheries

The seasonal distribution of effort and gross landing value for Division IVb (Central North Sea) are shown on the maps Figures 3.6.1(fishing effort in KWhrs) and Figure 3.6.2 (Value). The Figures show the distribution for the most important fisheries in the Dogger Bank:

- Beam trawl demersal fish
- Bottom trawl demersal fish
- Sandeel fisheries
- Seine (incl. flyshooting) fisheries

The data for the production of these maps are from the period 2007 – 2009, but in spite of their 'age' they are reproduced here because the trends and the main conclusions still apply in the period 2010-2015. The main conclusions from these maps are:

all fisheries have marked seasonality with second and third quarters as the period when the fisheries are most active. The seasonality is particular marked for the sand eel fishery.

The same fisheries occur also elsewhere in Division IVb in all seasons

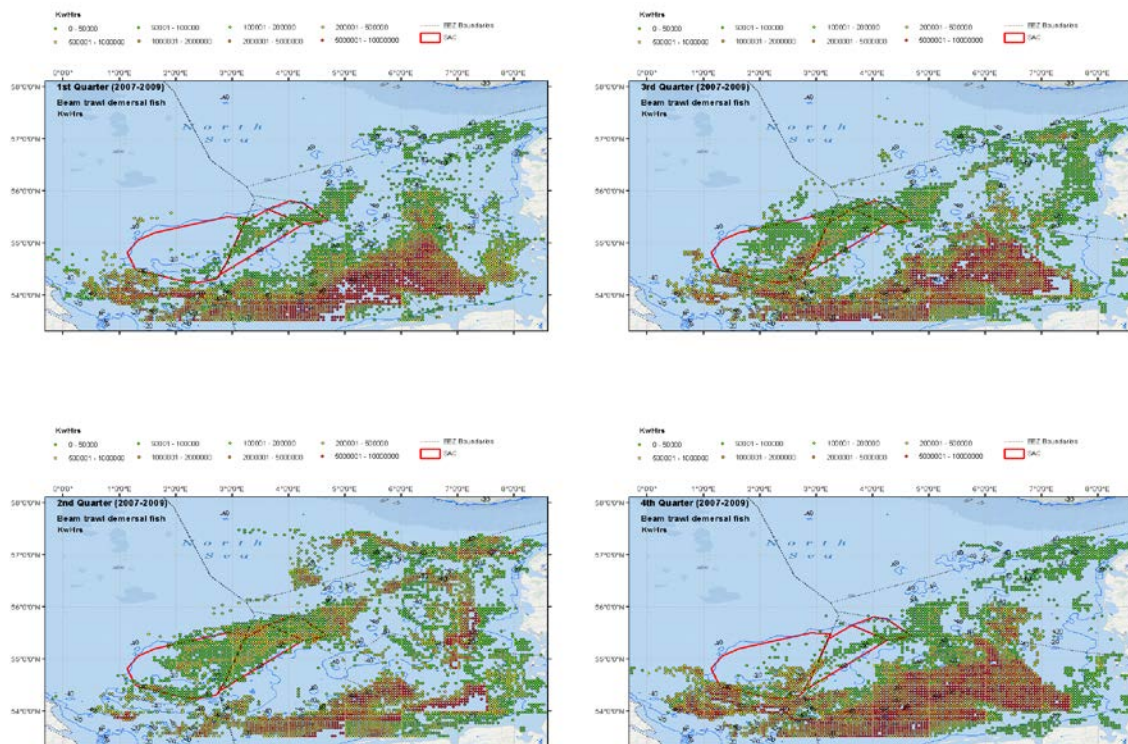
Figure 3.6.1 Quarterly distribution of fishing effort (KWHrs) for 2007-2009. The panels are

1 st Quarter	2 nd Quarter
3 rd Quarter	4 th Quarter

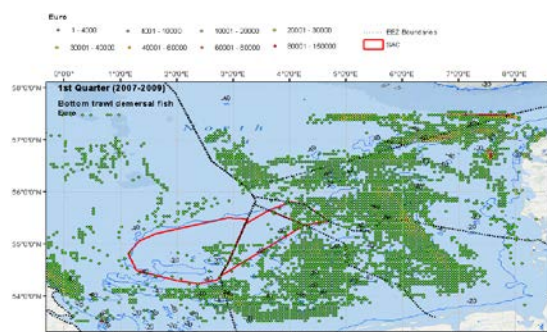
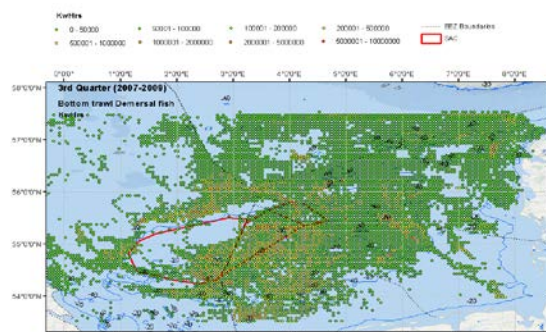
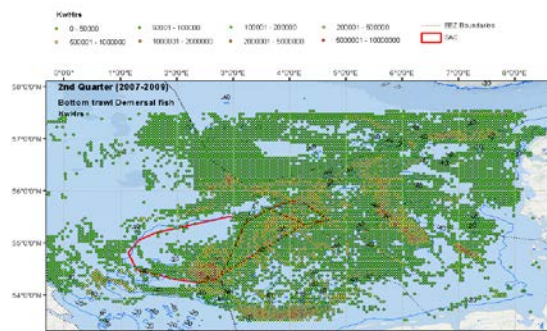
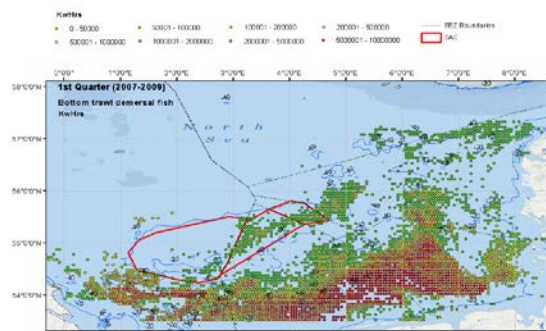
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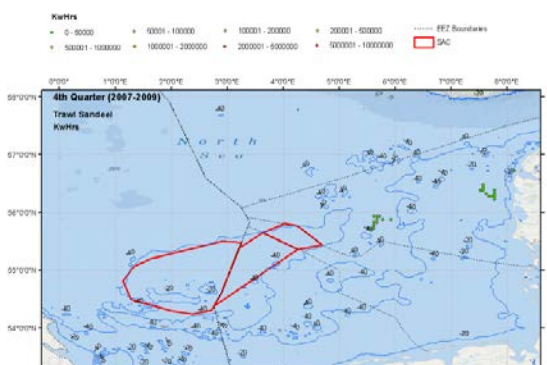
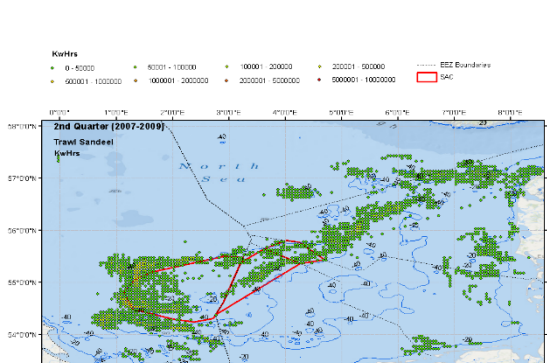
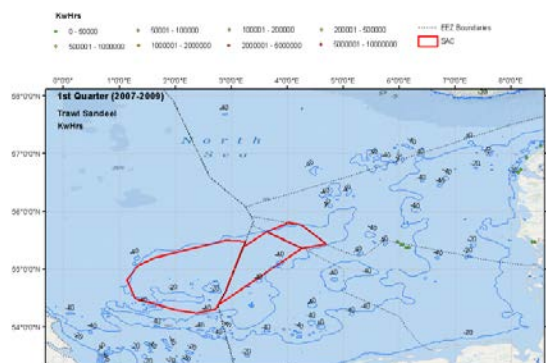
Beam Trawl Demersal Fish



Bottom Trawl Demersal Fish



Sandeel Trawl



Seines (incl Flyshooting)

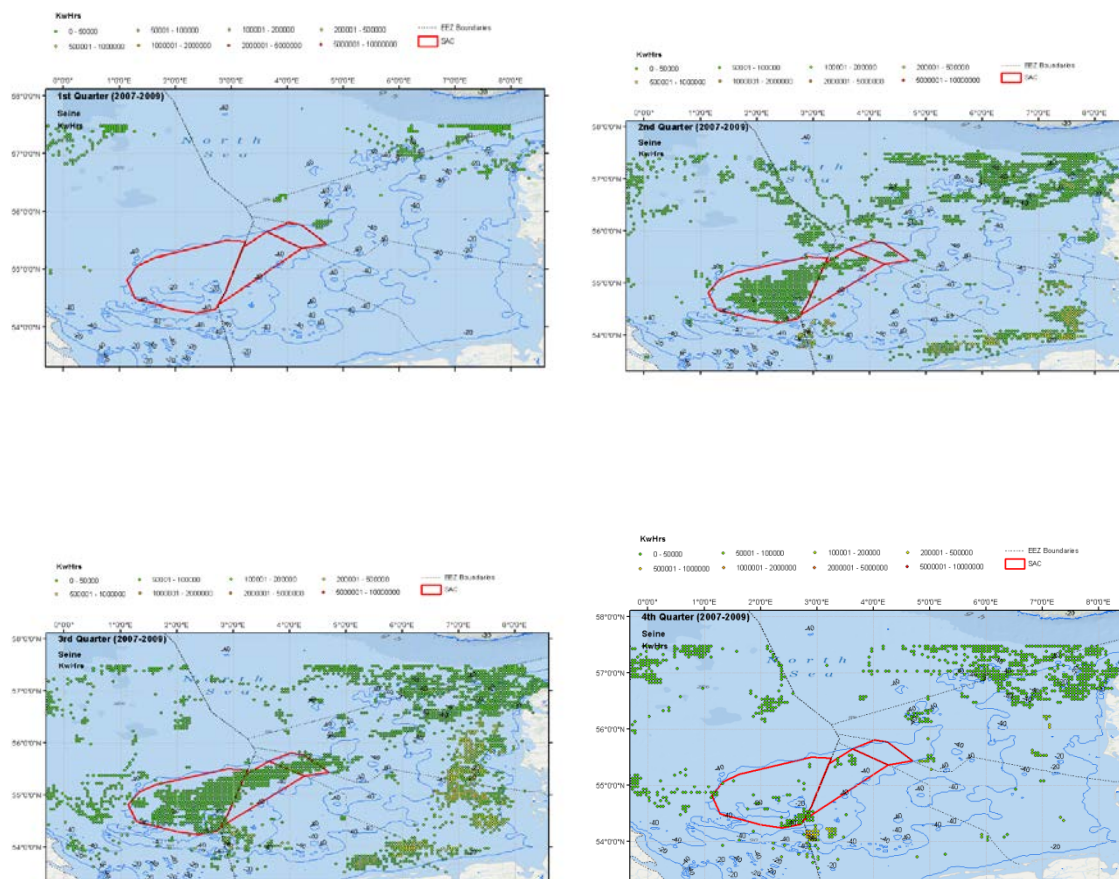


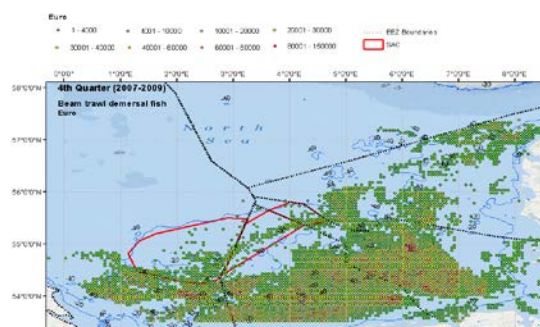
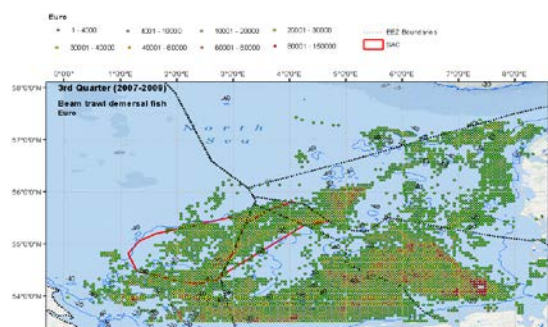
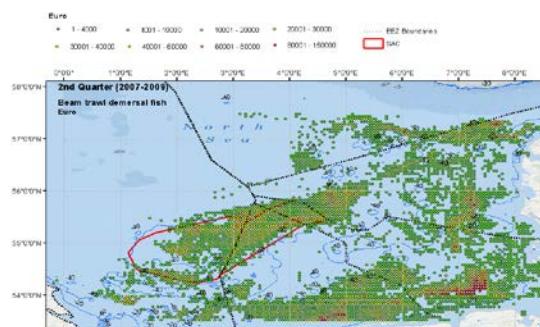
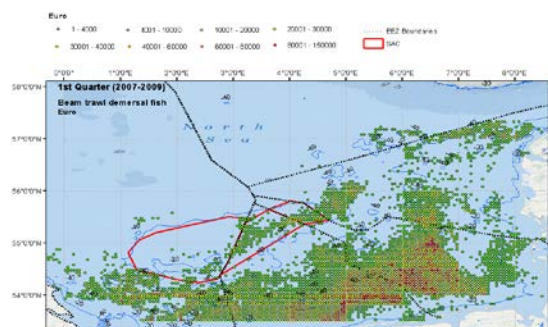
Figure 3.6.2. Quarterly distribution of Gross value of landings (Euro) for 2007-2009. The panels are

1 st Quarter	2 nd Quarter
3 rd Quarter	4 th Quarter

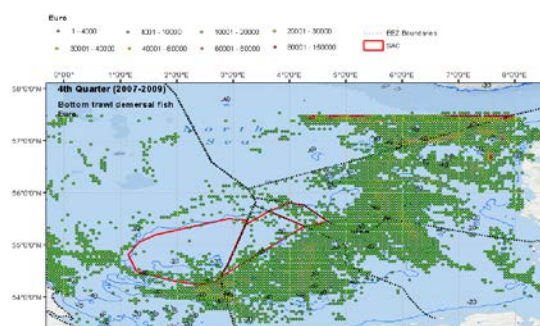
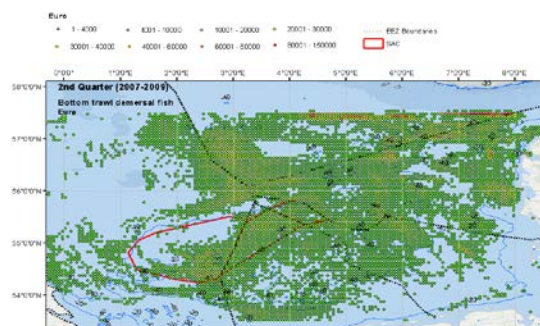
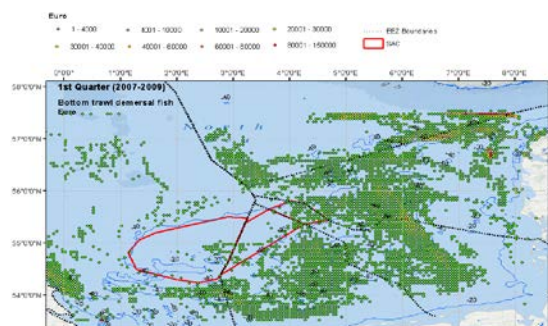
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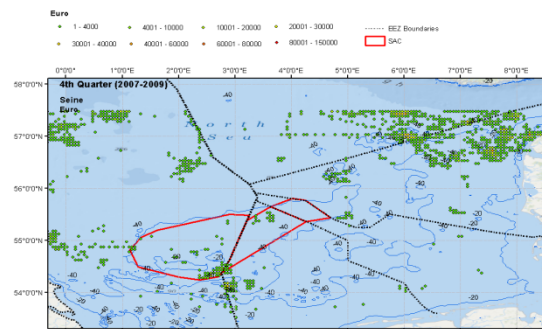
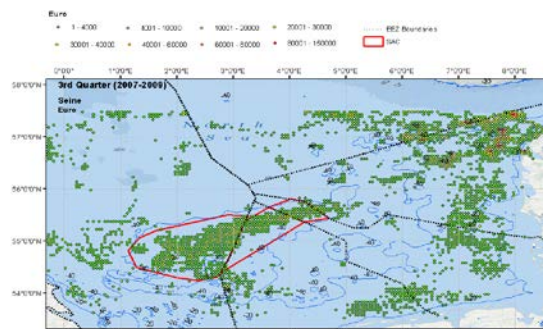
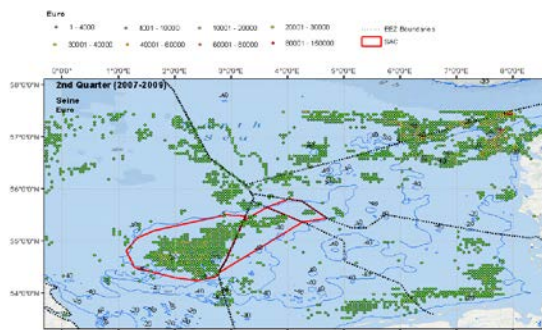
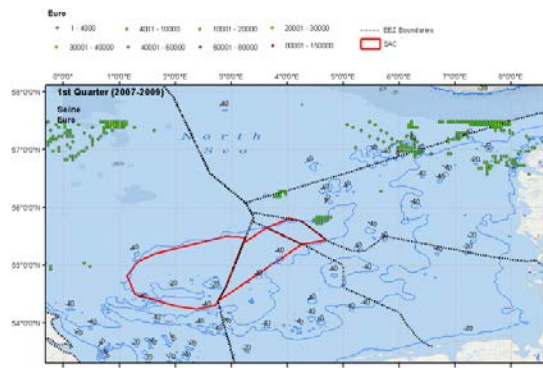
Beam Trawl Demersal fish



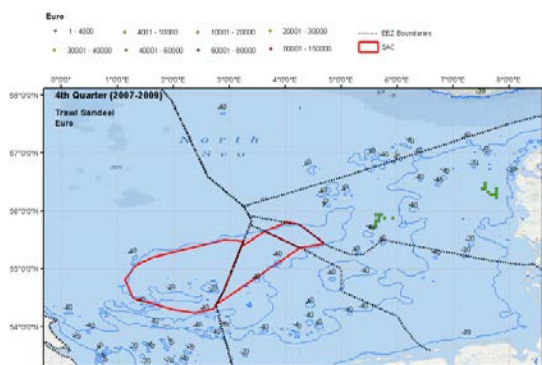
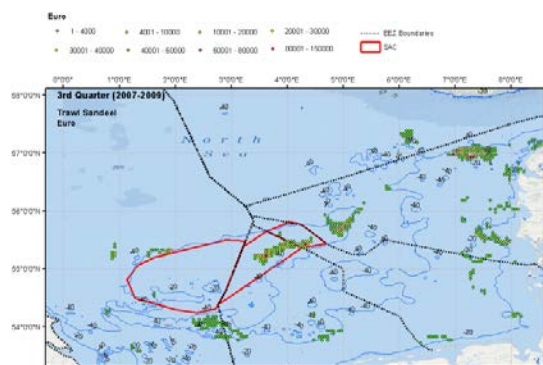
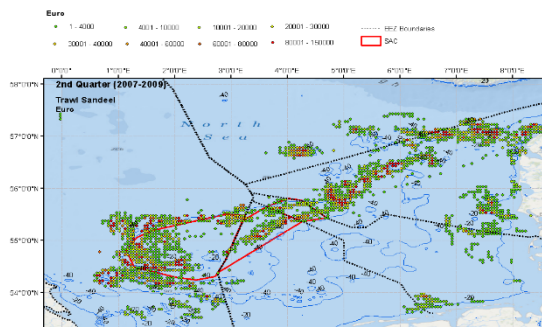
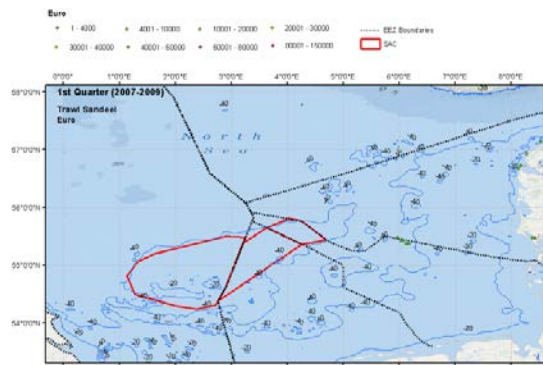
Bottom Trawl Demersal Fish



Seine (incl. Flyshooting)



Sandeel Trawl



8.2 Displacement

As areas of the SCI will be closed for certain gear types, some displacement is likely to happen, both within the SCI and outside the SCI.

Displacement is difficult to quantify, and it is impossible to predict where exactly activities will be displaced to. However, according to the ICES advice, displacement of (otter board, beam) trawl fisheries will be limited.

According to the WER report (WER, 2017, in print) the future value of fishing areas will decline and closure of these specific areas may result in smaller economic losses, when fishers move their effort to different locations. It is assumed that fishers move their effort to other locations in case of area closures. The effects of moving effort to another location (displacement) on catch and revenue are less well understood and are not necessarily negative. If effects are small at the scale of the fleet, this does not imply that individual fishers will not be affected substantially by a closure of a specific area at sea. The effects of closing a specific area are generally thought to have less effect fleet wide than on specific individuals or fishing companies.

Because not all of the SCI is closed, some displacement is likely to occur to areas within the SCI that are not closed. Such a displacement within the SCI could lead to deterioration of those areas left open and thus could jeopardize reaching the conservation objectives of the site which are designed to contribute significantly to the favourable conservation status. However, because the closed areas will benefit from the prohibition of certain gears and given the knowledge that 1st and 2nd trawl pass (Schröder et al., 2008) are the most damaging, such potential further deterioration is extremely difficult to assess. In any case, such developments are dependent on the fishing intensity and distribution before the closure, the added fishing activity caused by displacement and external factors (such as fish distribution, TAC/quota, fuel prices, other spatial claims).

Therefore, as a part of the overall monitoring programme (see paragraph 8.4), the changes in effort distribution within the SCI and any possible effects will be monitored.⁷ The monitoring of activity in each site could assist in any future considerations relating to displacement and could be used to indicate any changes in fishing trends and activity.⁸

8.3 Control and Enforcement

The proposed control, enforcement and compliance regime for the Dogger Bank SCIs consist of a combination of surface and aerial surveillance, establishment of an alert zone outside of the Dogger Bank SCI management areas, and remote monitoring of vessel position.

Key provisions, in accordance with Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with

⁷ See also para. 11 'Evaluation of possible displacement of fishing effort and impact on new areas' of UK document 20160109 IDRB NR JR V0.8. doc ; <https://my.huddle.net/workspace/36400569/files/#/folder/42962172/list>

⁸ A similar approach is used by e.g. the United Kingdom in its proposals for fisheries restrictions in Natura 2000 sites; see e.g. **Joint Recommendation regarding the protection of Subtidal coarse sediment and Subtidal sand within the North East of Farnes Deep Marine Conservation Zone, 2016.**

the rules of common fisheries policy (OJ L 343, 22.12.2009, p. 1), to be included in the delegated act to facilitate control enforcement and compliance are:

- Fishing activities of all fishing vessels in the management zones and a 4nm wide alert zone around the management zones shall be controlled by the fisheries monitoring authorities of the coastal Member State by using their system to detect and to record the vessels' entry into, transit through and exit from the fishing restricted areas.
- Fishing vessels carrying on board any prohibited gear types and travelling under six knots within the alert zone and management zone must use their vessel monitoring system for reporting fishing vessel identification, geographical position, date, time, course and speed. These data shall be transmitted every 30 minutes.
- The vessel will be under the obligation to report to the Fisheries Monitoring Centre of its flag entry and exit of alert and management zone.
- Fishing vessels may transit alert zone and management zone with prohibited gears on board provided that
 - any prohibited gear on board be lashed and stowed during the transit; and
 - the speed during transit is not less than six knots except in case of force majeure or adverse conditions. In such cases, the master shall without delay inform the fisheries monitoring centre of the flag Member State which shall then inform the competent authorities of the coastal Member State.
- The high frequency data can also be transmitted via GPRS/GSM. When GPRS/GSM signal is not available data shall be safely stored and forwarded to the competent authority on its request.
- A fishing vessel travelling at six knots or less that carries a prohibited gear entering the Dogger Bank alert zone area without such a system or not transmitting or storing the data is in breach of the regulations, except in the case of force majeure or adverse conditions.
- On the level of the Scheveningen Group guidelines for a common approach are in development. This common approach, when ready, will be taken into account in the implementation of the proposal.

8.4 Monitoring

An effective monitoring and assessment of the status of the managed and protected features will be achieved with a co-ordinated international programme, complemented by national programmes where appropriate.

The purpose of this programme is to monitor and assess the maintenance and/or recovery of the features within the site (as specified in the EC guidance) - or in other words: to assess the state of the SCI in order to provide evidence on achieving conservation objectives as outlined in the chapter 7.2 - and to assess the effects of the proposed fishing regulations on the habitat type 1110.

To develop the coordinated programme, a joint expert group for Monitoring and Research has been established between Germany, the Netherlands and United Kingdom, which will develop a minimum set of principles and criteria based on the existing / planned national programmes, including selection of indicators, sampling methodology, techniques and locations.

Delivery of the coordinated programme will be based on a proportionate cost effective approach. Monitoring will be consistent with existing monitoring requirements in the area

to report under the Birds and Habitats Directives, as well as the Marine Strategy Framework Directive.

All Member States are free to undertake additional sampling, assessment and research as their individual resources allow, and are encouraged to use the joint expert group as a forum to co-ordinate this work with the international programme.

Different tasks within the coordinated programme may be allocated by agreement to individual Member States to complete for the whole Dogger Bank SCIs.

In the following, the status and approach of the planned monitoring on the Dogger Bank of the three participated MS is described.

After an initial period of 6 years a review of the measures will inform decision making on whether to change or retain the proposed regime and how this should enter into effect. The initiative for this review lies with the initiating Member States

Monitoring in the UK part of the Dogger Bank

There is currently no long term UK monitoring plan in place for Dogger Bank SCI. The UK is developing options for Governments on a UK wide benthic habitat monitoring programme. The options will include proposals for monitoring benthic habitats within MPAs and in the wider environment.

The UK conducted a comprehensive benthic habitat monitoring survey to Dogger Bank SCI in 2014. The data may be used as a first data point in a long term monitoring time series and may also be used to provide information on the condition of habitats before the implementation of fisheries management measures.

The UK participated in an international survey in July 2016 with their German and Dutch colleagues to assess the fish communities across the UK, German and Dutch parts of Dogger Bank SCI before the implementation of fisheries management measures.

Monitoring in the Dutch part of the Dogger Bank

In the Netherlands all marine monitoring is programmed in the Marine Strategy for the Dutch part of the North Sea, part 2, the MSFD-monitoring programme. Only the Dutch-language version can be found online at this time. This programme follows the structure of the MSFD on the basis of the 11 descriptors. Per descriptor a description is given of: the environmental targets, the associated indicators, the research needs per indicator, the research strategy, the functional measurement needs, the monitoring strategy and the measurement plan.

Based on the measurement data, the Monitoring Programme provides insight into:

1. the status of the indicators, thereby indicating the extent to which an environmental target is achieved (MSFD, Art. 10), in order to facilitate the ongoing assessment and periodic updating of the environmental targets (MSFD, Art. 5)
2. the effectiveness of the programme of measures to be implemented under the MSFD.

The “Informatiehuis Marien” is the supporting body which plays a central role in implementing the MSFD monitoring cycle, particularly in monitoring quality, transparency, availability and cost efficiency.

To reduce costs and improve consistency, the MSFD-monitoring programme is aligned as much as possible with the existing monitoring programmes for the BHD and WFD. International collaboration is pursued in all steps of implementing the monitoring cycle. OSPAR plays an important role in achieving regional cooperation, be it on common indicators, or joint monitoring.

In 2015 a baseline measurement campaign was done for benthos, focusing on the MPA's in the Netherlands, also on the Dogger Bank. The baseline campaign and subsequent monitoring focuses on the typical species (in accordance with the Habitats Directive) and on a set of species indicative for the structure and function of the habitats, species that are sensitive to disturbance by human activities and species indicative for recovery. The data will be used for the update of the Initial Assessment in 2018, and also the reporting for the Habitats Directive in 2019, and the evaluation of management plans for the different MPA's. The measurement campaigns will be repeated every three years, to be able to evaluate the status and effectiveness of measures.

Also, the Netherlands participated in the international survey in July 2016 mentioned by the UK, together with the German colleagues to assess the fish communities across the UK, German and Dutch parts of Dogger Bank SCI before the implementation of fisheries management measures.

Monitoring in the German part of the Dogger Bank

In accordance with the above mentioned requirements Germany has already established a national monitoring programme which has been outlined by the BfN/vTI working group "AG Nord- und Ostsee" (see Sell et al. 2011) and elaborated by a consultant (BioConsult 2013). In the so-called "Before-After-Control-Impact (BACI) approach" the status of an area closed for mobile bottom-contacting gear will be compared with a non-managed area which is further open for fishery with mobile bottom-contacting gear. The aim of the monitoring is to assess, whether the closure for mobile bottom contacting fishing gears in the closed area will affect the conservation status of the habitat type H1110 and its typical species compared to the non-managed area. Based on this approach, the monitoring includes following components:

Timeframe of surveys

- Two representative parts (the defined managed and non-managed area) of the Dogger Bank SCI with similar size, ecological properties and fishing activities "before" the planned management measures will be compared. Therefore, a "pilot survey" in 2013 as basis for developing the survey design including occurrence of different benthic communities and suitability of control area(s) had been performed. The "before management" surveys have been conducted in 2014, 2015 2016 and 2017. The "after management" surveys will be carried out for at least 6 years (if necessary for significant results additional 3-6 years) with yearly reporting. Sampling is conducted once a year in august coinciding with the monitoring period of Thünen Institute for fish.

Sampling

- Number of stations will be large enough to be statistically powerful and abled to detect differences between the benthic communities and the various past and present fishing activities in the closure and the control area. 50 stations with 3 replicates each are sampled each year with same number of stations in both areas (25 each). The monitoring is performed using grid sampling. Each station is

sampled using a van Veen-grab (0.1 m²) with 3 replicates, 1m-beam trawl and video-sledge. Additional Side Scan Sonar (SSS) will be used to assess the fishery impact. Sediment composition and organic content (at each station) as well as hydrographic parameters in the water column are measured.

Analyses

All macrozoobenthic species (endofauna as well as epifauna) are monitored (parameter: species composition, species abundance and species biomass). Focus will be on species which occurred frequently on the Dogger Bank in former times but now being almost absent. Age and size distribution of selected species will be measured (to be selected according to sensitivity and conservation objectives). To analyze community structures and functioning of the benthic communities and single (indicator) species univariate as well as multivariate statistical methods are used. Together with the VMS and AIS data, the use of Side Scan Sonar (SSS) and video images should allow to control the compliance with the fishery measure in the closed area and to give insights about actual differences in fishing intensities between the closed and the control area. (DK and ED comment: what criteria/metrics will be used to judge significant impact of seines?)

8.5 Analysing the impact of seines

a) Monitoring the impact of seines by comparing the effects of different management strategies in the Natura 2000-sites of the Netherlands, Germany and the UK

As a part of the additional sampling, assessment and research mentioned in 8.4 Germany will develop its monitoring program for comparing monitoring results of the German management zone with the results of the monitoring in the managed areas of the other countries. Details will be elaborated in close cooperation with the Netherlands and the UK.

b) Study of the impact of seines in a within the German Natura 2000-site.

Several authors characterized demersal seines (i.e. Danish, Scottish, pair seines) as having relatively low impact on the seafloor and benthic species (Tulp et al. 2005, Suuronen et al. 2012; Polet et al. 2010, Deerenberg et al. 2010). Unfortunately, the above mentioned studies have a number of shortcomings, e.g. they did not consider the impact of different components of bottom-contacting fishing gears on the habitat type sandbanks, they did not differ between different types of demersal seines and they did not distinguish between the impact on different layers of the sediment (e.g. between the surface or the subsurface of benthic habitats).

More recent and in depth results of the EU project BENTHIS (Benthic Ecosystem Fisheries Impact Study) by Rijnsdorp et al. (2013) showed that the most severe impact of seine fishery is resulting from the impact of seine ropes, when they are pulled together in the first phase of fishing operation. In a ranking of the impacts Danish seines are assumed to be less impacting than otter trawl fisheries since the groundgear is lighter and there are no heavy trawl doors. The impacts of Scottish seines can be characterized as something between bottom trawling and Danish seining. Due to the much larger area swept, the impact of pair seining is assumed to be the largest of all seine types (Eigaard et al. 2015).

In contrast to the relatively small impact on the subsurface level demersal seines are one of the most impacting mobile bottom-contacting fishing gears on the surface and its biological and structural features of the seabed (sediment penetration < 2 cm). Taking into account the above mentioned scientific results Germany regards it as very likely that the favourable conservation status of habitat 1110 and its typical species in the Natura

2000-site of the Dogger Bank cannot be achieved with on-going fishing activities with demersal seines. According to current assessments, particularly benthic epifauna e.g. helmet crab (*Eupagurus bernhardus*), little serpent star (*Ophiura albida*), brittle star (*Ophiura ophiura*), whelk (*Buccinum undatum*) and sea-potato (*Echinocardium cordatum*) would be negatively affected by the different types of demersal seines

However, due to the lack of extensive in depth scientific data the impact of demersal seines on habitat 1110 and its typical species cannot be quantified in every desirable detail.

Field surveys directly analyzing the physical impact of demersal seines on benthic habitats and the mortality rates of benthic invertebrates are still lacking.

Therefore an experimental study will be performed in addition to analysis of the basic monitoring data to analyse the effects of seines fisheries on the habitat type 1110 sandbanks.

To this aim it is planned to conduct seine fisheries with a defined effort in a part of the German management area ("Seine Impact Research Area"), after the Management area was closed to all bottom-contacting fisheries including seines for approx. 6 years.

Sediment structure and benthic communities will be analysed after the fishing activity and after appropriate time intervals and compared to the status within the remaining part of the German Management area.

In order to be a successful, the conditions under which the assessment is conducted must be maintained on a rigorous and verifiable basis. In this context it is necessary to ensure that no (non-permitted, uncontrolled, unreported) fishing activities take place in the seines research area;

The management area and the seines impact research area (SIRA) have to be of comparable ecological and bathymetric properties.

This study (and the monitoring program) will deliver the necessary information to re-evaluate the effect of seining and the need of a continued ban of seines in the area.

8.6 Regional coordination

This proposal has been developed in a process of international coordination as described in chapter 4.

9. References

14th international Senckenberg conference 'North Sea 2000';

Birkett, 1953, Birkett, L., Change in the Composition of the Bottom Fauna of the Dogger Bank Area. letters to Nature. Nature 171, 265;

Boedecker, D., Krause, J. & Nordheim, v.H. (2006). Interpretation, identification and ecological assessment of Natura 2000 habitats "sandbanks" and "reefs". In: Nordheim, v.H., Boedecker, D. & Krause, J. (Eds.) Progress in Marine Conservation in Europe. Springer, Berlin, Heidelberg: 263 p.

Burning issues of North Sea ecology: proceedings of the Senckenbergiana marit 31:125–141;

Callaway et al, 2002, Callaway, R., J. Ålsvåg, I. de Boois, J. Cotter, A. Ford, H. Hinz, S. Jennings, I. Kröncke, J. Lancaster G. Piet, P. Prince & S. Ehrich 2002. Diversity and community structure of epibenthic invertebrates and fish in the North Sea. ICES J. Mar. Sci 59: 1199-1214;

DBSG, 2011, Fisheries Measures in Off Shore Natura2000 Sites: Dogger Bank, a Joint Approach, Background Paper, DBSG, May 2011, and Annex 1 (on file);

DBSG, 2012, the DBSG presented three options (fishing sector proposal; NGO proposal; DBSG third option) to ICES ACOM for scientific advice on September 4th 2012;

Deerenberg, C., Teal, L.R., Beare, D., van der Wal, J.T. (2010) FIMPAS project – Pre-assessment of the impact of fisheries on the conservation objectives of Dutch marine protected areas. Report number C071/10. International Council for the Exploration of the Sea (ICES). 82 S.

Diesing et al, 2009, Diesing, M., Ware, S., Foster-Smith, R., Stewart, H., Long, D., Vanstaen, K., Forster, R. & Morando, A. 2009. Understanding the marine environment – seabed habitat investigations of the Dogger Bank offshore draft SAC. Joint Nature Conservation Committee, Peterborough. JNCC Report No. 429, 89 pp., 5 Appendices;

EC, 2007, Guidelines for the establishment of the Natura 2000 network in the Marine Environment. Application of the Birds and Habitats Directive (May 2007);

EC, 2008, Fisheries measures for marine Natura 2000 sites - A consistent approach to request for fisheries management measures under the Common Fisheries Policy;

EC, 2012 Common methodology for assessing the impact of fisheries on marine Natura 2000, See <http://ec.europa.eu/environment/nature/natura2000/marine/docs/Fisheries%20methodology.pdf> ;

EC, 2012, Letter of 7 July 2012 the European Commission provided guidance EC, 2012, (on file);

EC, 2012, The most recent version was adopted by Commission Decision of 16 November 2012 (COM(2012)8222);

EC, 2015, COMMISSION IMPLEMENTING DECISION (EU) 2015/72 of 3 December 2014, adopting an eighth update of the list of sites of Community importance for the Atlantic biogeographical region, (notified under document C(2014) 9091); ECJ, 2005, ECJ case C-6/04, 20 Oct 2005;

Eigaard, O. R., Bastardie, F., Breen, M., Dinesen, G. E., Hintzen, N. T., Laffargue, P., Mortensen, L. O., Nielsen, J. R., Nilsson, H. C., O'Neill, F. G., Polet, H., Reid, D. G., Sala, A., Skold, M., Smith, C., Sorensen, T. K., Tully, O., Zengin, M., and Rijnsdorp, A. D. (2015) Estimating seabed pressure from demersal trawls, seines, and dredges based on gear design and dimensions. – ICES Journal of Marine Science, doi: 10.1093/icesjms/fsv099;

EU, 1992, Habitat Directive, Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.7.1992, p. 7–50;

EU, 2009, Birds Directive, Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, OJ L 20, 26.1.2010, p. 7–25;

EU, 2011, of Gear Codes in Annex XI in EU Regulation 404/2011, Commission Implementing Regulation (EU) No 404/2011 of 8 April 2011 laying down detailed rules for the implementation of Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the Common Fisheries Policy; OJ L 112, 30.4.2011, p. 1–153;

EU, 2013, Basic Regulation 2013, Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC, OJ L 354, 28.12.2013, p. 22–61;

Fishing industry, 2012, On 12 October 2012, the fishing sector presented its updated position paper (on file);

Fock, H.O. (2014) Patterns of extirpation. I. Changes in habitat use by thornback rays *Raja clavata* in the German Bight for 1902–1908, 1930–1932, and 1991–2009. *ENDANGERED SPECIES RESEARCH* 25: 197–207.

Frauenheim et al, 1989, Frauenheim, K., V. Neumann, H. Thiel & M. Türkay, 1989. The distribution of the larger epifauna during summer and winter in the North Sea and its suitability for environmental monitoring. *Senckenbergiana marit.*, 20 (3/4) 101–118;

Germany, 2011, Proposed measures for fisheries management in the Natura 2000 sites in the German EEZ of the North Sea and Baltic Sea, 20 April 2011; https://www.bfn.de/fileadmin/MDB/documents/themen/meeresundkuestenschutz/downloads/Berichte-und-Positionspapiere/Bericht_AG-Nord-und-Ostsee-2011.pdf ;

ICES, 2011, Dublin discussion document by International Council for the Exploration of the Sea (ICES) (on file);

ICES, 2012, ACOM for scientific advice on September 4th 2012 International DBSG, 2012 (on file);

Kaiser, M.J., Clarke K.R., Hinz, H., Austen, M.C., Somerfield, P.J. und Karakassis I. (2006) Modification of marine habitats by trawling activities: prognosis and solutions: Fish and Fisheries 3: 114-136;

Klein, A. (2006) Identification of submarine banks in the North Sea and the Baltic Sea with the aid TIN modelling. In: Nordheim, v.H., Boedecker, D. & Krause, J. (Eds.) Progress in Marine Conservation in Europe. Springer, Berlin, Heidelberg: 263 p.
Krause, J., Boedecker, D., Backhausen, I., Heinicke, K., Groß, A. & Nordheim, v.H. (2006). Rational behind site selection for the Natura 2000 network in the German EEZ. In: Nordheim, v.H., Boedecker, D. & Krause, J. (Eds.) Progress in Marine Conservation in Europe. Springer, Berlin, Heidelberg: 263 p.

Kröncke and Knust, 1995,; Kröncke, I. & R. Knust, 1995. The Dogger Bank: a special ecological region in the central North Sea. Helgoländer Meeresunters. 49: 335-353;

Kröncke, I. (2011) Changes in Dogger Bank macrofauna communities in the 20th century caused by fishing and climate. Estuarine, Coastal and Shelf Science 94 (3): 234-245;

LEI, 2012, Fishing activities on the Dogger Bank 2006-2011, Bartelings, H.; Hamon, K.G.; Oostenbrugge, J.A.E. van ((plus additional memorandum)
<http://www.wageningenur.nl/nl/Publicatie-details.htm?publicationId=publication-way-343339363838> ;

Lindeboom et al, 2008, Gebiedsbescherming Noordzee: discussienota over habitattypen, instandhoudingdoelen en beheermaatregelen, Lindeboom, H.J. (2008), Texel : IMARES, (Rapport / IMARES C035/08) - 18 p.;

MASPNOSE, Maritime Spatial Planning in the North Sea, a study carried out by six knowledge institutes (Centre for Marine Policy, Deltares, vTI, University of Ghent and DTU-Aqua) funded by EU DG Mare (on file); <https://www.wur.nl/en/show/Maritime-Spatial-Planning-in-the-North-Sea-MASPNOSE.htm>

N2K group 2016 Overview of sensitivity, interactions and impact of commercial fishing methodes on marine habitats and species protected under the EU habitats directive" requested by the European Commission

<http://ec.europa.eu/environment/nature/natura2000/marine/docs/Fisheries%20interactions.pdf>).

NSAC, 2012, a position paper was presented with 2 separate annexes: one fishing sector proposal and one NGO proposal, see also Annex 6, (on file);

Nielsen, R., Bastardie, F., Mortensen, L.B., Eigaard, O. et al. (2014) BENTHIS (Benthic Ecosystem Fisheries Impact Study) Deliverable 7.6. Report on assessing trawling impact in regional seas. 183 p.;

Olsen, 1883, Olsen, O.T., The piscatorial atlas of the North Sea, English and St. George's Channels. Taylor and Francis Publ., London;

Polet, H., Depestele, J., (2010) Impact Assessment of the Effects of a Selected Range of Fishing Gears in the North Sea. ILVO Technisch Visserijonderzoek, Ostende, Belgium, 110 pp.;

Rachor, E. (2006), Search for the particularly valuable benthic areas within the German North Sea EEZ. In: Nordheim, v.H., Boedecker, D. & Krause, J. (Eds.) Progress in Marine Conservation in Europe. Springer, Berlin, Heidelberg: 263 p.;

Rijnsdorp, A. (2013) BENTHIS (Benthic Ecosystem Fisheries Impact Study) Deliverable 1.1b. Benthic impact of the perspective of the fisheries. In: Report on benthic ecosystem processes and the impact of fishing gear: p.1-35;

Rijnsdorp, A. (2015) Flyshoot visserij in relatie met de instelling van bodem beschermende maatregelen voor het Friese Front en de Centrale Oestergronden. IJmuiden : IMARES, 2015 (Rapport / IMARES Wageningen UR C065/15) p. 23;

Schröder, A., Gutow, L. & Gusky, M. (2008). Auswirkungen von Grundschleppnetzfischereien sowie von Sand- und Kiesabbauvorhaben auf die Meeresbodenstruktur und das Benthos in den Schutzgebieten der deutschen AWZ der Nordsee (MAR 36032/15): Abschlussbericht für das Bundesamt für Naturschutz (BfN): 121 p. Bremerhaven: Alfred-Wegener-Institut für Polar- und Meeresforschung;

Sainsbury, J.C. (1996) Commercial fishing methods, an Introduction to vessels and gears. Fishing News Books, Blackwell Science, Oxford. 359 S.;

Sell, A.F., Pusch, C., von Dorrien, C., Krause, J., Schulze, T., Carstensen, D. (2011). Maßnahmenvorschläge für das Fischereimanagement in Natura 2000-Gebieten der deutschen AWZ der Nord- und Ostsee. 299 p.;

Sonnewald and Türkay, 2011, Sonnewald, M. and M. Türkay, The megaepifauna of the Dogger Bank (North Sea): species composition and faunal characteristics 1991–2008. Helgoland Marine Research;

Suuronen, P., Chopin, F., Glass, C., Løkkeborg, S., Matsushita, Y., Queirolo, D., and Rihan, D. (2012) Low impact and fuel efficient fishing—looking beyond the horizon. Fisheries Research, 119–120: 135–146;

Tulp, I., Piet, G., Quirijns, F., Rijnsdorp, A., Lindeboom, H., 2005. A method to quantify fisheries induced mortality of benthos and fish. RIVO-Netherlands Institute for Fisheries Research, Report No. C087/05;

Ursin, 1952, Ursin E. 1952. Change in the composition of the bottom fauna of the Dogger Bank area. letters to Nature. Nature 170, 324;

Valdemarsen, J.W., Jørgensen, T., and Enga°s, A. 2007. Options to mitigate bottom habitat impact of dragged gears. FAO Fisheries Technical Paper, 506. FAO, Rome, 29 pp.;

van Moorsel, 2011, Moorsel G., Species and habitats of the international Dogger Bank. (74pp, mimeo). ecosub PO Box 126 3940 ac Doorn Netherlands;

WER, 2017, in print, Overview of the international fishing activities on the Dogger Bank, Katell G. Hamon, Niels T. Hintzen, Hans J. A. E. van Oostenbrugge, Wageningen Economic Research, commissioned and financed by the Dutch Ministry of Economic Affairs , project number BO-20-010-151;

Wieking G, Kröncke I (2001): Decadal changes in macrofaunal communities on the Dogger Bank caused by large-scale climate variability. In: Kröncke I, Türkay M, Sündermann J (eds);

Wieking, G., Kröncke, I. (2003). Macrofauna communities of the Dogger Bank (central North Sea) in the late 1990s: spatial distribution, species composition and trophic structure. Helgol. Mar. Res. 57: 34–46;

Witbaard and Bergman, 2003, Witbaard, R. & M.J.N. Bergman, The distribution and population structure of the bivalve *Arctica islandica* L. in the North Sea: what possible factors are involved? J. Sea Res. 50: 11– 25;

WoRMS, World Register of Marine Species <http://www.MarineSpecies.org>
Zühlke 2001;

Annexes

Annex 1: Coordinates

German boundaries / GIS contour

Map:

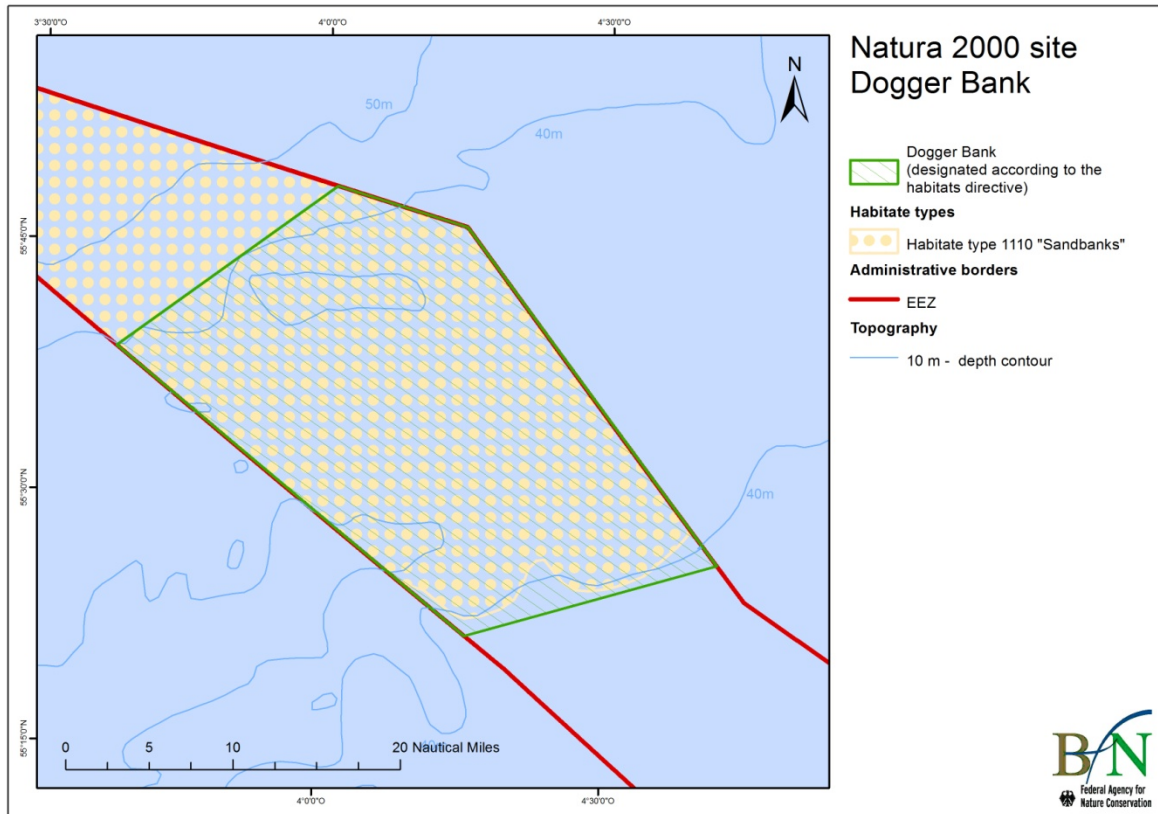


Fig. 3.3.1 German Natura 2000-site Dogger Bank (Sell et al, 2011), Area 1698,95 km²

Longitude and Latitude coordinates:

Latitude	Longitude	Latitude	Longitude
55,64645	3,63583	55 38 47 N	3 38 08 E
55,36630	4,26015	55 21 58 N	4 15 36 E
55,64645	3,63583	55 38 47 N	3 38 08 E
55,81030	4,01953	55 48 37 N	4 01 10 E
55,77272	4,25000	55 46 21 N	4 15 00 E
55,44004	4,70153	55 26 24 N	4 42 05 E
55,36630	4,26015	55 21 58 N	4 15 36 E

Scientific rationale for the proposed boundaries can be found in: Boedeker et al. (2006), Krause et al. (2006); Klein (2006)

Netherlands boundaries / GIS contour



Longitude and Latitude coordinates:

Latitude	Longitude	Latitude	Longitude
55,48233	3,25233	55 28 56 N	3 15 08 E
55,38329	3,2120	55 22 59 N	3 12 40 E
55,08186	3,08330	55 04 54 N	3 04 59 E
54,77169	2,95706	54 46 18 N	2 57 25 E
54,62167	2,89833	54 37 18 N	2 53 53 E
54,38000	2,76333	54 22 48 N	2 45 47 E
55,36630	4,26015	55 21 58 N	4 15 36 E
55,64645	3,63583	55 38 47 N	3 38 08 E

Scientific rationale for the proposed boundaries can be found in: Lindeboom et al. (2005) and Bos et al. (2008). In the meantime the UK boundary in its SCI has shifted slightly Northward. This means that the North-Western boundary of the Dutch SAC will be corrected in the future (refer to Chapter 3.3.5 below).

UK boundaries / GIS contour

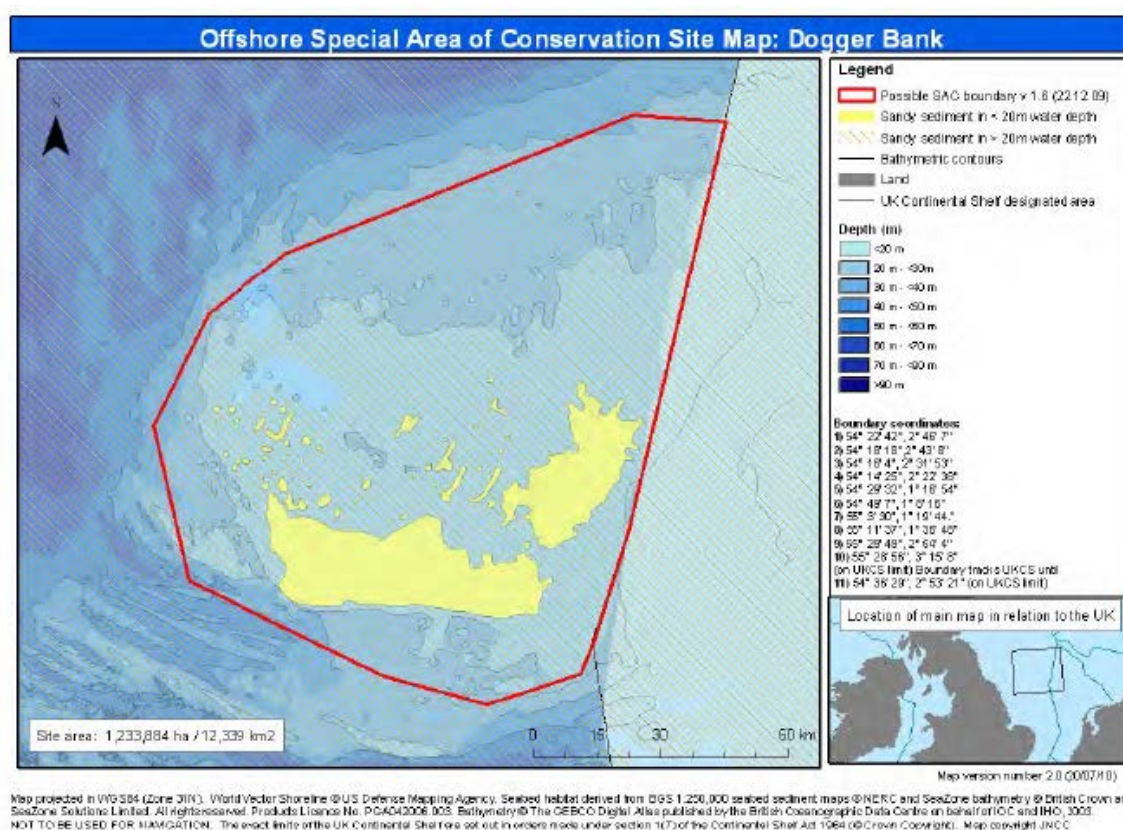


Figure 3.3.2 UK Natura 2000-site Dogger Bank (Diesing et al, 2009)

Longitude and Latitude coordinates:

Latitude	Longitude	Latitude	Longitude
55,48233	3,25233	55 28 56 N	3 15 08 E
55,38329	3,21120	55 22 59 N	3 12 40 E
55,08186	3,08330	55 04 54 N	3 04 59 E
54,77169	2,95706	54 46 18 N	2 57 25 E
54,62167	2,89833	54 37 18 N	2 53 53 E
54,38000	2,76333	54 22 48 N	2 45 47 E
54,30519	2,71896	54 18 18 N	2 43 08 E
54,26798	2,53146	54 16 04 N	2 31 53 E
54,24041	2,37750	54 14 25 N	2 22 38 E
54,29651	2,00296	54 17 47 N	2 00 10 E
54,49243	1,28175	54 29 32 N	1 16 54 E
54,81873	1,13793	54 49 07 N	1 08 16 E
55,05841	1,32892	55 03 30 N	1 19 44 E
55,19386	1,61355	55 11 37 N	1 36 48 E
55,49715	2,90409	55 29 49 N	2 54 14 E

Northern boundary correction for the Netherlands



Figure 3.3.5: Northern boundary correction in the Netherlands will be submitted to the European Commission, since the EC has now established the new List of Community Importance, including a UK SCI in december 2012.

Total GIS contour

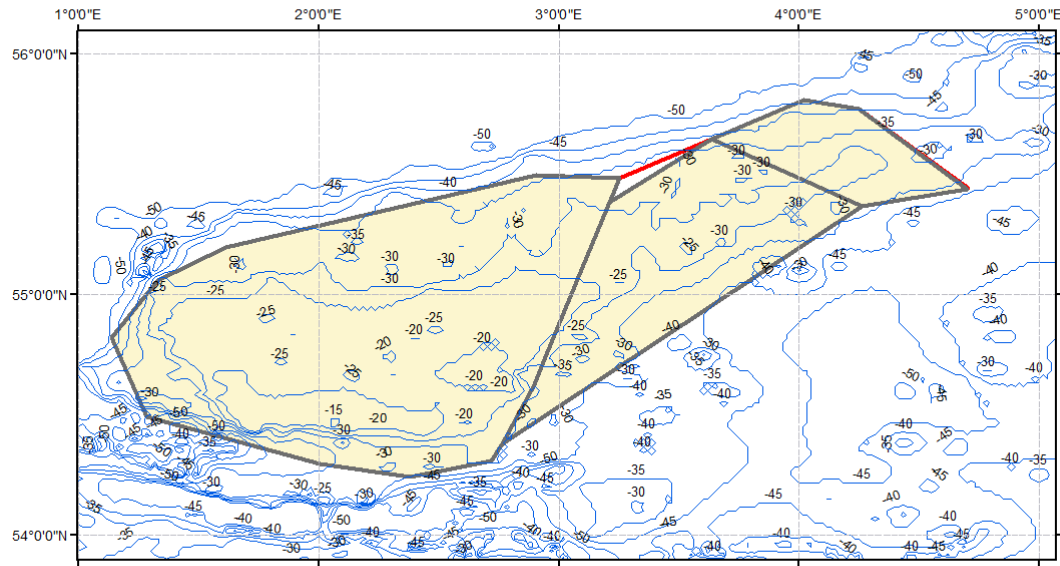


Figure 3.3.3: Dogger Bank SAC map with depth contours (ICES)

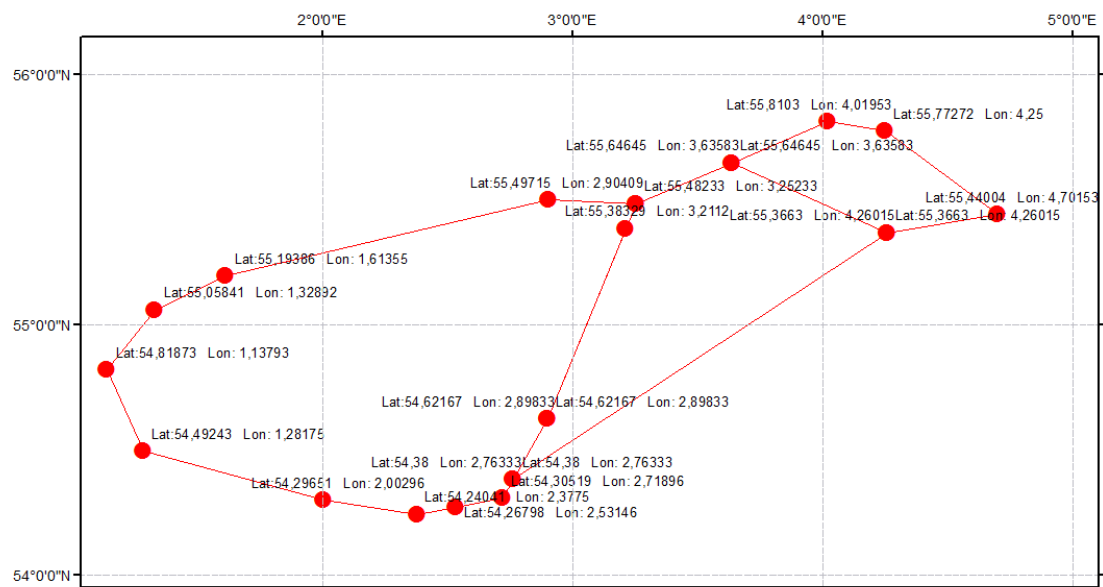


Figure 3.3.4: Dogger Bank SAC boundaries with coordinates (ICES)

Longitude and Latitude coordinates:

Latitude	Longitude	Latitude	Longitude
55,48233	3,25233	55 28 56 N	3 15 08 E
55,38329	3,21120	55 22 59 N	3 12 40 E
54,62167	2,89833	54 37 18 N	2 53 53 E
54,38000	2,76333	54 22 48 N	2 45 47 E
54,30519	2,71896	54 18 18 N	2 43 08 E
54,26798	2,53146	54 16 04 N	2 31 53 E
54,24041	2,37750	54 14 25 N	2 22 38 E
54,29651	2,00296	54 17 47 N	2 00 10 E
54,49243	1,28175	54 29 32 N	1 16 54 E
54,81873	1,13793	54 49 07 N	1 08 16 E
55,05841	1,32892	55 03 30 N	1 19 44 E
55,19386	1,61355	55 11 37 N	1 36 48 E
55,49715	2,90409	55 29 49 N	2 54 14 E
55,48233	3,25233	55 28 56 N	3 15 08 E
55,64645	3,63583	55 38 47 N	3 38 08 E
55,36630	4,26015	55 21 58 N	4 15 36 E
54,38000	2,76333	54 22 48 N	2 45 47 E
54,62167	2,89833	54 37 18 N	2 53 53 E
55,36630	4,26015	55 21 58 N	4 15 36 E
55,64645	3,63583	55 38 47 N	3 38 08 E
55,81030	4,01953	55 48 37 N	4 01 10 E
55,77272	4,25000	55 46 21 N	4 15 00 E
55,44004	4,70153	55 26 24 N	4 42 05 E

Management zones

A list of the coordinates of the management zones is contained in the attached zip file containing the shapefiles of the Dogger Bank and its management zones. If necessary this list will be integrated in various tables in this document.

Annex 2

ICES Advice 2012

ICES Advice presented to DBSG on 23 November 2012 (ICES, 2012)

ICES Advice 2012, Book 6 1

6.3.3.9 Special request, Advice November 2012 ECOREGION North Sea

SUBJECT Proposed fisheries measures for the Dogger Bank Special Area of Conservation

Advice summary⁹

ICES considers that the diversity, and ambition, of the national conservation objectives makes development of a single management approach complicated and difficult. Reaching the stated conservation objectives is complicated in that there may be changes, both anthropogenic and natural, already imposed on the area that are irreversible. The response of the five different benthic communities to changes in fishing pressures will differ. Achieving the conservation objectives for some of the very long-lived species will, if possible, take decades. Recovery of benthic species will depend on the availability of source populations, some of which may only occur outside the closed areas. Recruitment in the entire North Sea will be affected by influences such as changes in fish community composition and climate change effects. The establishment of a monitoring programme and selection of indicators will require further work to ensure that the selected indicators are responsive to changes in pressures from mobile bottom-contacting fishing gears and that they can measure trajectories towards the stated conservation objectives. It will be necessary to establish the spatial and temporal variance and patchiness of the characteristics being measured by the indicators. ICES advises that this work be carried out in a coordinated manner across the entire Dogger Bank, drawing on, and having reference to, developments in monitoring under the Marine Strategy Framework Directive. A comparison of incremental improvement after a full six-year monitoring and assessment period could improve understanding of the implication of scale and provide better scientific guidance for the appropriate location and size of areas needed to achieve the conservation objectives.

ICES considers that the effect of seine fishing gear on the Dogger Bank sandbank habitat may not significantly impede the achievement of the conservation objectives. It is unlikely that, under the current proposal, displacement will be a significant problem but there may be increased fishing efforts along the open/closed boundaries. A mechanism to allow experimental trials with low impact gear in part of the closed area, verifying results that indicate no likely impacts on the conservation objectives, should be established. Short-term access to the closed areas at specific times may be possible without compromising the conservation objectives, but should first be thoroughly evaluated.

Request

Germany, the Netherlands, and the UK have sent the following request to ICES.

⁹ This ICES advice is in response to specific questions on fisheries measures proposed by relevant authorities of Member States. Unless specifically stated, it is not an opinion from ICES on the designation of Natura 2000 sites or the Conservation Objectives set by the Member States for those sites. ICES facilitated input and advice in the Dogger Bank process by identifying an expert who advised the process. This expert was not involved in any of the ICES review, drafting or advice approving processes. An ACOM Vice-Chair was assigned the task of following and observing the process. Expert reviewers and advice drafters were selected from independent countries as per ACOM procedures. The ICES advice drafting process was managed by the ACOM Vice-Chair; the scientific advice is the work of the independent reviewers and advice drafters.

ICES is requested to advise on the degree to which the implementation of the proposed fisheries measure¹⁰ in the Presentation Paper will contribute to the achievement of the established conservation objectives, taking into account the wish of the Dogger Bank states to consider the Dogger Bank as one ecosystem.

The three Member States have taken note of the ICES advice from 2008 on protection of the German Natura 2000 site on the Dogger Bank (EMPAS Advice). As the advice requested in this procedure affects the German sector, ICES is asked to provide a rationale for any deviation from the 2008 advice.

In preparing its response ICES is required to advise on the changes that can be attributed solely or primarily to the implementation of the proposed fisheries measures. Specifically, if the proposed fisheries measures described in the three proposals (closed areas to certain gear types) are implemented, ICES should describe:

- i) The likely progress over a six year period towards achieving the conservation objectives that will occur as a result of implementation of the proposed measures in the closed areas and in the habitat type 1110 in the Dogger Bank SAC;*
- ii) The likely long term progress towards achieving the conservation objectives that will occur beyond the six year period as a result of implementation of the proposed measures in these areas;*
- iii) How progress towards achieving the conservation objectives could be measured and when such changes can be expected to be measurable;*
- iv) The key aspects that should be contained in an appropriate, cost effective, joint monitoring programme to measure progress towards achieving the conservation objectives;*
- v) The likely impacts of seines including fly-shooting on attaining the conservation objectives for the Dogger Bank habitat type 1110 and an assessment of the likely additional benefits for the achievements of the conservation objectives from the prohibition of these gears in the managed /closed zones and – if available data are not sufficient for a concluding analysis – identification of missing data and how to obtain such data;*
- vi) The effort displacement within the SAC attributable to the proposed measures and, the expected effects of such displacement on the achievement of the conservation objectives for habitat type 1110 in the SAC area, together with any possible measures to mitigate any effects. When considering effort displacement other relevant factors causing changes in fishing patterns in the Dogger Bank (e.g. TAC/quotas, fuel cost, other spatial claims etc.) should be taken into account;*
- vii) Any shortcomings in the proposed measures and how these might be overcome;*
- viii) Summarise under points i) to iii) in a comparative analysis the difference to the improvements to the conservation status between the implementation of the proposed measures of the DBSG, the NGO and the fishing sector proposals. The two latter proposals are described in the NSRAC Position Paper of April 2012. In this comparative analysis ICES should comment on the relationship between the size and location of the closed areas and the progress towards achieving the conservation objectives;*
- ix) Any other information on fishing impacts ICES considers relevant to the achievement of conservation objectives in the SAC area for habitat type 1110.*

ICES advice

¹⁰ The proposal from Germany, the Netherlands, and the UK is shown in Annex 1.

Dogger Bank conservation objectives

In the documentation submitted to ICES with the request it is stated that

The purpose of fisheries measures is to reduce the pressure on the benthic habitat from bottom contacting fishing gear with a view to contributing to the achievement of the conservation objectives. The conservation status is currently assessed as unfavourable.

In order to put the request and ICES response into context, additional information on the conservation objectives is available in Annex 2.

ICES considers that the diversity of the national conservation objectives makes development of a single management approach complicated and difficult. The different objectives (improve/restore/recover) have different outcomes and all depend on agreement on what constitutes a favourable status for habitat type 1110 with respect to stated indicators that are yet to be defined (as noted by the UK). The “improve” objective further requires knowledge of the recovery trajectories of selected indicators, which will not be linear, so that status can be evaluated along the path towards the objective state. This assumes that full recovery is possible even if some of the changes (due to both anthropogenic and natural factors) already imposed on the area may be irreversible.

More specific restoration objectives commonly agreed to by UK, Germany, and the Netherlands are listed as:

- 1) For abiotic and biotic factors in the area to achieve a state which enables benthic communities to reach and maintain a good state of preservation.
- 2) Benthic communities should be shaped by characteristic, in particular long-lived, species. Of these species individuals should be present of all typically occurring species and in natural proportions of size and age.
- 3) Characteristic fish species should be present in characteristic population structures and of all typical species in natural proportions of size and age.

ICES notes that these conservation and restoration objectives are very demanding. However, if their achievement is couched in terms of natural recovery following removal of fishing pressure then any change in status could be considered as achieving some degree of restoration. ICES also cautions that if the indicators that were used to assess the original determination of unfavourable status were not based on the restoration objectives noted above, then it will be important to re-evaluate current status against an agreed set of indicators so that change can be effectively tracked.

Response to Question i) The likely progress over a six year period...

Given the caveats noted above for framing change in status within an envelope of baseline and target conditions, in responding to this question ICES has assumed that recovery is possible and that any changes that have occurred are not irreversible. Further, ICES can only respond to this question in abstract terms given that full information on the size/age composition for most of the "typical" species (excepting lesser sandeel and plaice) is unknown.

ICES considers it likely that changes in status of the typical species in the five different benthic communities will differ due to differences in species composition, population dynamics, depth, and sensitivity to fishing impacts.

Within the list of typical species for the area, lifespans range from several years or less (e.g., *Spisula subtruncata*, *Acrocnida brachiata*, *Lanice conchilega*) to centuries (*Arctic islandica*), although there are few species with very long lifespans. Given that the current population structure of the longest-lived species, *Arctic islandica*, appears to be altered from baseline conditions with fewer large animals found on the bank than formerly, and that restoration objective 2 noted above requires this species to be present in natural proportions of sizes and ages, it is clear that the conservation objectives will not be met in a six-year time frame.

Selecting and closing areas of the Dogger Bank particularly appropriate for supporting some now uncommon or rare benthic species will result in more progress being made in six years towards restoration of healthy populations of species characteristic of the Dogger Bank. The more areas included, the more progress made, although the relationship between the amount of area closed to fishing and the six-year progress towards restoring populations of all characteristic species is not simple and linear.

For species with lifespans of less than six years, recovery is possible provided that recruitment occurs within the area. Many short-lived species are subject to fluctuations in recruitment due to environmental conditions and detecting change in their abundance will require an appropriately designed monitoring programme. This also applies to the biogenic reefs formed by aggregations of *Lanice conchilega* tubes which appear to have good recovery potential over this time frame.

ICES notes that pelagic larval duration is an important consideration, and that the source/sink dynamics for most of the typical species are unknown; consequently source populations may occur in areas outside of the proposed closed area. For some fish populations whose effective breeding populations extend well beyond the Dogger Bank no measures applied solely on the Dogger Bank will allow recovery of the historical age and size compositions of these populations, as long as fishing, even at sustainable levels, is allowed outside the Dogger Bank. In such cases, if the source populations are impacted by ongoing fishing then no or slow rates of change may occur in the proposed closed area. Furthermore, if displaced effort increases the impact on those source populations outside the closed area, then recruitment to the closed area could be further retarded.

Response to Question ii) The likely long term progress...

All of the issues raised in the response to the previous question have relevance here, given the lifespan and recruitment dynamics of the typical species. The connectivity of populations on the Dogger Bank has implications for direct colonization and recovery of impacted areas. Additionally, over longer time periods (>6 years), changes in fish community composition occurring at large spatial scales throughout the North Sea could influence progress towards achieving the stated conservation objectives in the Dogger Bank. This is because many fish species prey on benthic species at some point in their

life cycle and changes to the predation pressure may influence recovery trajectories of the benthos. Environmental changes such as those resulting from climate are also expected to be expressed over these longer time periods and will affect conservation objectives in unknown ways (new species moving in, changes in water chemistry and pelagic production, etc.). Environmental change will influence rates of changes as well as changes in state. In relatively high-energy environments, characteristic species and communities are all adapted to some frequency of natural disturbance. Hence, for time periods longer than six years there will continue to be an increase in the number of species that re-establish self-sustaining populations, but there will be diminishing gains over longer time periods. However, that is not cause to suspend restrictive management after six years. In general, the fisheries management measures suggested will reduce the pressure on the benthic habitats from bottom-contacting fishing gears, although the scale of this effect and consequences to the status of the habitats are not possible to predict.

Response to Question iii) *How progress could be measured and changes can be expected to be measurable*

As noted above, it is imperative that an operational framework be built around the stated conservation objectives. This will entail establishment of appropriate indicators which will allow for target setting and evaluation followed by an appropriate monitoring programme (see below). Ongoing work by ICES has outlined a prioritized list of eighteen criteria that should be considered when selecting indicators (ICES, 2012a). Evaluation of indicators against these criteria considers *inter alia* the quality of the available data, responsiveness of the indicator to the pressure of interest, and links to conceptual and/or theoretical underpinnings. Not all of these criteria are expected to be met by any one indicator and not all may be relevant to the present application. Table 6.3.3.9.1 provides an overview of a preliminary list of generic criteria for indicators along with an evaluation of their priority for any monitoring programme. Indicator redundancy, i.e. groups of metrics or indicators that co-vary significantly, providing duplicate copies of a single signal rather than reflecting different independent signals, should be avoided.

Table 6.3.3.9.1 Preliminary list of priority for criteria by which to assess the suitability of indicators (ICES, 2012a).

Number	Criterion/Characteristic	Priority
1	Methodological approach to defining the target should be consolidated	Essential
2	Existing reference conditions	Essential
3	Relevant spatial domain	Desirable
4	Environmental fluctuations and climate	Desirable
5	Related to change in specific pressures	Essential
6	Uncertainty	Desirable
7	Relevant to management objectives	Essential
8	Relevant to management measures	Essential
9	Comprehensible	Desirable
10	Established target	Desirable
11	Pragmatic	Desirable
12	Theoretically sound	Essential
13	Early warning	?
14	Target suites	Desirable
15	Compatibility	Desirable
16	State, impact, pressure, and operational targets	Essential
17	Relevance to MSFD ecosystem components	Essential
18	Cross-application	?

ICES anticipates that different indicators will be required for each or some of the five different benthic communities identified for the Dogger Bank due to differences in species composition and response to changes in pressure. Further, more than one indicator will be required for each area, given the three conservation targets. Consideration of the relative importance of the indicators in each area when assessing overall status may be required and will relate back to relative importance of the conservation objectives.

Response to Question iv) *An appropriate, cost effective, joint monitoring programme...*

It is a priority to establish a comprehensive baseline study and this should be informed by previous work on the Dogger Bank. This is a prerequisite to designing a monitoring programme to measure progress or otherwise towards the conservation objectives. Suitable control areas, outside of the closed area where normal fishing operations are conducted, should be selected for each of the five benthic communities. The spatial and temporal variance and patchiness of the species or ecological elements to be monitored needs to be understood and addressed in the design of a monitoring programme. Standard power curve analyses can be used to determine the precision needed to detect a difference of a given size (say a 25% increase in abundance of a population) with a specified (usually high) probability. To determine the sampling effort needed to achieve the necessary level of precision, it is then necessary to know how variance in the population estimate increases with sampling effort. For the overall objectives of improved environmental status for the communities on the sand banks, improvements in the more common species will contribute most to healthy functioning of ecosystem processes. Such improvements are usually best measured with a representative, spatially stratified random survey design. However, for objectives related to specifically improving the status of rarer species, particularly ones with specialized ecological requirements, targeted sampling will be more efficient. For rarer species, having accurate estimates of likelihood of encounter and total range of occurrence are properties that are possible to quantify with sufficient precision to allow evaluation of trends over time.

ICES highly recommends that a common and coordinated monitoring programme for the entire Dogger Bank should be established and used by each country. Use of established protocols for related subjects (e.g. wind farm EIA (environmental impact assessment), or oil-spill monitoring) should be considered. Standards such as EN 16260:2012 (CEN, 2012) on visual seabed surveys and ISO 16665:2005 (ISO, 2005) on sampling marine soft-bottom macrofauna could inform this process.

The monitoring requirements of the Marine Strategy Framework Directive and developments within OSPAR will also provide an opportunity for coordination. Currently, the ridged structure and focus on fish stock assessment of Data Collection Framework (DCF) surveys means that they could provide only limited data and information for the likely

monitoring requirements on the Dogger Bank. With minimal adjustments, DCF surveys could provide useful data on commercial species such as plaice, sandeel, and possibly other elements. Current developments aiming at closer cooperation between the DCF and environmental monitoring will bring efficiencies in the coming years.

It will be appropriate to target monitoring effort in areas that are judged to be controversial and/or sensitive, for example, areas where moderate to high fishing effort has occurred prior to the closure, across the interface between open and closed areas and the transition between the different benthic communities. Cooperation with the fishing industry could bring efficiencies and provide cost-effective access to the sites.

A variety of sampling and data collection methods are available, such as high-frequency echograms combined with sidescan sonar, underwater video, bait-camera systems, grab sampling and dredge sampling, and it is likely that a combination of these and other methods will be required.

Response to Question v) The likely impacts of seines including fly-shooting and the likely additional benefits from the prohibition of these gears...

Seine gear is moved while in contact with the bottom and can theoretically impact the biota and disturb the seabed. Little is known on the impacts of the various types of seine fishing gear on the benthic communities. Impacts will depend on the target species and associated substrate type, but effects on plain sand bottom are likely to be low. Given the lack of information on the impact of seining in its different forms a risk analysis such as Ecological Risk Assessment for the Effects of Fishing (ERAEF) (WGECO; ICES, 2012a) is a useful first step. This would provide an extended gear matrix to supplement the one carried out by FIMPAS. For example, comparisons with beam trawls in a relative framework, taking into account the efficiency of the fishery, the swept area, and the costs associated with gear change could be evaluated. Such a study could provide a semi-quantitative approach to evaluating the pressures on the benthic communities of different types of seine gear such as fly-shooters (Scottish seiners) and anchor seiners. However, based on current knowledge ICES considers that the effect of seine fishing gear on the Dogger Bank sandbank habitat may not significantly impede the achievement of the conservation objectives.

Response to Question vi) The effort displacement within the SAC...

The data appears to be available to quantify effort displacement magnitudes and costs, not only for areas within the Dogger Bank but anywhere in the southern North Sea, and ICES advises that these quantifications be undertaken.

The sandeel fishery is a specific localized activity primarily at the edges of the Dogger Bank. Closures are not proposed for the most important sandeel fishing areas. The proposal to close areas in the central part of the Dogger Bank will affect the less important sandeel fisheries thus having only a minor displacement effect on the sandeel fishing effort.

There is an important beam trawl fishery for flatfishes on the Dogger Bank. The proposed closure of areas where this beam trawl fisheries occurs will result in some displacement of this fishing effort.

In the current DBSG proposal there is no restriction on the use of seine fishing gear. The shallower areas proposed for closure to beam and otter trawling are important seine fishing grounds. ICES advises that if these shallower areas were to be closed to seine fishing it will result in substantial displacement of this fishing effort while achieving minimal reduction of the pressure on these areas.

Response to Question vii) Any shortcomings in the proposed measures

In the documentation supplied to ICES with the request it is stated that the fisheries management proposal for the Dogger Bank SAC shall be designed so that overall, approximately the same proportion of each benthic communities' area is protected. Given that the areas of the different communities vary widely, closing equal proportions of these areas assumes that ecological processes are scale independent. There does not seem to be scientific evidence in the supporting material for this assumption. Some minimum size may be essential for each type of benthic community, but it may not be the same for each. Furthermore, the proposal does not seem to have been developed with a focus on adaptive management relevant to both meeting conservation objectives and climate change. A comparison of incremental improvement after a full six-year monitoring and assessment could improve understanding of the implication of scale and provide better scientific guidance for the appropriate location and size of the areas needed to achieve conservation objectives.

Response to Question viii) Summarise the difference to the improvements to the conservation status between the DBSG, the NGO and the fishing sector proposals...

It is not possible to predict how, or over what time period, the Dogger Bank will respond to reduced pressures from fisheries or for that matter respond to wider environmental pressures such as climate change or acidification. In terms of size of the areas to be closed, there is no "best percent". The nature of the ecosystems, the nature of the potential threats, and the nature of the management outside the protected areas combine to make the optimum area to protect a case-specific consideration. From an ecological perspective there is no need to protect all of any benthic community type or sedentary species range; as long as the areas that are protected are large enough to sustain viable populations, the current proposal seems to achieve that. As mentioned above there are some mobile fish populations whose effective breeding populations extend well beyond the Dogger Bank and no measures applied solely to the Dogger Bank will allow recovery to the historical age and size compositions of these populations, as long as fishing, even at sustainable levels, is allowed outside the Dogger Bank. Based on information provided with the request, the areas proposed by the industry may not be sufficient and the areas proposed by the NGOs may be excessive. The current proposal for fisheries measures, if implemented, will provide an opportunity to monitor and assess the response of the ecosystem to the reduced pressure from bottom-contacting fishing gear. This information is needed before it will be possible to carry out a scientific comparative analysis.

Response to Question ix) Any other information on fishing impacts...

Fisheries management measures will directly affect at least two different trophic levels; however, food chain effects are not evaluated with regard to achieving favourable conservation status. For mobile species (most fishes) closures will only have effects proportional to the population distribution. For more sessile species (sandeels to some degree and many invertebrates to a high degree) populations may be able to build up biomasses that may have spill-over effects which could have positive influences on commercial species yield outside the closed areas. This could result in increased fishing efforts along the open/closed boundaries and could have an adverse effect on local recruitment. Increased biomass may also attract commercial fish which prey on benthic communities and thereby reduce availability to the fishery in the open area.

Developments in low impact gear should continue and when proven not to have adverse effects on the benthic communities of the closed areas their use in these areas should be permitted. This may require experimental trials within a closed area but should only be permitted at the very late stages of a research programme and only to verify results

indicating no likely impacts on the conservation objectives. ICES advises that a decision-making process should be established to consider such access.

In addition, economic mitigation measures within the closed areas that consider the spatial and temporal distribution of fishing should be considered. There may be times when, due to seasonal or tidal influences, gear/species interaction is reduced to an extent that the use of banned gear would not compromise the attainment of the conservation objectives. In these situations, the short-term pulse disturbances of such access could be tolerated. This should be evaluated and, if considered viable, a mechanism established for permitting such short-term access.

Sources

- CEN. 2012. Water quality – Visual seabed surveys using remotely operated and/or towed observation gear for collection of environmental data. BS EN 16260:2012.
- ICES. 2009. Report of the EMPAS project (Environmentally Sound Fisheries Management in Protected Areas), 2006–2008, an ICES–BfN project. 123 pp.
- ICES. 2012a. Report of the Working Group on the Ecosystem Effects of Fishing Activities (WGECO), 11–18 April 2012; Copenhagen, Denmark. ICES CM 2012/ACOM:26. 192 pp.
- ICES. 2012b. Material provided to ICES for advice on proposed fisheries measures for the Dogger Bank Special Area of Conservation. Dogger Bank Steering Group, September 2012. ICES CM 2012/ACOM:77.
- ISO. 2005. Water quality – Guidelines for quantitative sampling and sample processing of marine soft-bottom macrofauna. ISO 16665:2005.

Annex 1 Extract from the document '20120904 Dogger Bank Presentation paper final', submitted to ICES with the request.

Gears with bottom-contact and which are expected to have a significant effect on the habitats are banned in the closed zone. This includes beam trawls and otter board trawls and dredges. However, other bottom contacting gears are used in the Dogger Bank site which may present a risk to the achievement of the conservation objectives, i.e. seines including flyshooting as indicated by the ICES 2008 EMPAS advice. There was no consensus whether the prohibition of other bottom contacting gears, in particular seines including flyshooting, should apply to the proposed closed areas. In so far as seines including flyshooting are concerned, the DBSG considered that there was insufficient information on the adverse effects of these gears on the conservation status of the whole of the SAC. However, the DBSG recognised that the management of "all mobile bottom contacting gear" had been proposed as a part of the EMPAS advice (advice relating to the conservation of the German sector), when this was assessed in isolation in 2008. Therefore DBSG has asked ICES to advise on the potential impacts of these gears on the habitat and on additional beneficial effects that may accrue if these gears were prohibited from the overall proposed closed area;

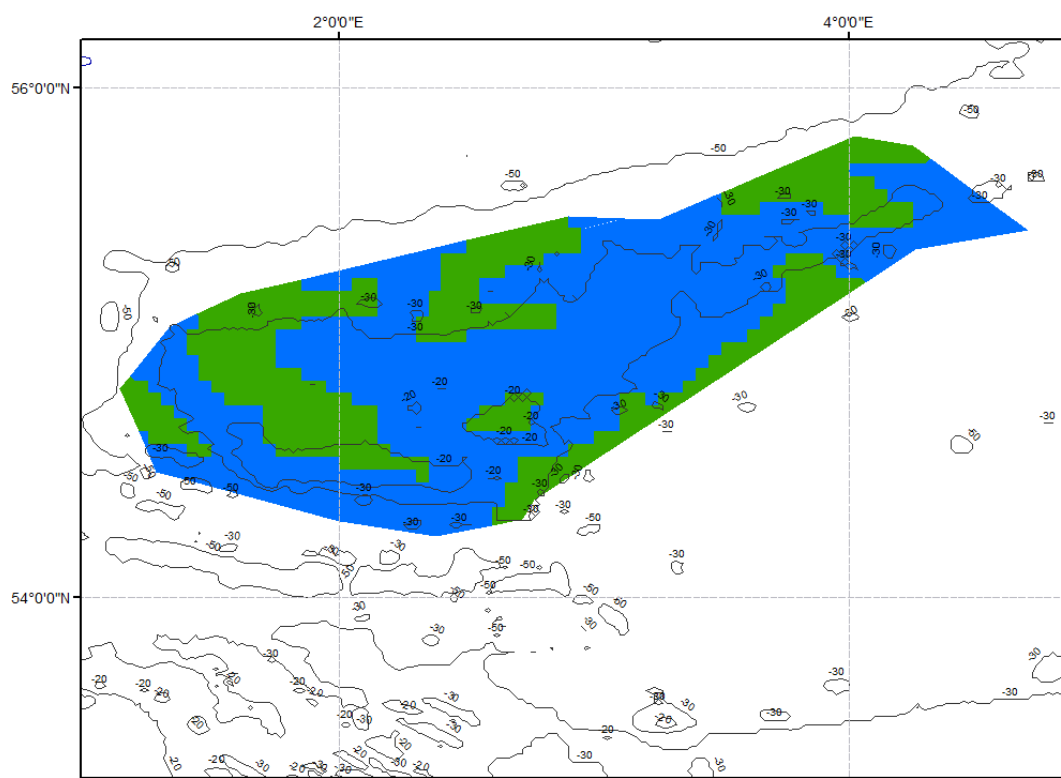


Figure 6.3.3.9.1 Proposal for closed areas including depth contours. Green: areas closed to beam and otter board trawls and dredges.

Annex 2 Extract from document '20120904 Conservation objectives final', submitted to ICES with the request.

- *The conservation status is currently assessed as unfavourable, due mainly to the quality of the habitat and considerations of disturbances of the biological community which result from impacts to sediments;*
- *This assessment mentions significant habitat disturbance as a result of (bottom-contacting) fishing, and that fishing has distorted the species composition – towards smaller and short-lived species;*
- *Therefore the Member States want to decrease human pressure from the habitat as a result of bottom-contacting fishing gear, with the aim to: improve the quality of the habitat (NL); restore the habitat to favourable condition (UK); conservation and restoration of a favourable conservation status of the habitattype (1110) including its characteristic and threatened communities and species (GER);*
- *In doing so, they want to establish a more natural situation in which*
 - *physical structure (the shape, form and composition of the habitat and its substrata),*
 - *diversity (the number of different biological communities or number of species within a given community),*
 - *community structure (e.g. age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility), and**typical species are improved/are restored/are recovered;*

Annex 4

Report of Wageningen Economic Research, Wageningen, 16 January 2017

Overview of the international fishing activities on the
Doggerbank (see separate document)