



JRC SCIENCE FOR POLICY REPORT

Scientific, Technical and Economic Committee for Fisheries (STECF)

-

Review of Joint Recommendations for Natura 2000 sites at Dogger Bank, Cleaver Bank, Frisian Front and Central Oyster grounds (STECF-19-04)

Edited by Clara Ulrich and Antonello Sala

This publication is a Science for Policy report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policy-making process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

Contact information

Name: STECF secretariat

Address: Unit D.02 Water and Marine Resources, Via Enrico Fermi 2749, 21027 Ispra VA, Italy

E-mail: jrc-stecf-secretariat@ec.europa.eu

Tel.: +39 0332 789343

JRC Science Hub

<https://ec.europa.eu/jrc>

JRC117963

EUR 28359 EN

PDF ISBN 978-92-76-11227-3 ISSN 1831-9424 doi:10.2760/422631

STECF ISSN 2467-0715

Luxembourg: Publications Office of the European Union, 2019

© European Union, 2019

The reuse policy of the European Commission is implemented by Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Reuse is authorised, provided the source of the document is acknowledged and its original meaning or message is not distorted. The European Commission shall not be liable for any consequence stemming from the reuse. For any use or reproduction of photos or other material that is not owned by the EU, permission must be sought directly from the copyright holders.

All content © European Union

How to cite: Review of Joint Recommendations for Natura 2000 sites at Dogger Bank, Cleaver Bank, Frisian Front and Central Oyster grounds (STECF-19-04). Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-11227-3, doi:10.2760/422631, JRC117963

All images © European Union 2019

Abstract

Commission Decision of 25 February 2016 setting up a Scientific, Technical and Economic Committee for Fisheries, C(2016) 1084, OJ C 74, 26.2.2016, p. 4–10. The Commission may consult the group on any matter relating to marine and fisheries biology, fishing gear technology, fisheries economics, fisheries governance, ecosystem effects of fisheries, aquaculture or similar disciplines. This report deals with the review of Joint Recommendations for Natura 2000 sites at Dogger Bank, Cleaver Bank, Frisian Front and Central Oyster grounds. The STECF produced its advice by written procedure in August 2019.

Authors: Abella, J. Alvaro, Bastardie, Francois, Borges, Lisa, Casey, John, Catchpole, Thomas, Damalas, Dimitrios, Daskalov, Georgi, Döring, Ralf, Gascuel, Didier, Grati, Fabio, Ibaibarriaga, Leire, Jung, Armelle, Knittweis, Leyla, Kraak, Sarah, Ligas, Alessandro, Martin, Paloma, Motova, Arina, Moutopoulos, Dimitrios, Nord, Jenny, Prellezo, Raúl, O'Neill, Barry, Raid, Tiit, Rihan, Dominic, Sampedro, Paz, Somarakis, Stylianos, Stransky, Christoph, Ulrich, Clara, Uriarte, Andres, Valentinsson, Daniel, van Hoof, Luc, Vanhee, Willy, Villasante, Sebastian, Vrgoc, Nedo

TABLE OF CONTENTS

SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (STECF) - Review of Joint Recommendations for Natura 2000 sites at Dogger Bank, Cleaver Bank, Frisian Front and Central Oyster grounds (STECF-19-04)5

Request to the STECF5

Summary of information provided to the STECF.6

STECF response7

STECF conclusions34

Contact details of STECF members38

Background Documents.....41

SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (STECF) - Review of Joint Recommendations for Natura 2000 sites at Dogger Bank, Cleaver Bank, Frisian Front and Central Oyster grounds (STECF-19-04)

Request to the STECF

- A. Joint Recommendation by Germany, the Netherlands and the United Kingdom regarding fisheries management measures under articles 11 and 18 of Regulation (EU) No. 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy (the Basic Regulation) **for protection of sandbanks at three Natura 2000 sites** designated under the Habitats Directive 92/43 EEC of 21 May 1992 **(Dogger Bank)**

The STECF is requested to:

1. Review whether the proposed conservation measures minimise the negative impacts of fishing activities on the marine ecosystem and ensure that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.
2. Review how the proposed measures contribute towards ensuring that the habitats and species addressed in the recommendation are maintained and restored at favourable conservation status inside the delineated areas as stipulated under Article 2 and 6 of the Habitats Directive 92/43/EEC. In undertaking this review, all relevant aspects, including ensuring compliance with the proposed measures, should be considered.

- B. Joint Recommendation by the Netherlands and other Member States with a direct management interest regarding fisheries management measures under article 11 and 18 of Regulation (EU) No. 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy (the Basic Regulation) for protection of reefs in the Natura 2000 site Cleaver Bank designated under the Habitats Directive 92/43 EEC of May 1992

The STECF is requested to:

1. Review whether the proposed conservation measures minimise the negative impacts of fishing activities on the marine ecosystem and ensure that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.
2. Review how the proposed measures contribute towards ensuring that the habitats and species addressed in the recommendation are maintained and restored at favourable conservation status inside the delineated areas as stipulated under Article 2 and 6 of the Habitats Directive 92/43/EEC. In undertaking this review, all relevant aspects, including ensuring compliance with the proposed measures, should be considered.

- C. Joint Recommendation by the Netherlands and other Member States with a direct management interest regarding fisheries management measures under article 11 and 18 of Regulation (EU) No. 1380/2013 of the European Parliament and of the Council of 11

December 2013 on the Common Fisheries Policy (the Basic Regulation) for protection of the common guillemot in a Natura 2000 site designated under the Birds Directive 2009/147/EC of 30 November 2009

The STECF is requested to:

1. Review whether the proposed conservation measures minimise the negative impacts of fishing activities on the marine ecosystem and ensure that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.
2. Review how the proposed measures contribute towards ensuring that the habitats and species addressed in the recommendation are maintained and restored at favourable conservation status inside the delineated areas as stipulated under Art. 4 of the Birds Directive. In undertaking this review, all relevant aspects, including ensuring compliance with the proposed measures, should be considered.

D. Joint Recommendation by the Netherlands and other Member States with a direct management interest regarding fisheries management measures under article 11 and 18 of Regulation (EU) No. 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy (the Basic Regulation) for seabed protection at the Frisian Front and Central Oyster Grounds under article 13.4 of the Marine Strategy Framework Directive 2008/56/EU of 17 June 2008.

The STECF is requested to:

1. Review whether the proposed conservation measures minimise the negative impacts of fishing activities on the marine ecosystem and ensure that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.
2. Assess if the proposed conservation measures would contribute to the objectives under Articles 1(1) and 13(4) of the MSF Directive 2008/56/EC, in particular with the objective of achieving a good environmental status by 2020.

Summary of information provided to the STECF.

The following documents were provided to the STECF for the four cases A, B, C and D.

A. For the Dogger Bank Joint Recommendation:

- The Dogger Bank Joint Recommendation document, dated 16 April 2019;
- Annex I: Background Document to the Joint Recommendation, dated 26 March 2019; this document describes the legal framework, the process, its principles, the supporting science and the justification of the JR; this document includes:
 - Annex I: Maps and coordinates of the national boundaries (Germany, the Netherlands, and UK) of Natura 2000 site Dogger Bank;
 - Annex II: ICES Advice to a special request about "Proposed fisheries measures for the Dogger Bank Special Area of Conservation", dated November 2012;
- Annex II: Coordinates of Management Zones, shape file of the six polygons;
- Annex III: Map of 4 nm alert zones (pdf file) and coordinates (excel file).

- Report of Wageningen Economic Research - Overview of the international fishing activities on the Dogger Bank, dated May 2017.

B. For the Cleaver Bank Joint Recommendation:

- The Cleaver Bank Joint Recommendation document, dated 16 April 2019, this document includes:
 - Annex I: Coordinates of site of community interest;
 - Annex II: Map and Coordinates of the four Management Zones;
 - Annex III: Map and Coordinates of the alert zones;
- Annex IV: Background document to the Joint Recommendation, dated 16 April 2019; this document describes the legal framework, the process, the supporting science and the justification of the JR.
- ICES Advice to a special request about "Proposed fisheries measures for the Cleaver Bank Special Area of Conservation", dated November 2012

C. For the Frisian Front Birds Directive Joint Recommendation:

- The Frisian Front Birds Directive Joint Recommendation document, dated 16 April 2019; this document includes:
 - Annex I: Map and coordinates of the site of community interest and the Management Zone;
- Annex II: Background document to the Joint Recommendation, dated 19 April 2019; this document describes the drafting process, its principles, the supporting science and the justification of the JR;
- ICES Advice to a special request about "Proposed fisheries measures for the Frisian Front Special Area of Conservation", dated November 2012.

D. For the Central Oyster Grounds and Frisian Front MSFD areas Joint Recommendation:

- The Central Oyster Grounds and Frisian Front MSFD areas Joint Recommendation document, dated 16 April 2019; this document includes:
 - Annex I: Coordinates and map of the three protected areas / Management Zones;
 - Annex II: Coordinates and map of alert zones;
- Annex III: Background document to the Joint Recommendation, dated 16 April 2019; this document describes the drafting process, its principles, the supporting science and the justification of the JR.

In addition, several STECF plenaries (15-01, 16-02, 17-02 and 19-01) and STECF EWG 16-24 advised in the past on similar Natura 2000 cases, thus providing a guideline for the current advice.

STECF response

General observations and comments

STECF notes that each of the Joint Recommendations (JRs) is accompanied by comprehensive supporting documentation citing relevant scientific investigations.

The four JRs were issued in reference to Article 11 (on "Conservation measures necessary for compliance with obligations under Union environmental legislation") of Regulation 1380/2013. However, they are rather different from each other in terms of Member States involved, processes, and objectives:

- JR A is a transboundary case, concerning an area spanning the Dutch, German and UK EEZs; the JR was initiated by the Netherlands, Germany, and the UK and agreed by the other Member States having a direct management interest in the fishery to be affected by such measures, namely Belgium, Denmark, France and Sweden (High Level Scheveningen Group meeting on 27 February 2019).
- JRs B, C and D concern areas limited to the Dutch EEZ; these are initiated only by the Netherlands and are agreed to by the other Member States having a direct management interest in the fishery to be affected by such measures, namely Belgium, Denmark, France, Germany, Sweden and the UK (High Level Scheveningen Group meeting on 27 February 2019).
- Cases A-C concern Natura 2000 sites. In cases A and B, the Natura 2000 sites are designated under the Habitats Directive 92/43 EEC of 21 May 1992; in case C, the Natura 2000 site is designated under the Birds Directive 2009/147/EC of 30 November 2009. Case D does not concern a Natura 2000 site but proposes protection of an area under article 13.4 of the Marine Strategy Framework Directive 2008/56/EU of 17 June 2008.
- In each of the cases A-D, the process of drafting the JR was initiated about 10 years ago; for the Natura 2000 sites of cases A-C, the process started in 2009 under the Dutch FIMPAS (Fisheries Measures in Protected Areas) project. The basic philosophy of FIMPAS was one of transparent decision-making, involving the relevant stakeholders.
- The drafting of JR A followed the 2008 guidance document published by the European Commission Services called "Fisheries measures for marine Natura 2000 sites - A consistent approach to request for fisheries management measures under the Common Fisheries Policy".
- The drafting of each of the JRs B-D followed the 2018 guidance published by the European Commission Services called "COMMISSION STAFF WORKING DOCUMENT on the establishment of conservation measures under the Common Fisheries Policy for Natura 2000 sites and for Marine Strategy Framework Directive purposes".

In each case, the political process was based on the following principles: sound scientific basis, stakeholder involvement, transparency, proportionality and non-discrimination. Additionally, the process of the transboundary case A was based on the principle of multilateral coordination.

STECF observes that each of the JRs was preceded by and informed by extensive scientific studies, on the respective conservation importance of the sites, on the current nature status of the sites, on the impact of fishing by the respective gears, and on the socio-economic impact of the respective measures on the fishing industry. These studies generally support the proposed measures.

STECF notes that in cases B and D the scientific evaluation addresses different areas than the final areas included under the respective JRs. Whereas the initial areas are based on scientific considerations (e.g. Lindeboom et al., 2005) and stakeholder involvement, it is not transparent what the rationale is for the final protection areas in the draft JRs. STECF notes that this may have been based on a trade-off between fisheries restrictions and nature conservation objectives, but this has not been stated in any of the documents. In the case of the Frisian Fronts (case D), Lindeboom et al. (2015) argued that one large area is better than several smaller areas, owing to boundary effects; in addition, one larger area is more efficient in terms of control and enforcement; nevertheless, the management areas in JRs A, B and D consist of several separate areas. STECF notes that this may also have been based on a desire to accommodate fisheries interests.

For cases A, B and D, the proposed control, enforcement and compliance regime consist of a combination of surface and aerial surveillance, establishment of an alert zone outside of these management areas, and remote monitoring of vessel position. In particular (in accordance with Council Regulation 1224/2009 Article 50):

- Fishing activities of all fishing vessels in the respective 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 with a speed under 6 knots within the respective 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 relevant fisheries monitoring authority shall be informed about entry and exit of the respective areas.
- Fishing vessels may transit the respective 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 no 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.
- A fishing vessel travelling at six knots or less that carries a prohibited gear entering the respective alert zone area of the management areas 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 for addressing control and enforcement aspects in Joint Recommendations are in development. This common approach, when ready, will be considered in the implementation of the proposal.

STECF notes that the size and irregular shapes of the managed areas complicates enforcement and control. Furthermore, STECF considers that a VMS ping frequency of 30 minutes may not be frequent enough for the enforcement agency to monitor vessels in the area. STECF further notes that the Commission delegated regulation (EU) 2017/118 that establishes fisheries conservation measures for the protection of the marine environment in the North Sea, requires all vessels present in the management area to be fitted with and to maintain in operation an automatic identification system (AIS) that transmits position multiple times in a minute, in order to ensure an effective monitoring of vessels present on the sites.

STECF further notes that none of these measures constitutes enforcement. The text (above, lifted from the JRs) does not prescribe any actions to be taken by the respective control agency in case of, for example, receiving data at intervals of 30 minutes from vessels travelling inside the respective areas with a speed under 6 knots without force majeure or adverse conditions. According to the 4th bullet point above, such vessel activity is prohibited; nevertheless, according to the 2nd bullet point above, the vessel could continue its potentially prohibited activity if it transmits the data every 30 minutes. For these instances, no action is described on how the control agency should verify whether the vessel is fishing with the prohibited gear or whether it is lashed and stowed. Therefore, STECF comments that this set of control and enforcement measures does not actually enforce the closure of the respective areas to fishing with the respective prohibited gears. It merely prescribes requirements for vessels when entering, transiting and exiting the closed areas.

STECF also considers that the proposed threshold of six knots may not be precautionary, since beam trawls often fish at the speed of six to eight knots (van Oostenbrugge et al., 2016, Hamon et al., 2017). This implies that even vessels with a speed over six knots could be fishing.

For fishing vessels with a length of less than 12 meters, no VMS-obligation applies. However, according to the respective background documents of cases B, C, and D, there are (almost) no Dutch ships smaller than 12 meters active in the respective areas with the prohibited gears. The

JRs argues such vessels do not fish offshore in the closed areas because they are too far from the ports. The background documents further argue that, for the same reason, it is unlikely that foreign vessels below 12 meters will visit these areas and such vessels are not considered to be a risk for the conservation objectives. STECF considers that the same reasoning may apply to the area of case A, although it was not mentioned in the background document of case A.

For monitoring and assessment of the effect of the measures, case B and D as well as the Dutch part of case A, make use of a common Dutch monitoring programme from the Dutch Marine Strategy (IenM, 2014). This programme follows the structure of the MSFD based on the 11 descriptors. In 2015, a baseline measurement campaign was executed for benthos, focusing on the marine protected areas in the Netherlands. The baseline campaign and subsequent monitoring focuses on the typical species (in accordance with the Birds and Habitats Directives) 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 measurement campaigns will be repeated every three years to evaluate the status and effectiveness of measures. The Dogger Bank and Cleaver Bank (cases A and B respectively) are already included in these campaigns; once the measures in the proposed closed areas at the Frisian Front and Central Oyster Grounds (case D) are determined, the monitoring programme will be modified, and the baseline measurement will be performed. The monitoring plan that has currently been designed is able to detect a change of 50% in population distribution based on the occurrence of the species within the samples, with a statistical power of 80%. A 50% change in hit rate for an indicator species triggers further analysis of the monitoring plan. STECF considers that a 50% change in population distribution is a high threshold and considers that a lower percentage may be more in line with the precautionary approach.

See Figure 1 for an overview of all sampling stations. The Netherlands developed the Benthic Indicator Species Index, to assess the quality and account for changes in habitat quality on the Dutch part of the North Sea and the different protected areas.

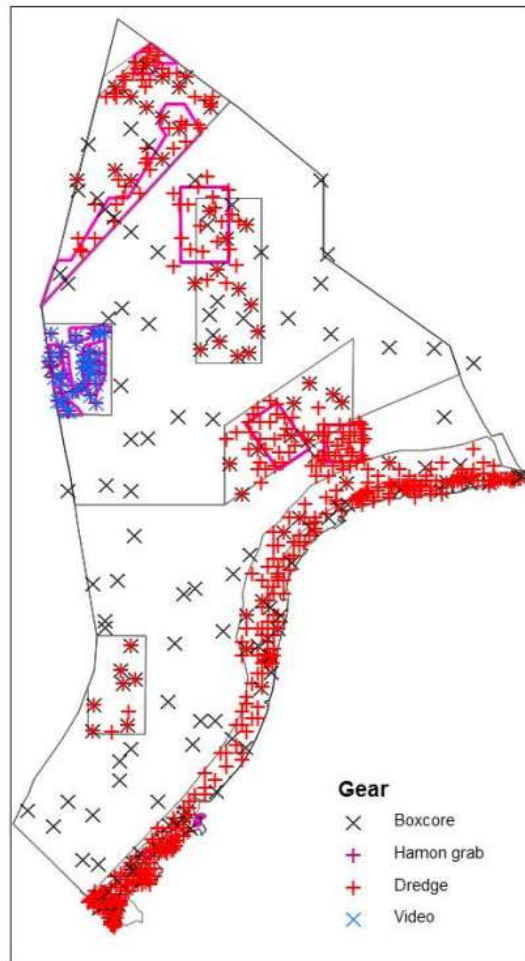


Figure 1. Overview sampling stations of the monitoring campaign at the Dutch part of the North Sea. Figure copied from the background document of case D.

Specific observations and comments for the individual cases A, B, C and D

A. Protection of sand banks in the Dogger Bank

Case A concerns a JR for offshore fisheries management measures on the International Dogger Bank. The overall aim of the proposed measures is to ensure protection of habitat type 1110 (sand banks which are slightly covered by sea water all time) of the Dogger Bank, a Site of Community Interest (SCI), by reducing the pressure on the benthic habitat from bottom contacting fishing gear in accordance with the Habitats Directive. The proposal for fisheries management measures for protection of sandbanks has been coordinated with representatives from environmental and fisheries departments in the initiating Member States and those Member States with a direct management interest. STECF notes that the Natura 2000 Standard Data Form of the site lists in addition the following species of mammals: *Phocoena phocoena*, *Halichoerus grypus*, and *Phoca vitulina*.

Current status

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 because of (mobile bottom-contacting) fishing, and that fishing has distorted the species composition – towards smaller and short-lived species. The flat top of the Dogger Bank is dominated by small

endobenthic species, well adapted to disturbances. 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). The Dutch National Surface Water Monitoring Program (MWTL) indicates that *Maetra stultorum* (rayed trough-shells) and *Iphinoe trispinosa* (small crustacean) have virtually disappeared. Thornback rays (rocker, *Raja clavata*) have become rare at the Dogger Bank (ICES, 2011a).

Five benthic infauna habitats are considered essential parts of the Dogger Bank H1110 biotope complex for which conservation objectives need to be developed: 1) Bank community; 2) Bank sub-community; 3) Southern community; 4) Western community; 5) North-eastern community (Figure 2).

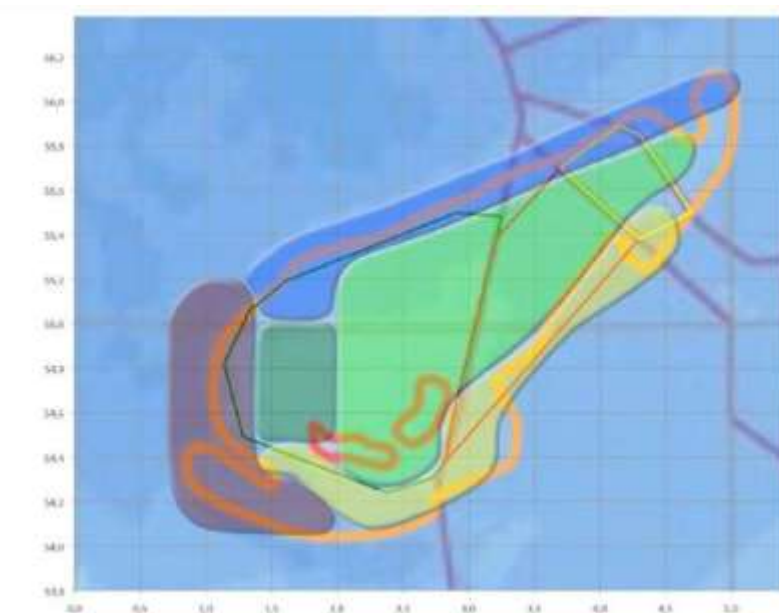


Figure 2. Habitats at the Dogger Bank, based on the map of the endobenthic communities from Wieking and Kröncke (2003), adapted by van Moorsel (2011). Green: Bank community; dark green: Bank sub-community; yellow: Southern community; purple: Western community; blue: North-eastern community. 20 m (red) and the 40 m (orange) isobaths.

Objectives

Initiating Member States want to decrease human pressure on the habitat because of mobile bottom-contacting fishing gear. STECF notes that the national conservation objectives have been formulated in slightly different wording by the various Member States: 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). This makes the development of a single management approach unnecessarily difficult. This issue was also highlighted by ICES advice (2012a). In addition, STECF considers that changes in status of the five different benthic communities (Figure 2) could be different, due to differences in species composition, population dynamics and sensitivity to fishing impacts.

Area(s)

The JR entails fisheries management measures in three Natura 2000 sites located on the Dogger Bank which have been designated for the protection of sandbanks (H1110): a) the German site "Doggerbank" included in the list of SCI (Commission Decision 2008/23/EC of 12 November 2007); b) the Dutch site "Doggersbank" included in the list of SCI (Commission Decision 2010/43/EU of 22 December 2009); c) the UK site "Dogger Bank" included in the list of SCI

(Commission Decision 2013/26/EU of 16 November 2012). Initiating Member States propose the establishment of a zoning system including six management zones (Figure 3; sizes: 242 km², 375 km², 1081 km², 1111 km², 1275 km², and 2200 km²) and one (continuous) open zone. The six areas were identified following a seven steps process: 1) partitioning of the Dogger Bank area into 1058 cells ("Csquares") which can be attributed both to benthic communities and to industry and NGOs proposals (NSAC, 2012); 2) using the industrial proposal as base map for agreed closure areas (22% of the total surface); 3) adding national and fishing sector concerns to the base map; 4) adding further areas from NGOs proposals until 1/3 of the total surface is closed; 5) removing isolated Csquares; 6) smoothing the boundaries of selected areas; 7) final proposal resulting in 33.8% total coverage of the management zone.

Article 2 of the Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitat Directive) states that: a) measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest; b) measures taken pursuant to this Directive shall take account of economic, social and cultural requirements and regional and local characteristics. Article 6 states that for special areas of conservation, Member States shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites. STECF notes that the final proposal represents a trade-off between protection of the sand banks and socio-economic interests, in line with Article 2. STECF further notes that this trade-off may however have negative impacts on the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the Dogger Bank since fishing with bottom contacting gears will continue in >60% of the Natura 2000 site, and fishing with purse seines will continue in >90% of the site. Nevertheless, STECF notes that the final proposal considerably increases the areas proposed by the industry, and agrees with the 2012 NGO proposal referenced in the JR.

An alert zone of 4 nm width adjacent to each management zone is also proposed (Figure 4). 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.

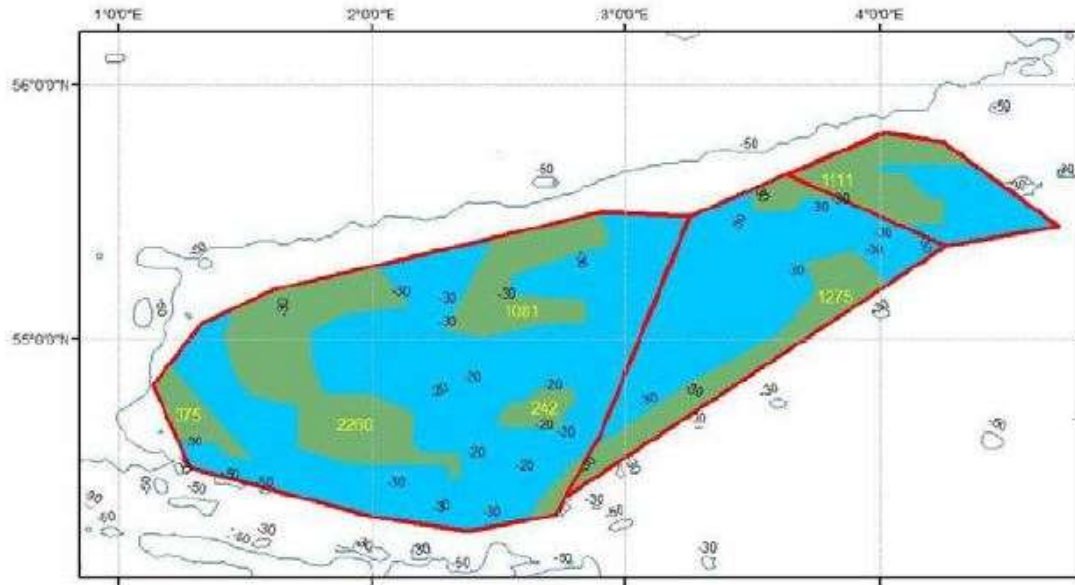


Figure 3. Map showing the six fisheries management zones proposed for the Dogger Bank (green areas). Numbers inside polygons show the surface of each zone in km². Blue colour shows the open zone. Red lines are maritime delimitations between UK, Netherlands and Germany. The figure is copied from the JR document.

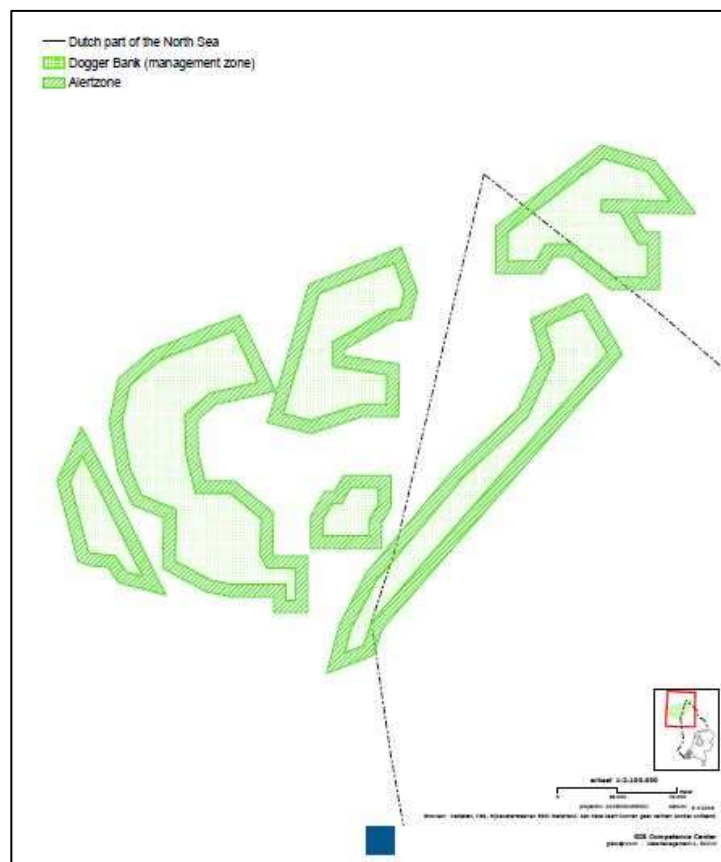


Figure 4. Map showing the alert zones (4 nm buffer) adjacent to each management zone is also proposed.

Management measures

All management zones will be closed to beam trawls (TBB), bottom otter trawls (OTB, OTT, PTB, TBN, TBS, TB), dredges (DRB, HMD) and semi-pelagic trawl (TSP). The German management zone will additionally be closed to demersal seines (SDN, SSC, SPR, SX, SV). A derogation for new and/or modified mobile bottom contacting gears shall be obtained in case the use of such gears in the management zones would not jeopardize the delivery of conservation objectives.

STECF notes that fishing with seines will be allowed in almost the whole Dogger bank (>90 % area), and without any fishing effort limits. STECF considers that the impact of seines (both Scottish and Danish seines) on sandy bottoms are likely to be low, since the maximum penetration depth is <2cm (Eigaard et al., 2016). However, seines might nevertheless have an impact on benthic epifauna, in particular on suspension feeders. STECF considers that there is currently not enough information to determine the impact of seines on the Dogger Bank sandbank habitat and typical species associated with this habitat. Consequently, it is not possible to conclusively determine whether the continued operation of seines will impede the achievement of the conservation objectives in the managed zones.

After a period of 6 years after the entry into force of the delegated act, the initiating Member States shall review these measures, to inform decision making on whether to change or retain this regime and how any renewed regime would be enforced. The closure of the German management zone shall apply for a period of 3 years (starting from the moment of the entry into force of the delegated act).

Concerning the likely progress over a 6 years period, given the lifespan and recruitment dynamics of typical species, STECF notes that for some species with lifespans of less than 6 years, recovery is possible if recruitment occurs within the area. This also applies to biogenic reefs formed by *Lanice conchilega* tubes, having a good recovery potential over this time frame. Over longer time periods (>6 years), STECF considers that other variables could influence the conservation objectives in the Dogger Bank (e.g. change in fish community at large scale, climate change, connectivity between closed and open areas, etc.). STECF considers that for most fish species and marine mammal species, the effects of the closures will mostly depend on species distribution, while benthic species and sandeel should be able to increase biomasses with a consequent spill-over effect outside the closed areas.

Political process

In 2008 the Member States started to identify a common approach to protect the Dogger Bank area and the North Sea Advisory Council (NSAC, at the time called NSRAC) suggested a joint approach. In 2009-2010 various ad hoc meetings took place for this purpose. In 2011 the Dogger Bank Steering 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. The Focus Group included observers from the four Member States and representatives of the European Commission. This group met several times in the Netherlands in an intensive process between December 2011 and February 2012. On April 2012 the NSAC presented two proposals to the DBSG: one fishing sector proposal and one NGO proposal (NSAC, 2012). 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. In May 2013 agreement was reached between the initiating Member States and Denmark 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. Initiating Member States started a regionalisation consultation process in 2016 and an agreement on the joint recommendation by Belgium, Denmark, France and Sweden was reached in 2019.

Impact on fisheries

Fishing effort, landings volume, landings value and contribution to the Gross Value Added (GVA) for all bottom-trawling fleets are quantified for all Member States exploiting the Dogger Bank (Netherlands, UK, Denmark, Germany, Belgium, Sweden, France) in the period 2010-2015. Several sources were used in this study: VMS data, catch data from logbooks, fleet data from the Register of Fishing Vessels (NRV), data on landings value and economic performance of all fleets from database of the Annual Economic Report (STECF, 2016). The gear groups of major importance in terms of effort and economic importance are: 1) beam trawls for flatfish, 2) otter trawl for demersals, 3) otter trawl for sand eel. Seines have some relevance only in terms of effort. Maps of the spatial distribution of the fishing effort by gear are also provided. The fishing activity in the proposed closed areas for the different countries represents 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. In terms of landings, the proposed closed areas represent 24% of the total Dogger Bank for the Netherlands, 22% for UK, 17% for Germany and Belgium, 15% for Denmark and 8% for Sweden. The Wageningen Report also reviews the potential effects of the fishing restrictions on the downstream industry (processing and marketing).

It is assumed that fishers move their effort to other locations in case of area closures. STECF considers that more attention should be paid to the potential effects of the fishing effort displacement, both within the SCI and outside the SCI. In fact, if displaced effort increases the impact on fish populations outside the closed areas, then recruitment to the closed areas could be further affected. Advanced bio-economic models (e.g. DISPLACE, Bastardie et al., 2013) could be used to further investigate potential fishing effort redistribution.

Control and enforcement

The proposed scheme for control and enforcement has been described in the section above "*General observations and comments by the STECF*".

Monitoring

Monitoring and assessment of the state of the managed and protected features to provide evidence on achieving conservation objectives status will be performed by a joint expert group (Germany, the Netherlands and United Kingdom). This group 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. STECF considers that the results obtained after 6 years of monitoring and assessment could improve understanding and provide better scientific guidance for the appropriate location and size of the areas needed to achieve conservation objectives.

The UK and The Netherlands have no long-term specific national monitoring plan in place for the Dogger Bank SCI. Both countries participated in the international survey in July 2016, 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. Germany has already established a national monitoring programme based on Before-After-Control-Impact (BACI) approach, where the status of an area closed for mobile bottom-contacting gear will be compared with a non-managed area that is open for fishery with mobile bottom-contacting gear. 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 with yearly reporting. The number of monitored stations will be large enough to be statistically powerful and able to detect differences between the benthic communities and the various past and present fishing activities in the closure and the control area.

Van Veen-grab, beam trawl, video-sledge and Side Scan Sonar (SSS) will be used to assess the fishery impact. All macrozoobenthic species will be monitored, focusing on species that occurred frequently on the Dogger Bank in former times but now being almost absent. Together with the VMS and AIS data, the use of SSS and video images should allow controlling the compliance with the fishery measures in the closed area and to give insights about actual differences in fishing intensities between the closed and the control area. STECF notes that a common and coordinated monitoring program for the whole Dogger Bank should be established and used by each country. STECF considers that different indicators may need to be considered for each of the five benthic communities identified in the Dogger Bank, due to differences in species composition and response to changes in pressure.

B. Protection of reefs in the Cleaver Bank

Case B concerns a JR for fisheries management measures on the Cleaver Bank. The overall aim of the proposed measures is to ensure protection of "open-sea reefs" (habitat type 1170) on the Cleaver Bank, a Site of Community Interest (SCI), by reducing the pressure on the benthic habitat from bottom contacting fishing gear in accordance with the Habitats Directive. The Natura 2000 Standard Data Form of the site lists in addition the following species of mammals: *Phocoena phocoena*, *Halichoerus grypus*, and *Phoca vitulina*. In the EC Marine guidelines (EC, 2007) habitat type 1170 "reefs" is defined as: "Reefs can be either biogenic concretions or of geogenic origin. They are hard compact substrata on solid and soft bottoms, which arise from the sea floor in the sublittoral and littoral zone. Reefs may support a zonation of benthic communities of algae and animal species as well as concretions and corallogenic concretions".

The proposal for fisheries management measures for protection of reefs has been coordinated with representatives from environmental and fisheries departments in the initiating Member State and those Member States with a direct management interest, the North Sea Advisory Council, the relevant fishing industry associations/organizations and Non-Governmental Organisations (NGOs).

Objectives and current status

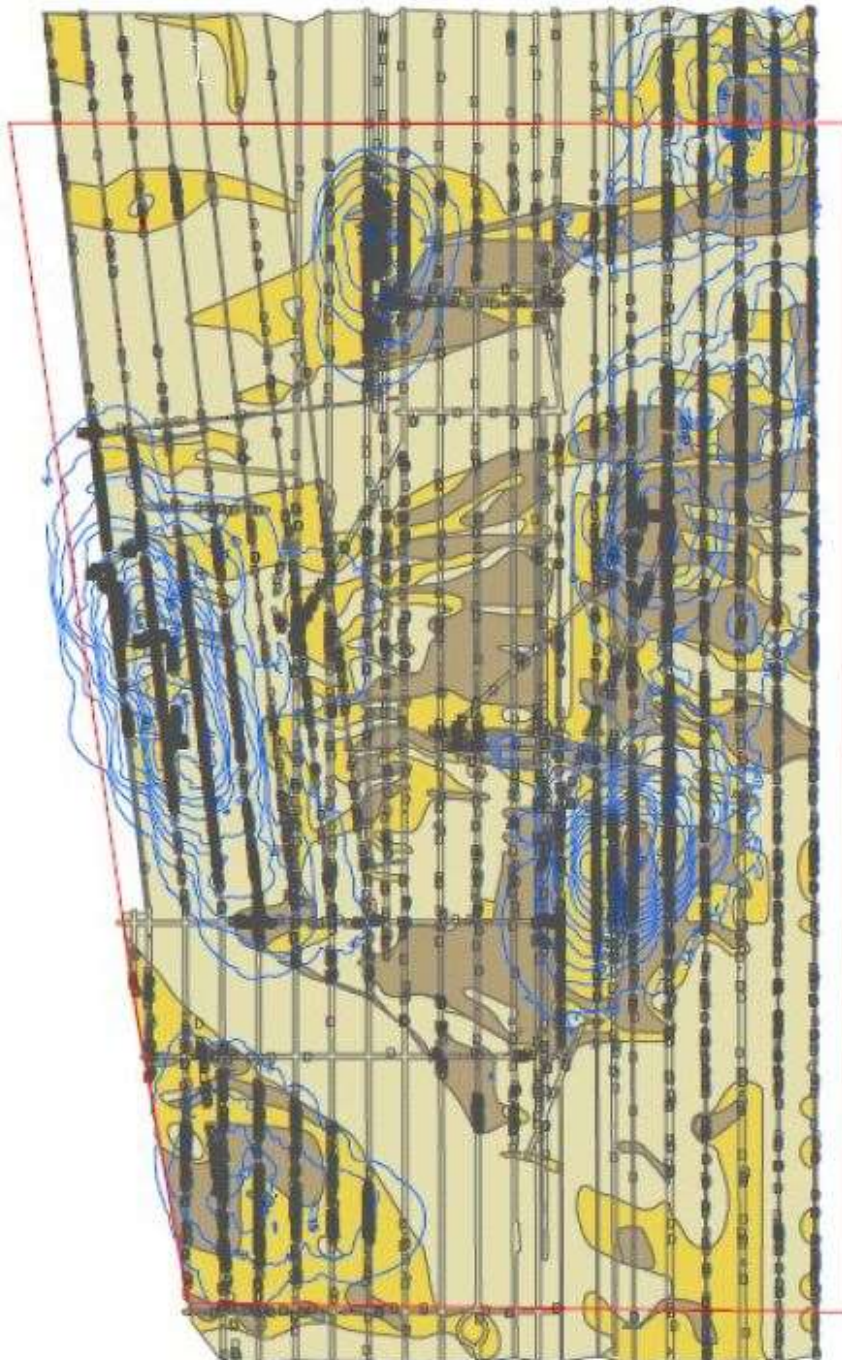
The conservation objectives for H1170 are: maintain distribution, maintain surface area and improve quality of the open sea reefs. An improvement in quality is needed because the quality of the habitat is currently assessed to be unfavourable–inadequate (Jak et al., 2009). Side-scan sonar recordings show that in parts of the site, the tracks of bottom fishery are present and that, as a result, there is an elevated dynamic that disturbs the biotic communities present. Bottom fisheries have been shown to remove, homogenize and flatten the substrate of H1170 and cause changes (mainly reduction) in abundance of its typical species (Deerenberg et al., 2010). Jak et al. (2009) concludes that the structure and function of the habitat have fundamentally deteriorated due to repeated disturbance of the bottom compared to an undisturbed situation.

In addition, there are other conservation objectives for harbour porpoise, grey seal (maintain the extent and quality of habitat to maintain the population) and harbour seal (maintain the distribution, extent and quality of habitat in order to maintain the population).

Leewis and Verduin (2016) identified two 'clusters' of typical H1170 benthic species: a) the eastern area is dominated by soft-bodied typical species that live on rocks and coarse sediment; b) the western area is dominated by hard-bodied typical species usually present on coarse sand and gravel. A map of the seabed distribution is shown in Figure 5. Van Moorsel (2003) described benthic species which are characteristic of coarse permeable sands (*Branchiostoma lanceolatum*, *Echinocyamus pusillus*, *Aonides paucibranchiata*, *Typosyllis cornuta*, *Goniadella bobretzkii*, *Urothoe marina*) and hard substrates (*Alcyonium digitatum*, *Lithothamnion sonderi*,

Phymatolithon sp., *Pomatoceros triqueter*, *Sabellaria spinulosa*, *Pododesmus patelliformis* and *Hiatella arctica*).

The Cleaver Bank is also probably the last site in the Netherlands where the oval venus *Timoclea ovata* can still be found. The marine gastropod mollusc *Caecum glabrum* has not been found alive often anymore but is fairly common on the Cleaver Bank. Fish species include gobies (*Pomatoschistus* spp.), small flatfishes like the scaldfish (*Arnoglossus laterna*) and solenette (*Buglossidium luteum*) and the common dragonet (*Callionymus lyra*). Two species prefer to live on and between cobbles and as such can be called characteristic. These are the Norway bullhead (*Taurulus liljeborgi*) and the two-spotted clingfish (*Diplecogaster bimaculata*). Various fish



species, such as the whiting, spawn in the Cleaver Bank.

Figure 5. Cleaver Bank gravel content (dark brown = (sandy) gravel; dark yellow = gravelly sand and beige = sand or clay) and identified rocks >30cm (blue lines = contours based on actual reflection and interpolation) and SCI boundary (red line). Figure copied from the JR document.

Area(s)

The JR entails management measures in the Natura 2000 site located on the Cleaver Bank which has been designated for the protection of reefs (H1170): the Dutch site "Klaverbank" was included in the list of Sites of Community Importance (hereafter SCI), pursuant to Art. 4(2) of the Habitats Directive, by Commission Decision 2010/43/EU of 22 December 2009.

The original site boundaries which were submitted to the European Commission in 2009 were located slightly more southwards compared to the latest Cleaver Bank site boundaries (Figure 6). This change was made because, at the time of submitting the site, it was estimated that the habitat type H1170 was present in approximately half of the submitted area. Subsequently, based on new data provided by the industry on presence of stones, pebbles, cobbles and gravel, it was suggested to move the Southern boundary to the North (thus excluding an area where H1170 is not present) and move the Northern boundary further to the North (thus including an area where H1170 is present). The resulting Cleaver Bank SCI is 1539 km² in size.

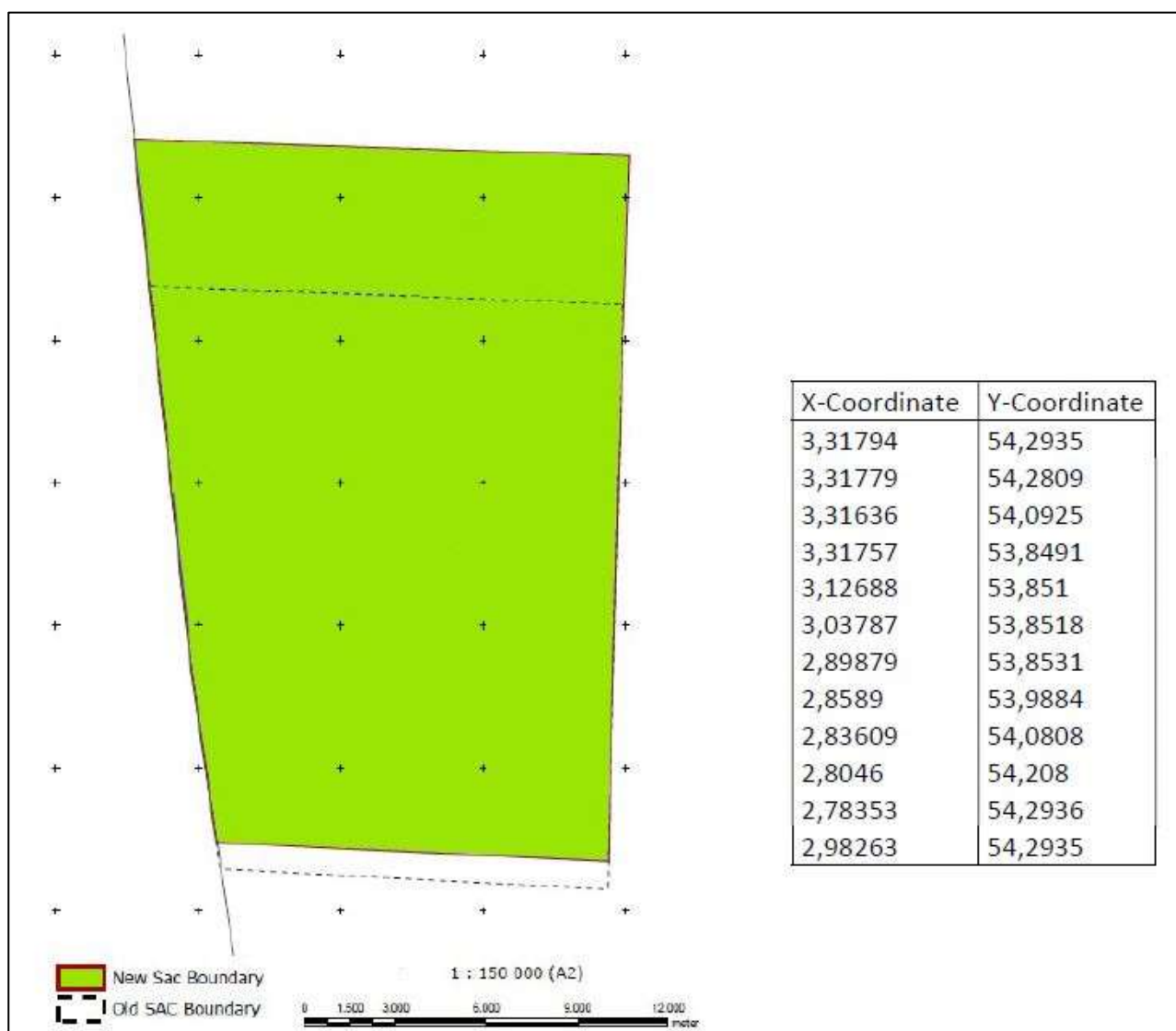


Figure 6. GIS contour and coordinates of the new Cleaver Bank site boundaries. The figure is copied from the JR document.

Management measures

Four management zones (Figure 7) will be closed to beam trawl (TBB, including pulse trawl and pulse wing), bottom otter trawls (TBB, OTB, OTT, PTB, TBN, TBS, TB, BTM), dredges (DRB, HDM), demersal seines (SDN, SSC, SPR, SV, SX, including Danish and Scottish Seines): Area 1 (113.84 km²), Area 2 (294.16 km²), Area 3 (187.55 km²), Area 4 (106.02 km²). The remaining area will be open to all types of not otherwise prohibited fishing gear. An alert zone of 4 nm width, measured from the outer limits of each management zone, will be established adjacent to each management zone (Figure 8); in the alert zone there are no restrictions on fishing activities.

STECF notes that the proposed areas closed to fisheries represent a substantial portion (45.6%) of the Cleaver Bank SCI and encompasses most of the reef habitats. However, a small proportion of reefs is located beyond the proposed boundaries of the Cleaver Bank management zones, within the alert zones. STECF considers that a buffer zone where no fishing is allowed surrounding reef habitats would have been preferable, and more in line with the precautionary approach.

Cleaver Bank proposal
 in relation to reef features

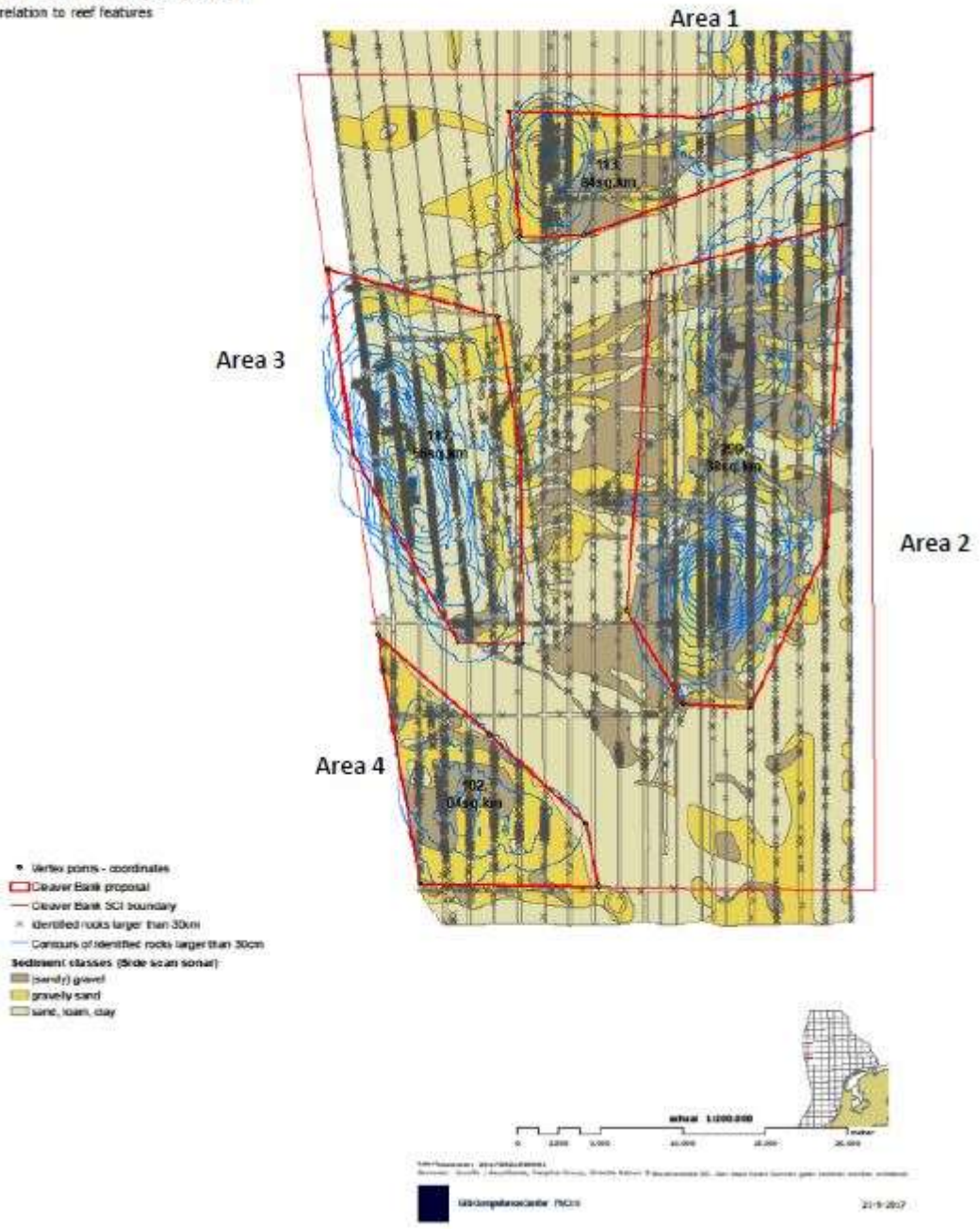


Figure 7. Map with four management zones on the Cleaver Bank. The figure is copied from the JR document.

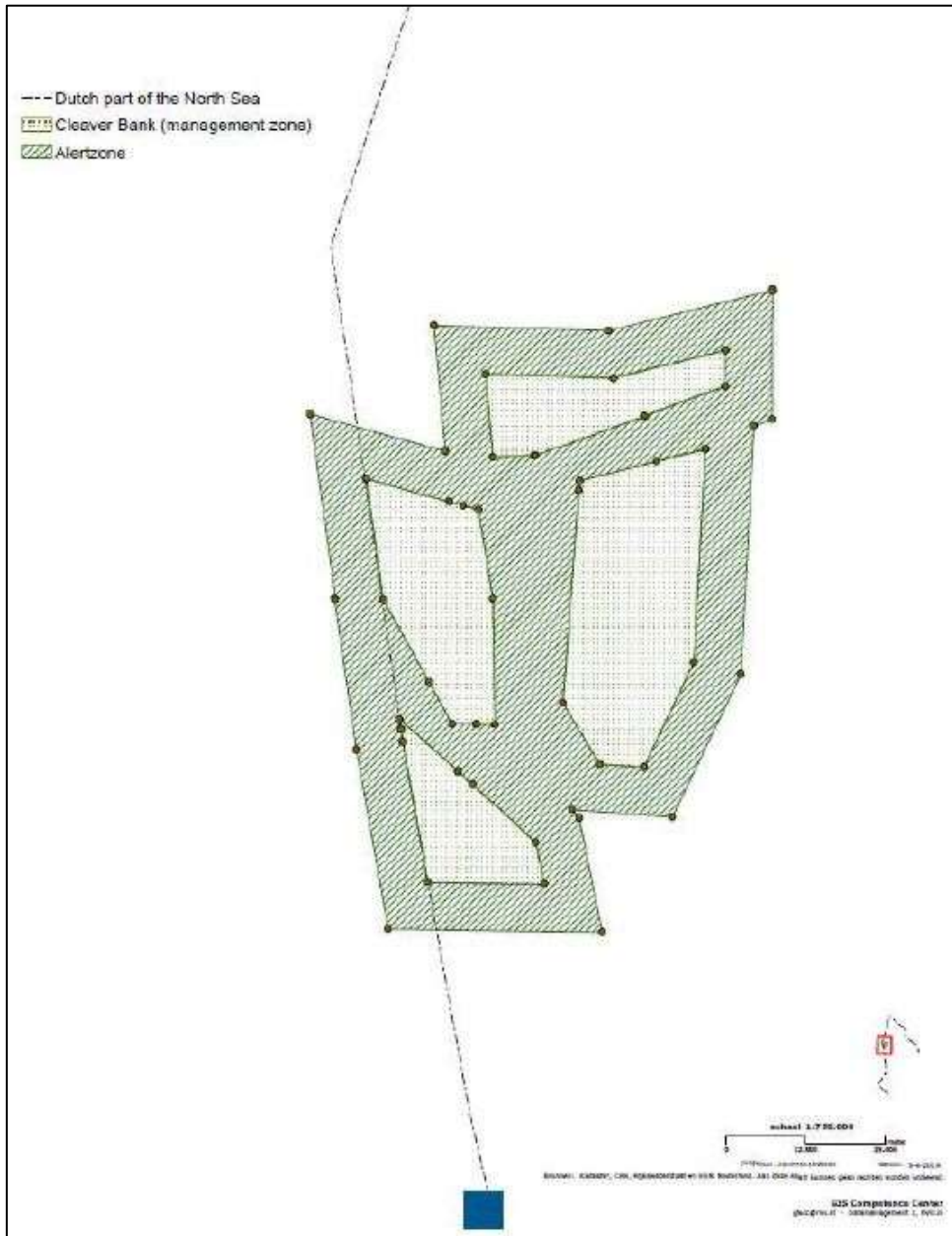


Figure 8. Map with the 4 nm alert zones on the Cleaver Bank. The figure is copied from the JR document.

After a period of 6 years after the publication of the Regulation the initiating Member State will assess the impact of the measures on the benthic ecosystem. STECF notes that some of the typical reef species will not have commenced or completed re-colonization within the six-year period. Nevertheless, if good quality refers to the presence of long-lived species on the Cleaver Bank, these species appear to be present now and will hopefully continue to be present over the first six-year period of reduced fishing pressure. ICES (2012a) also noted that some encrusting coralline algae species found on the reefs are slow growing and under certain conditions can form maërl, which can build up over millennia and it is difficult to know whether this type of biogenic habitat could form on Cleaver Bank in the absence of fishing pressure. STECF considers that for marine mammal species, the effects of the closures will mostly depend on species distribution.

Political process

In 2009, The Netherlands started the FIMPAS project. In 2010-2011 a series of workshops was held with stakeholders from the fishing sector, NGO's and science communities to review existing data and scientific information on the interaction of fisheries with natural features in the Natura 2000 sites. Subsequently, a group of industry representatives presented a proposal to the FIMPAS Steering Group, but the NGOs informed the FIMPAS Steering Group that they did not want to consider any changes to the original proposal as discussed at the 3rd FIMPAS Workshop. Governments and stakeholders from the Netherlands, Belgium, Germany, United Kingdom and Denmark attended all three FIMPAS workshops. The FIMPAS Steering Group concluded that the new industry proposal did not meet the management principles of the 3rd FIMPAS workshop. No new initiatives emerged to bridge the differences of views between sector and NGOs, between June 2011 and summer of 2012. On September 2012 the FIMPAS Steering Group sent in a request to ICES ACOM for scientific advice. The ICES advice supported the FIMPAS zoning proposal, with the exception of the Botney Cut, where no immediate ban on beam trawling was thought to be necessary. In 2013-2015, additional research on the Cleaver Bank was carried out to determine precisely where the habitat type H1170 reefs are located. National fisheries organisations and NGOs were informed of the results and it was determined by all groups that this was the best information available. In 2016 a meeting with all national stakeholders was held, but no progress could be made towards reaching common ground. In 2017, a new version of the JR was discussed in a series of meetings involving the ad hoc Scheveningen Group, representatives from the NSAC and NGOs. One last round of comments was collected and resulted in the conclusion early 2018 by the neighbouring countries that 'sufficient information' had been provided. The JR and background document were agreed to by the High Level Scheveningen Group in its meeting on February 2019.

Impact on fisheries

Fishing effort, landings volume, landings value and contribution to the Gross Value Added (GVA) for all bottom trawling fleets are quantified for all Member States exploiting the Cleaver Bank (Netherlands, UK Denmark, Germany, Belgium, Sweden, France) in the period 2010-2016. Several sources were used in this study: VMS data, catch data from logbooks, data on landings value and economic performance of all fleets from the database of the Annual Economic Report (STECF, 2016).

Over the 2010-2016 period the amount of fishing activities with bottom contacting gear has varied significantly from year to year in the proposed closed areas on the Cleaver Bank with different patterns for the different countries and seems to be declining. Over the period, the Dutch effort was on average 174 days at sea, while British, German and Belgian activities amounted to 28, 31 and 43 days at sea, respectively. The effort of Sweden, France and Denmark were in the region of 0-3 days at sea.

Landings remained relatively stable over the period at an average of 478 tonnes for the Netherlands, 112 tonnes for UK, 76 tonnes for Belgium, 54 tonnes for Germany, 28 tonnes for Denmark, 6 tonnes for France and 1 tonnes for Sweden representing an average value of 1.170 k€ (The Netherlands), 222 k€ (UK), 173 k€ (Belgium), 76 k€ (Germany), 9 k€ (Denmark), 9 k€ (France) and less than 1 k€ (Sweden), and a GVA of 525 k€ (The Netherlands), 58 k€ (UK), 81 k€ (Belgium), 41 k€ (Germany), 6 k€ (Denmark), 1 k€ (France) and less than 1 k€ (Sweden) (Hamon et al., 2017; Hamon and van Oostenbrugge, 2017).

Beam trawls and otter trawls are the predominant fishing gears. The Dutch fleet also operates seines in the area. The main species targeted by the beam-trawl fleet is plaice. The other demersal gears catch mackerel, sand eel, cod and whiting. The dependency of the Dutch fleet on fishing in the proposed closed area is low at the fleet level (less than 1% of the revenue of the vessels operating at least part of the year with bottom contact gears).

On average around 35 vessels had some revenue from the area but for most of them the revenue from the Cleaver Bank represented less than 10% of their total revenue (on average about 3 vessels had a dependency higher than 10% per year).

As is the case for the Dogger Bank, it is assumed that fishers move their effort to other locations in case of area closures. STECF considers that advanced bio-economic models (e.g. DISPLACE, Bastardie et al., 2013) could be used to further investigate and predict potential fishing effort redistribution. ICES (2012a) advice on the Cleaver Bank states, however, that displacement of trawl fisheries is not an issue of concern.

Control and enforcement

The proposed control and enforcement scheme is described in the section “*General observations and comments by the STECF*” above.

Monitoring

Monitoring follows the protocol also described in that section. An evaluation will be carried out every six years because recovery of the ecosystem can take several years and some of the typical reef species will not have commenced or completed re-colonization within the six-year period (ICES, 2012a). It can take two to three MSFD cycles of six years before a change can be detected. Besides the biological indicators, fisheries data are an important indicator to analyse the temporal and spatial fine-scale distribution of fishing efforts through the Fishing Pressure Indicator, which is developed by ICES and the Benthis project (Rijnsdorp et al, 2017). This indicator is a pressure indicator (impact of fisheries on the areas not closed for fishing effort) by combining VMS data and information on footprint. STECF notes that the monitoring is focused on benthic monitoring, but no monitoring specifically for the fish communities is programmed.

C. Protection of the common guillemot in the Frisian Front

Case C concerns a JR for fisheries management on the Frisian Front as a Special Protection Area (SPA) under the Birds Directive, for protection of the common guillemot.

Current status

The Frisian Front is characterised by high concentrations of fish and bird species. Common guillemots (*Uria aalge*) migrate here in great numbers, exceeding 20 000 individuals in summer and autumn to raise their young and moult (Lindeboom et al., 2005) (Figure 9). In this period, great skuas (*Stercorarius skua/Catharacta skua*) are also found regularly on the Frisian Front. Lesser black-backed gull (*Larus fuscus*) are assumed to be present in June and July, while great black-backed gull (*Larus marinus*) can regularly be encountered in late October to November. Only the common guillemot is a qualifying species for the Frisian Front under the Birds Directive. Amongst other factors, the boundaries of the Frisian Front closure are determined by the concentration of bird species (Lindeboom et al., 2005).

After the breeding season, common guillemot males swim with their young, mostly from the Scottish breeding colonies, to remote places such as the Frisian Front to forage. The young cannot yet fly at this stage and the adults use this time to moult. Common guillemots hunt under water for food, at depths averaging between 20 and 50 metres, using their wings to generate propulsion. Common guillemots occur everywhere on the Frisian Front (but particularly in the western part; Lindeboom et al., 2005) and are regularly present in large numbers from July to November.

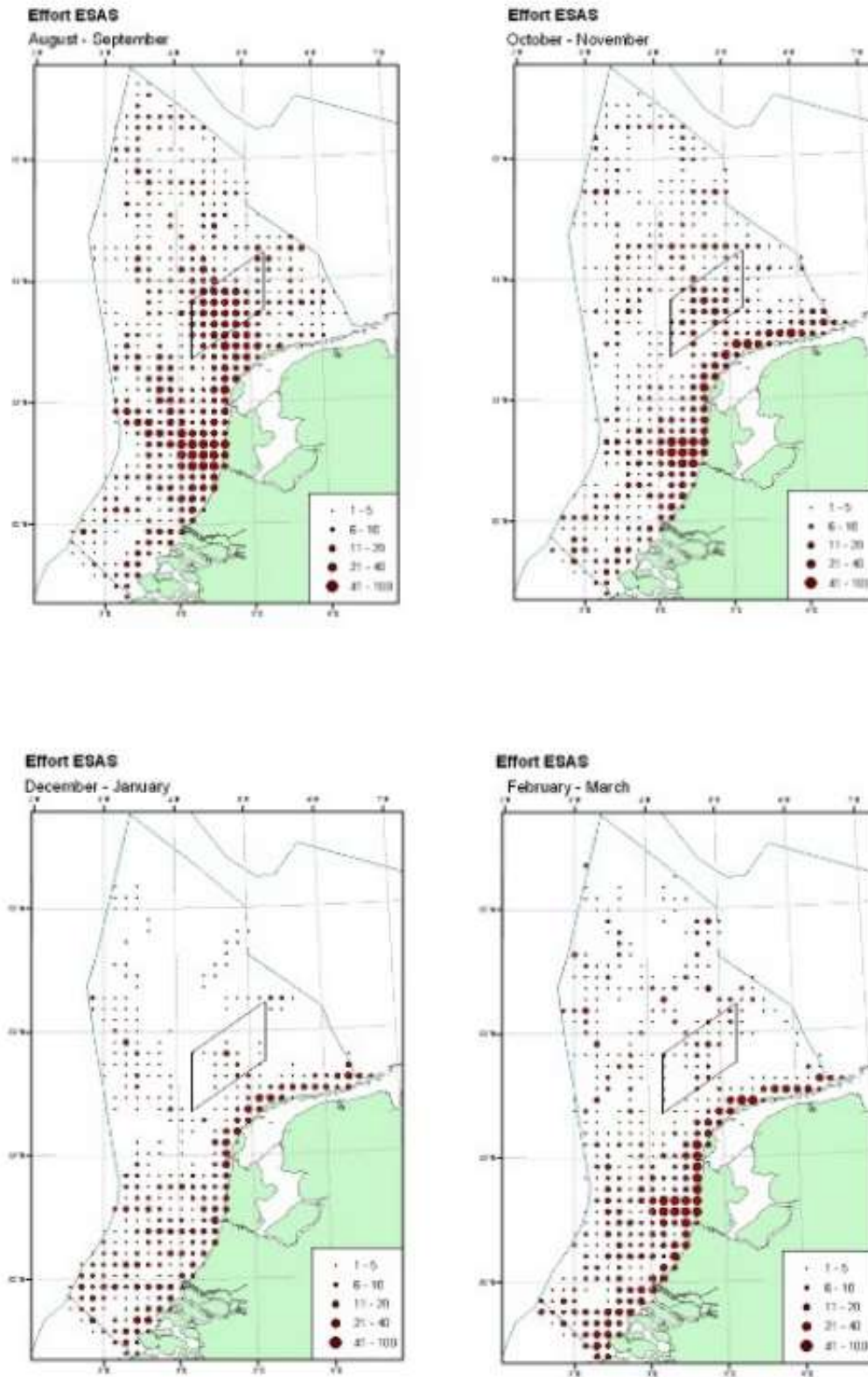


Figure 9. Spatial and temporal distribution of common guillemot based on shipping observations in the period 1987-2006. The parallelogram designates the Frisian Front; see also Figure 10. Figure copied from the background material.

Objectives

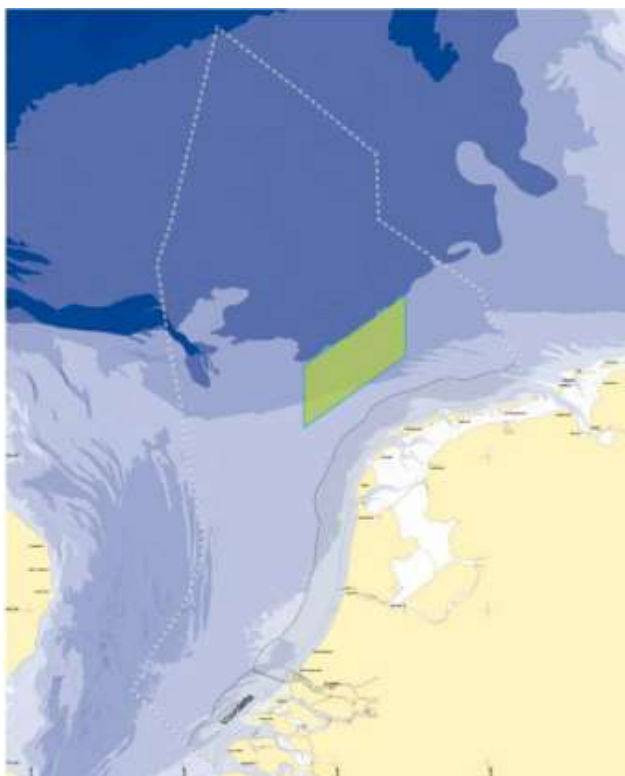
The overall aim of the proposal is to ensure the adequate protection of the common guillemot and to ascertain a key contribution to achieving the conservation objective, which is at national level to maintain the extent and quality of habitat for the common guillemot, in accordance with the Birds Directive 2009/147/EC. Regarding the common guillemot, the Frisian Front was designated as a Habitat Directive Special Protected Area (SPA) because the common guillemot occurs in the site at numbers exceeding 20 000 individuals and the threshold value of 1% of the population¹.

The purpose of the fisheries management measures is to reduce the pressure on the common guillemot in accordance with the Birds Directive, in the period when young common guillemots have not started to fly, and the adults are unable to fly due to moulting. During this period, they are highly vulnerable, especially to gillnet fisheries (ICES, 2011b, van Roomen et al., 2013; the latter cited in the background material). The protection of the rearing grounds for young common guillemots, such as the Frisian Front, will help maintain the population (Jak et al., 2009; cited in the background material).

Given the potential risk to the common guillemot from gillnets and the potential for future changes in fishing patterns, ICES (2012; see information provided to the STECF) agrees with the proposed measures. According to the background document, disturbance from other human activities (pipelines and cables, platforms, shipping, oil pollution, other fishing gears) is absent or low and do not pose a threat to guillemots

Area(s)

The JR entails fisheries management measures in the entire Frisian Front (Figure 10).



¹ A site is generally considered as being of international ornithological importance under Directive 2009/147/EC on the conservation of wild birds if it regularly holds 1% or more of the estimated population of one species.

Figure 10. The Frisian Front, designated by the green parallelogram. Figure copied from the background material.

Management measures

The management measure stipulates that the Frisian Front area will be closed to gill net fishing from 1 June until 30 November of each year, specifically for the following gear codes: GN, GNS, GND, GNC, GTN, GTR. This measure is excepted for a limited amount of fishing from 1 June until 30 November based on the average days at sea for the years 2012-2016. This only includes fleets that have fished in those years, and results in 3 days per period (1 June until 30 November) for the Dutch fleet, 2 days per period for the Danish and German fleets each and 1 day per period for the UK fleet.

Gill net fishing is allowed in the Frisian Front outside of the period from 1 June until 30 November. The common guillemot is especially vulnerable from July-November. Hence including June can be seen to be precautionary. This was proposed to accommodate earlier arrivals of moulting birds and adults with their young, in the light of climate change. The common guillemot is particularly vulnerable in this early part of the season when both moulting birds and young are incapable of flight. After a period of six years after the publication of the delegated act the initiating Member States will assess the impact of the measure on the conservation objective to the common guillemot.

STECF notes that the proposed measure does not constitute a reduction compared to the current situation; it is a "freeze" at current levels. It is not clear to STECF why the JR allows these few days at sea in the period from 1 June until 30 November. In the background material it is said that over the period 2010-2015 no vessel has shown a great dependency in the area (one vessel had 10-20% of its revenue from the area/season in 2011, otherwise all vessels got less than 10% of the revenue from the area/season). Thus, it seems unlikely that this decision was necessary to accommodate fisheries interests.

STECF considers that the bycatch risk to common guillemot is high in gillnets but low in beam trawl and otter trawls. However, Deerenberg et al. (2010) evaluated sound and visual disturbance. They found that common guillemots generally avoid vessels to some extent, by swimming out of the ship's path. Direct effects do not seem to be large (displacement over tens of meters only), but fishing attracts large numbers of large gulls and skua's to the area. These are exactly the predators that common guillemots try to avoid while swimming with small young at sea. It thus cannot be excluded that the present fishing intensity is sufficient to cause relevant displacements in season when these birds are the most vulnerable, i.e. when young are still small and vulnerable to gull/skua predation (July-August). Nevertheless, FIMPAS (ICES, 2011b) concluded that the Deerenberg et al. (2010) conclusion of medium disturbance impact for common guillemot is not supported and should not be considered further, since there is no a priori reason to believe that their foraging is adversely affected by the noise and light from trawling/seining operations.

STECF has no further information to decide whether to the conclusion by Deerenberg et al. (2010) or the conclusion by FIMPAS (ICES, 2011b) are correct.

Political process

In terms of the stakeholder-involving process, as with the cases A and B, the Netherlands started the FIMPAS project in 2009. In the project, a series of workshops was held with stakeholders from the fishing sector, NGOs and science communities to review existing data and scientific information on the interaction of fisheries with natural features in the Natura 2000 sites. Preceding the three workshops, literature reviews were made available to participants. The third and last FIMPAS workshop reached agreement on a proposal for fisheries measures for the Frisian Front. In 2012, the FIMPAS Steering Group sent in a request to ICES ACOM for scientific advice.

ICES was requested to advise on the degree to which the implementation of the proposed fisheries measures would contribute to the achievement of the conservation objectives. The ICES advice supported the proposed measure (ICES, 2012b).

An important feature of the FIMPAS project was the involvement of neighbouring Member States in the process. This started from the very early stages. Governments and stakeholders from The Netherlands, Belgium, Germany, United Kingdom and Denmark attended all three FIMPAS workshops. In 2017, following the FIMPAS process, the Scheveningen Group and the NSAC were involved; discussions led to a new version of the proposal. In the last round of commenting, one Member State could not agree because they felt the proposed measure was too precautionary. As the conservation objective for the common guillemot is 'to maintain the extent and quality of habitat' and the level of gillnet fisheries is very low in the specific period in the Frisian Front, the Scheveningen Group then agreed to the suggestion to 'freeze' the level of gillnet fisheries from June to November in the Frisian Front, based on the average levels of fisheries per country in that period in the last 5 years. Final approval of the Joint Recommendation was agreed by those Member States with a direct fisheries management interests in the "High Level Scheveningen Group" in its meeting of 27 February 2019.

As noted above, STECF does not understand why this has been decided, because the fisheries' dependency on the area is so low (see the section below).

Impact on fisheries

The impact of the measures on the gillnet fishing sector was analysed. Economic information specific for the closure in the June-November period for the years 2010-2016 for the Dutch, British, Danish, German, Belgian, Swedish and French fishing fleets was used. The main species targeted by the gillnetters on the Frisian Front are sole and cod. The other species caught are turbot, plaice and red mullet. There is a strong variability in the catch combination between years. As stated above, the dependency was found to be low. STECF considers that, since in the final proposal of the JR the Member States can continue to use gillnets in the area in the June-November period at the levels of the previous years (2012-2016), there is no or low impact to the fisheries.

Control and enforcement

The proposed control and enforcement is the same as described in the section above "*General Observations of the STECF*". In this case, however, the relevant period is June to November, there are no alert zones of 4 nm around the management area and, because the prohibited gear is gillnets, there is no speed threshold of 6 knots. Moreover, as stated above, some gillnet fishing activity by the Netherlands, Germany, Denmark and the UK in the relevant period is allowed (3, 2, 2, and 1 days at sea respectively).

Monitoring

Monitoring will involve the following indicators: numbers of the common guillemot (biological indicator), and fishing effort (pressure indicator). The Dutch monitoring plan for sea birds in the EEZ consists of annually 4 aerial surveys with a moderate-high transect density; this will provide information on bird density.

D. Protection of the seabed in the Central Oyster Grounds and the Frisian Front

Case D concerns a JR for fisheries management on the Frisian Front and the Central Oyster Grounds. These areas do not qualify for the Habitats Directive, because their habitats are not

included in the list of natural habitat types in Annex I of the Directive. Due to a unique combination of ecosystem elements, it was decided in the Dutch Marine Strategy to offer additional protection to the seabed ecosystem in the areas of the Frisian Front and Central Oyster Grounds based on article 13.4 of the MSFD. These measures would contribute to attain a Good Environmental Status (GES), with respect to descriptors 1 and 6, but also descriptors 3 and 4.

The Frisian Front also qualifies under the Birds Directive (see case C above) for protection of common guillemots. The proposed conservation measure areas are an addition to Natura 2000 areas on the Dutch part of the North Sea to contribute to the creation of a coherent and representative network of marine protected areas.

Current status

To determine the potential for such spatial measures, a study has been carried out to analyse and present hotspots of biodiversity for several taxonomical groups and habitats on the Dutch Continental Shelf, based on the spatial application of the GES descriptor 1 (Biodiversity) (Bos, 2011). In this study, data series and literature on benthos (macrobenthos and megabenthos), fish, seabirds, marine mammals and habitats have been assessed, thus providing biodiversity information on the three different levels (species, habitat and ecosystem) described in the 2010 Commission Decision on the criteria and methodological standards for GES descriptor 1.

The Frisian Front contains high densities and biomasses of megabenthos, and many rare megabenthic species (Bos, 2011), such as the long-lived ocean quahog (*Arctica islandica*). A set of 13 metrics of biodiversity covering the width of the Commission Decision criteria has been defined and maps per biodiversity metric and per taxonomical group have been constructed. Some conclusions of this analysis are in Table 1. In a societal cost-benefit analysis (SCBA, van Oostenbrugge et al., 2015), the ecological benefits were assessed using the “ecopoint” method, focusing on the current status of the benthic ecosystem and possible focus areas in the management zones. The ecopoint method makes it possible to compare options with different ecological qualities based on a numerical score attributed to an area or subarea.

Table 1.

Area	Macrobenthos	Megabenthos	Habitat
Frisian Front	Many big growing species High species richness	High density High biomass Many rare species High species richness	Rare habitat
Central Oyster Grounds	Many old growing species Many big growing species High species richness	High density Many rare species High species richness	Rare habitat

Objectives

The overall aim of the proposal is the recovery of substantial parts of the seabed ecosystem from a disrupted state towards a natural condition. The purpose of the fisheries management measures is to reduce the pressure on the benthic habitat from towed bottom contacting fishing gear with a

view to ensuring a key contribution to the achievement of conservation objectives in accordance with the Marine Strategy Framework Directive.

The background document lists the human activities in the areas, such as shipping, cables and pipelines, oil and gas extraction, oil pollution, and fisheries. The principle bottom contacting fisheries on the Dutch Continental Shelf are beam trawl, otter trawl, pulse trawl, and demersal seines.

The direct effects of trawl fishing are: fish mortality, change in food availability and changes in habitat conditions for the benthos, which ultimately result in effects on abundance and diversity of the benthic community (Deerenberg et al., 2010, referred to in Slijkerman, 2013). Significant negative effects on total biomass, secondary production and species richness have been identified (Reiss et al., 2009 and Hinz, 2009, both referred to in Slijkerman, 2013). The physical impact of trawling can broadly be classified into: penetration into the seabed, thus damaging or taking away benthos; collision with (hard) structures; and re-suspension of sediments. As a result, the sea floor may be homogenized, having a negative impact on deep digging species such as shrimps. Those species are important for the structure, chemical conditions, mineralization of the sea floor, enhancing the distribution of other species (Slijkerman, 2013). The density of ocean quahogs diminished since 1980, probably caused by increased bottom trawling on the Frisian Front (Lindeboom, 2008b, referred to in Slijkerman, 2013).

The background document provides an indication of the effects of long-term closure of an area to fisheries by describing a study on a nearby exclusion zone for all shipping, and thus for fisheries, around a gas production platform, where greater species richness, evenness, abundance, and densities of various species occurred. In general, based on various studies, it is expected that seabed structure will change towards natural intrinsic conditions and an increase in natural bioturbation. A benthic community in which epifauna has a larger role can develop. It is assumed that benthos biodiversity increases, biogenic structures develop, scavengers and worms decrease, crustaceans and bivalves increase, as well as sensitive fish species, predatory fish and large specimens of certain species. Based on various studies, it is expected that the period over which a benthic community recovers may be in the order of 5 to 25 years.

Area(s)

The JR entails fisheries management measures in three sites located on the Frisian Front and Central Oyster Grounds, which together amount to 2000 km² (Figure 11). This comprises 3.3% of the Dutch part of the North Sea and together with the proposed measures for Dogger Bank and Cleaver Bank (about 8%) contributes to the ambition of the Dutch government to protect 10 to 15% of the Dutch part of the North Sea against significant seabed disruption.

STECF observes that the three areas do not entirely lie within the "search area" as defined in the background document (Figure 12), although, according to the background document (p. 26, point c), the government had stated as a principle that the management areas *should be* within the search area. Furthermore, STECF observes that the northernmost area overlaps only partly with the Central Oyster Grounds and the easternmost area overlaps barely with the Frisian Front (Figure 13, from Lindeboom et al., 2005). Moreover, the evaluations of the management measures are based on studies (van Oostenbrugge et al., 2015, 2016a, b) that analysed different sets of areas within the region compared to the final one in the JR.

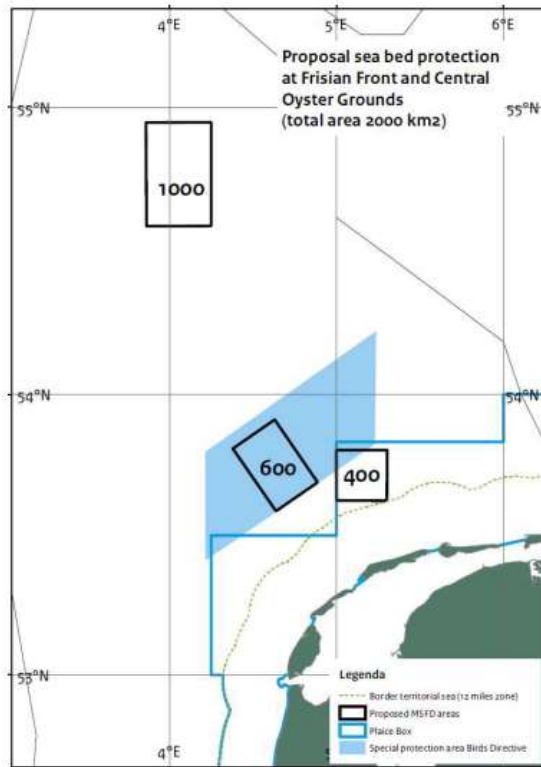


Figure 11. The three proposed areas (rectangles). Numbers inside the rectangles are km². Figure copied from the JR document.



Figure 12. The search area is green hatched. Figure copied from the background document.

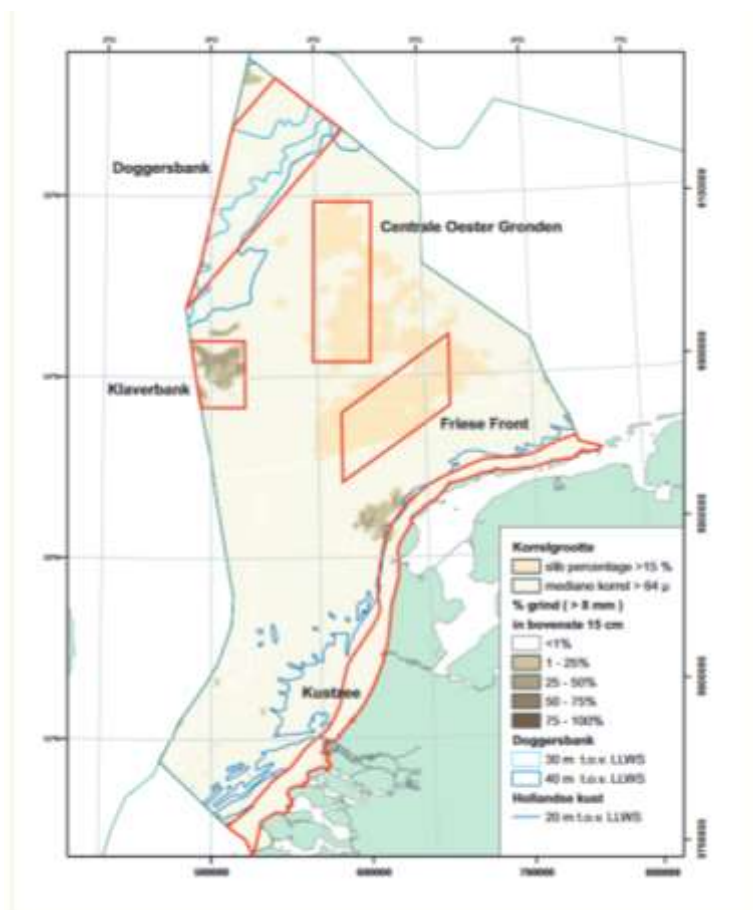


Figure 13. The Central Oyster Grounds ("Centrale Oester Gronden") and the Frisian Front ("Friese Front"). Figure copied from Lindeboom et al. (2005).

More precisely, the SCBA performed by van Oostenbrugge et al. (2015), combining all the ecological and economic information available, dealt with six variants of management areas. The outcomes differed substantially between the six variants, with the two largest (of 4206 km² and 6339 km²) ranking highest in terms of ecopoints. The others (ranging between 1204 km² and 1683 km²) varied in rank according to assumptions. Similarly, the largest two variants yielded substantially higher economic costs to the fisheries than the smaller variants (van Oostenbrugge et al., 2015). Based on this analysis and having the MSFD goals in mind, the Dutch government decided to strive towards a medium-size protection area of 2400 km². Four variants of that size were analysed with respect to their economic costs for the fishing industry (Oostenbrugge, 2016a); later in the same year another variant of 2400 km² was analysed with respect to costs (Oostenbrugge, 2016b). The costs varied between these five variants of 2400 km², with the costs of the last variant being the lowest, namely between € 0 and € 6 million (depending on a range of assumptions). Finally, the Dutch parliament decided on reducing the 2400 km² proposal that was analysed in van Oostenbrugge (2016b) to 2000 km² by leaving out one area of 400 km²; that final variant was not analysed. The rationale for the decision to reduce the area is not mentioned and thus not known to STECF. According to the background document (p. 39), the economic impact on the fishing industry is expected to be limited (namely ranging between € 0 and less than € 6 million). STECF considers it unlikely that the decision was necessary to accommodate the interest of the fishing industry. For none of the later variants was the initial ecological analysis repeated. STECF finds it difficult to judge whether all the intended conservation benefits will materialize through the proposed measures.

Management measures

The management measure stipulates that the management zones will be closed to fisheries travelling under six knots using the following towed bottom contacting gear types: beam trawl (TBB), bottom otter board trawl (OTB, OTT, PTB, TBN, TBS, TB, BTM), dredges (DRB, HMD) and demersal seines (SPR, SDN, SSC, SX, SV). After a period of six years from the publication of the delegated act, the initiating Member State will assess the impact of the measure on the benthic ecosystem.

Control and enforcement

The proposed control, enforcement and compliance regime for the Frisian Front and Central Oyster Grounds is already discussed in the section of general observations and comments.

Political process

For this JR, the national stakeholder process started in 2013. The stakeholders included the fisheries organisations VisNed and the Nederlandse Vissersbond (NVB) and the NGOs the North Sea Foundation (Stichting De Noordzee) and WWF. In October 2014, Greenpeace also participated. In 2014, the main principles for the process were established with the stakeholders: maximum ecological gain, minimal costs for the fisheries, and robust larger areas instead of several smaller areas.

STECF notes, however, that most of the variants explored as well as the final variant consist of several smaller areas. The initial six variants were established during the process (two were brought up by the fisheries sector, one by the NGOs and three by the government). All parties were involved in the drafting of the SCBA of these six variants, by different workshops and possibilities for input along the process (van Oostenbrugge et al., 2015). Based on this document the government decided to strive towards a medium-size protection area of 2400 km². In February 2017, the Dutch Parliament adopted a motion that adapted the proposal of the Minister of Infrastructure and the Environment and the Minister of Economic Affairs to a total area to be protected of 2000 km². This adapted proposal is presented in the current JR.

Impact on the fisheries

Dutch and foreign fisheries on the Frisian Front and Central Oyster Grounds have been analysed in the SCBA of fisheries measures in these areas (van Oostenbrugge, 2015). The main species targeted by the beam-trawl fleet on the Central Oyster Grounds and Frisian Front is plaice with small catches of sole. The other demersal gears catch a combination of species such as sprat, plaice and herring. Some sole and *Nephrops* are caught as well.

Landing values of the Dutch fishing sector on Frisian Front and Central Oyster Grounds amounted to about € 4.9 million on average over the period 2008-2014; this was 2% of the total value of the Dutch demersal fleet. In this period, quarterly about 45 Dutch vessels fished in the areas. Three quarters of them took 10% or less of their revenues from these areas. Landing values of the foreign fleet on Frisian Front and Central Oyster Grounds were on average 1.5 times larger than landing values of the Dutch fleet. STECF notes that the supporting documents refer to old economic data, and that more updated data would be necessary to understand whether they reflect the current fishing pattern in the two areas.

The economic effects of closures on the fishing sector have been assessed by an analysis of the historic fishing activities in the areas combined with scenario analysis (van Oostenbrugge et al., 2015). The closures will have an impact on social aspects in fisheries and their local communities, mostly Urk and Wieringen where most of demersal fisheries exploiting Frisian Front and Central Oyster Grounds are based.

These social effects have been assessed through interviews with fishermen. Most of these aspects cannot be attributed to one of the variants but have been described in van Oostenbrugge et al. (2015). Costs for monitoring and control have been estimated but are non-distinctive for most of the variants as the uncertainty in the costs is high. For the last 2400 km² variant (van Oostenbrugge, 2016b) costs in terms of gross value added for the Dutch fisheries, depending on the scenarios, range between € 0 and € 6 million. Therefore, for the adapted variant of 2000 km² of the JR, the range is expected to be between € 0 and less than € 6 million.

Monitoring

Monitoring follows the Dutch monitoring programme as described under the general observations.

STECF conclusions

General conclusions

STECF restates previous advice (most recently PLEN 17-02) that control and enforcement is complicated in small sized and irregularly shaped sites. There is a risk that fishing could take place without being detected by vessels for which VMS signals are polled every 30 minutes, or which are not monitored by VMS at all (i.e. all vessels < 12 meters in length). STECF thus considers that additional control and enforcement measures may be appropriate for such fishing vessels. Furthermore, STECF notes that it is not clear how enforcement is guaranteed when vessels transit the area at speeds lower than 6 knots, because for such instances no action is described on how the control agency should verify whether the vessel is fishing with the prohibited gear or whether it is lashed and stowed. STECF thus considers that the control and enforcement measures may need to be revised to include actions to be taken when vessels transit the area. Moreover, since beam trawls often fish at the speed of six to eight knots, even vessels with a speed over six knots could be fishing. It would, therefore, be more precautionary to have a threshold higher than eight knots.

A. Protection of sand banks in the Dogger Bank

ToR 1

STECF concludes that the proposed conservation measure in the Dogger Bank represents a positive step forward towards (i) minimising the negative impacts of fishing activities (all management zones will be closed for beam trawl, bottom/otter trawl, dredges and semi-pelagic trawls; the German zone will also be closed for demersal seines) on habitat type H1110 (sand banks which are slightly covered by sea water all time) and its biological communities, and (ii) ensuring that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of the Regulation 1380/2013.

Regarding point (i), STECF considers that for most fish species, the magnitude of any effects of the measures will mostly depend on species distribution, while benthic species such as flatfish and sand eel should be able to increase biomasses with a possible spill-over effect outside the closed areas. Regarding point (ii), STECF notes that more attention should be paid to the potential effects of fishing effort displacement, both within the SCI and outside the SCI.

ToR 2

STECF concludes that the proposed measures may contribute towards ensuring that the habitats and species addressed in the recommendation are maintained and restored at favourable conservation status. STECF notes that the final proposal represents a trade-off between protection of the sand banks and socio-economic interests, in line with Article 2 of the Habitats

Directive 92/43/EEC. STECF further notes that this trade-off may have negative impacts on the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the Dogger Bank since fishing with bottom contacting gears will continue in >60% of the Natura 2000 site, and fishing with purse seines will continue in >90% of the site.

STECF considers that any resulting changes in status of the five different benthic communities occurring on the Dogger Bank are likely to differ, due to differences in species composition, population dynamics and sensitivity to fishing impacts. Concerning the likely progress over a 6 years period, given the lifespan of typical species, STECF notes that for some species with a lifespan of less than 6 years recovery would be possible in this period.

STECF concludes that a common and coordinated monitoring program for the whole Dogger Bank should be established and implemented by each Member State. The results after 6 years of such monitoring, may improve understanding and provide better scientific guidance for the appropriate location and size of the areas needed to achieve conservation objectives.

Furthermore, different indicators may need to be considered for each of the five benthic communities identified on the Dogger Bank, due to differences in species composition and response to changes in fishing pressure. STECF also considers specific monitoring programmes for harbour porpoise, grey seal and harbour seal should be implemented since these species are listed in the Dogger Bank Natura 2000 site Standard Data Form.

B. Protection of reefs in the Cleaver Bank

ToR 1

STECF concludes that the proposed conservation measure in the Cleaver Bank represents a positive step forward towards (i) minimising the negative impacts of fishing activities on “reefs” (habitat type H1170) and (ii) ensuring that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of the Regulation 1380/2013.

ToR 2

STECF concludes that the proposed measures are likely to contribute towards ensuring that the habitats and species addressed in the recommendation are maintained and restored at favourable conservation status. The bans and limitations are proposed for gears that have been shown to negatively impact the species and habitat concerned.

STECF notes that some of the typical reef species (e.g., *Arctica islandica*, *Modiolus modiolus*, *Lithothamnion sonderi* and *Phymatolithon* sp.) may not have commenced or completed recolonization within the proposed 6-year monitoring cycle.

STECF acknowledges that the proposed areas closed to fisheries represent a substantial portion (45.6%) of the Cleaver Bank SCI, indicating progress towards the conservation objectives. STECF notes that a small proportion of reef habitats is located outside the proposed boundaries of the Cleaver Bank management zones, within the alert zones where fishing is allowed. STECF considers that a buffer zone where fishing is prohibited surrounding all reef habitats would have been preferable, and more in line with the precautionary approach.

In order to assess the effect of the proposed measures, STECF considers that monitoring programmes for fish communities should be implemented by Member States besides the planned monitoring of benthic communities. STECF further considers specific monitoring programmes for harbour porpoise, grey seal and harbour seal should be designed since these species are listed in the Cleaver Bank Natura 2000 site Standard Data Form.

C. Protection of the common guillemot in the Frisian Front

ToR 1

STECF concludes that the proposed conservation measure in the Frisian Front represent a positive step forward towards (i) minimising the negative impacts of fishing activities on some components of the marine ecosystem (i.e., the common guillemot population) and (ii) ensuring that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of the Regulation 1380/2013.

Regarding point (ii), STECF notes that the fishing activity with gillnets in the sensitive period (July-November) could be further minimized. Moreover, also in relation to point (ii), STECF notes that possible negative effects of fishing with gears other than gillnets (e.g. beam trawls and otter trawls), via the attraction of birds that prey on juvenile common guillemots, should be investigated.

ToR 2

STECF concludes that the proposed measures contribute towards ensuring that the habitats and species addressed in the recommendation are maintained and restored at favourable conservation status as stipulated under Art. 4 of the Birds Directive. The bans and limitations are proposed for gears that have been shown to impact negatively on the common guillemot. Moreover, the selected area includes an important proportion of the habitat where the common guillemots reside and is considered a key area for the conservation of the species. The selected period is the time of year when the common guillemots are most vulnerable.

STECF notes that the current proposal is the result of trade-offs between (i) setting management measures to significantly contribute to reaching the conservation target of the Bird Directive and (ii) limiting the impact of such measures may have on the economic viability of the fishery. However, STECF considers that, given the low level of fishing effort and the low relative economic importance of the fishery in the area, to minimise fishing activity impacts on the guillemot population consideration should be given to introduce a total ban of gillnet fisheries in the area during the closure period of 1 June to 30 November.

D. Protection of the seabed in the Central Oyster Grounds and the Frisian Front

ToR 1

STECF concludes that the proposed conservation measures in the Central Oyster Grounds and Frisian Front represent a positive step forward towards (i) minimising the negative impacts of fishing activities on some components of the marine ecosystem (i.e., the unique habitats and the benthic communities they support) and (ii) ensuring that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of the Regulation 1380/2013.

Nevertheless, because the management areas are not entirely within the search area adopted by the stakeholders and do not entirely overlap with the Central Oyster Grounds and the Frisian Front and because the ecological analyses did not address the chosen variant of management areas (see Areas section of case C), STECF cannot judge to what extent the ecological benefits of the measures will materialize. Moreover, contrary to one of the adopted principles (see Political process section of case C), the management zone consists of several smaller areas, which, owing to boundary effects, may be less effective than one bigger area.

ToR 2

While STECF considers that the proposed measures represent a step forward towards achieving the objective of good environment status (GES) as defined under the MSF Directive 2008/56/EC, STECF has no objective means to assess if the proposed measures would contribute to achieving

GES by 2020. Based on various studies, it is expected that the period over which a benthic community fully recovers may be in the order of 5 to 25 years.

References

Bastardie, F., Nielsen, J.R., Miethe, T. 2013. DISPLACE: a dynamic, individual-1 based model for spatial fishing planning and effort displacement - integrating underlying fish population models. *Canadian Journal of Fisheries and Aquatic Sciences* 71(3), 366-386.

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

Bos, O.G., Witbaard, R., Lavaleye, M.S.S., Moorsel, G.W.N.M., Teal, L.R., Van Hal, R., Van der Hammen, T., Ter Hofstede, R., Van Bemmelen, R.S.A., Witte, R.H., Geelhoed, S.C.V., Dijkman, E.M. 2011. Biodiversity hotspots on the Dutch Continental Shelf: a marine strategy framework directive perspective, IMARES Report 071/11.

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. Wageningen IMARES Report number C071/10.

Eigaard, O.R., Bastardie, F., Breen, M., Dinesen, G.E., Hintzen, N., 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., Rijnsdorp A.D. 2016. Estimating seabed pressure from demersal trawls, seines, and dredges based on gear design and dimensions. *ICES Journal of Marine Science* 73:i27-i43.

European Commission, 2007. Guidelines for the establishment of the Natura 2000 network in the marine environment. Application of the Habitats and Birds Directives.

Hamon, K., van Oostenbrugge, J.A.E, Bartelings H. 2013. Fishing activities on the Frisian Front and the Cleaver Bank – Historic developments and effects of management. LEI Memorandum 13-050, May 2013. LEI Wageningen UR, The Hague. 69 pp.

Hamon, K., Hintzen, N.t., van Oostenbrugge, J.A.E, 2017. Overview of the international fishing activities on the Cleaverbank and Frisian Front. LEI Memorandum XX, January 2017. LEI Wageningen UR, The Hague.

ICES. 2011a. Dublin discussion document by International Council for the Exploration of the Sea (ICES).

ICES. 2011b. Report of the FIMPAS Workshop 3 Management proposals for Dogger Bank, Cleaver Bank and Frisian Front, 24 - 26 January 2011, Den Helder, The Netherlands. ICES Advisory Committee.

ICES. 2012a. ICES advice on Proposed fisheries measures for the Cleaver Bank Special Area of Conservation. ICES Advice 2012, Book 6.

ICES. 2012b. ICES advice on Proposed fisheries measures for the Frisian Front Special Area of Conservation. ICES Advice 2012, Book 6.

IenM. 2014. Ministry of Infrastructure and the Environment, Marine Strategy for the Dutch part of the North Sea 2012-2020, Part 2, MSFD Monitoring Programme.

Jak, R.G., Bos, O.G., Witbaard, R., Lindeboom, H.J. 2009. Conservation objectives for Natura 2000 sites (SACs and SPAs) in the Dutch sector of the North Sea. IMARES report C065/09.

Leewis, L., van Lil, R., van den Oever, E.A., Verduin, E. 2016. Leeswijzer bij de geo-ecologische resultatenkaart Klaverbank, Integratie en kartering van beschikbare geologische en ecologische data 2014/2015, Periplus Consultancy rapport nr 16C021-01, 11 augustus 2016.

Lindeboom H.J., Geurts van Kessel, A.J.M., Berkenbosch, A. 2005. Gebieden met bijzondere ecologische waarden op het Nederlands Continentaal Plat. Rapport RIKZ/2005008, Den Haag / Alterra rapport 1109, Wageningen:103 p.

Lindeboom, H., Rijnsdorp, A.D., Witbaard, R., Slijkerman, D., en Kraan, M. 2015. Het ecologisch belang van het Friese Front. IMARES rapport C137/15.

NSAC. 2012. A position paper was presented with 2 separate annexes: one fishing sector proposal and one NGO proposal.

Rijnsdorp, A.D., Eigaard, O.E., Kenny, A., Hiddink, J.G., Hamon, K., Piet, G., Sala, A., Nielsen, J.R., Polet, H., Laffargue, P., Zengin, M., Gregerson, O. 2017. Final Report BENTHIS. Assessing and mitigating impact of bottom trawling. www.benthis.eu

Slijkerman, D.M.E., Bos, O.G., Van der Wal, J.T., Tamis, J.E., De Vries, P. 2013. Zeebodintegriteit en visserij op het Friese Front en de Centrale Oestergronden. Beschikbare kennis en 1e uitwerkingen. IMARES Rapport 078/13.

STECF. 2016. Scientific, Technical and Economic Committee for Fisheries (STECF) – The 2016 Annual Economic Report on the EU Fishing Fleet (STECF 16-11); Publications Office of the European Union, Luxembourg; ISBN 978-92-79-64633-1; doi:10.2788/842673.

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

van Moorsel, G.W.N.M. 2003. Ecologie van de Klaverbank. BiotaSurvey 2002. Ecosub, Doorn, 157 pp.

Contact details of STECF members

¹ - Information on STECF members' affiliations is displayed for information only. In any case, Members of the STECF shall act independently. In the context of the STECF work, the committee members do not represent the institutions/bodies they are affiliated to in their daily jobs. STECF members also declare at each meeting of the STECF and of its Expert Working Groups any specific interest which might be considered prejudicial to their independence in relation to specific items on the agenda. These declarations are displayed on the public meeting's website if experts explicitly authorized the JRC to do so in accordance with EU legislation on the protection of personnel data. For more information: <http://stecf.jrc.ec.europa.eu/adm-declarations>

Name	Affiliation¹	Email
Abella, J. Alvaro	Independent consultant	aabellafisheries@gmail.com
Bastardie, Francois	Technical University of Denmark, National Institute of Aquatic Resources (DTU-AQUA), Kemitorvet, 2800 Kgs. Lyngby, Denmark	fba@aqu.dtu.dk
Borges, Lisa	FishFix, Lisbon, Portugal	info@fishfix.eu
Casey, John	Independent consultant	blindlemoncasey@gmail.com

Name	Affiliation¹	Email
Catchpole, Thomas	CEFAS Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk, UK, NR33 0HT	thomas.catchpole@cefas.co.uk
Damalas, Dimitrios	Hellenic Centre for Marine Research, Institute of Marine Biological Resources & Inland Waters, 576 Vouliagmenis Avenue, Argypolis, 16452, Athens, Greece	shark@hcmr.gr
Daskalov, Georgi	Laboratory of Marine Ecology, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences	Georgi.m.daskalov@gmail.com
Döring, Ralf (vice-chair)	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Economic analyses Herwigstrasse 31, D-27572 Bremerhaven, Germany	ralf.doering@thuenen.de
Gascuel, Didier	AGROCAMPUS OUEST, 65 Route de Saint Briec, CS 84215, F-35042 RENNES Cedex, France	Didier.Gascuel@agrocampus-ouest.fr
Grati, Fabio	National Research Council (CNR) – Institute for Biological Resources and Marine Biotechnologies (IRBIM), L.go Fiera della Pesca, 2, 60125, Ancona, Italy	fabio.grati@cnr.it
Ibaibarriaga, Leire	AZTI. Marine Research Unit. Txatxarramendi Ugarteia z/g. E-48395 Sukarrieta, Bizkaia. Spain.	libaibarriaga@azti.es
Jung, Armelle	DRDH, Techopôle Brest-Iroise, BLP 15 rue Dumont d'Urville, Plouzane, France	armelle.jung@desrequinsetdeshommes.org
Knittweis, Leyla (vice-chair)	Department of Biology, University of Malta, Msida, MSD 2080, Malta	Leyla.knittweis@um.edu.mt
Kraak, Sarah	Thünen Institute of Baltic Sea Fisheries, Alter Hafen Süd 2, 18069 Rostock, Germany.	sarah.kraak@thuenen.de

Name	Affiliation¹	Email
Ligas, Alessandro	CIBM Consorzio per il Centro Interuniversitario di Biologia Marina ed Ecologia Applicata "G. Bacci", Viale N. Sauro 4, 57128 Livorno, Italy	ligas@cibm.it; ale.ligas76@gmail.com
Martin, Paloma	CSIC Instituto de Ciencias del Mar Passeig Marítim, 37-49, 08003 Barcelona, Spain	paloma@icm.csic.es
Motova, Arina	Sea Fish Industry Authority, 18 Logie Mill, Logie Green Road, Edinburgh EH7 4HS, U.K	arina.motova@seafish.co.uk
Moutopoulos, Dimitrios	Department of Animal Production, Fisheries & Aquaculture, University of Patras, Rio-Patras, 26400, Greece	dmoutopo@teimes.gr
Nord, Jenny	The Swedish Agency for Marine and Water Management (SwAM)	Jenny.nord@havochvatten.se
Prellezo, Raúl	AZTI -Unidad de Investigación Marina, Txatxarramendi Ugarteaz/g 48395 Sukarrieta (Bizkaia), Spain	rprellezo@azti.es
O'Neill, Barry	DTU Aqua, Willemoesvej 2, 9850 Hirtshals, Denmark	barone@aqu.dtu.dk
Raid, Tiit	Estonian Marine Institute, University of Tartu, Mäealuse 14, Tallin, EE-126, Estonia	Tiit.raid@gmail.com
Rihan, Dominic	BIM, Ireland	rihan@bim.ie
Sampedro, Paz	Spanish Institute of Oceanography, Center of A Coruña, Paseo Alcalde Francisco Vázquez, 10, 15001 A Coruña, Spain	paz.sampedro@ieo.es
Somarakis, Stylianos	Institute of Marine Biological Resources and Inland Waters (IMBRIW), Hellenic Centre of Marine Research (HCMR), Thalassocosmos Gournes, P.O. Box 2214, Heraklion 71003, Crete, Greece	somarak@hcmr.gr

Name	Affiliation¹	Email
Stransky, Christoph	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Herwigstrasse 31, D-27572 Bremerhaven, Germany	christoph.stransky@thuenen.de
Ulrich, Clara (chair)	Technical University of Denmark, National Institute of Aquatic Resources (DTU-AQUA), Kemitorvet, 2800 Kgs. Lyngby, Denmark	clu@aquu.dtu.dk
Uriarte, Andres	AZTI. Gestión pesquera sostenible. Sustainable fisheries management. Arrantza kudeaketa jasangarria, Herrera Kaia - Portualdea z/g. E-20110 Pasaia - GIPUZKOA (Spain)	auriarte@azti.es
Valentinsson, Daniel	Swedish University of Agricultural Sciences (SLU), Department of Aquatic Resources, Turistgatan 5, SE-45330, Lysekil, Sweden	daniel.valentinsson@slu.se
van Hoof, Luc	Wageningen Marine Research Haringkade 1, IJmuiden, The Netherlands	Luc.vanhoof@wur.nl
Vanhee, Willy	Independent consultant	wvanhee@telenet.be
Villasante, Sebastian	University of Santiago de Compostela, Santiago de Compostela, A Coruña, Spain, Department of Applied Economics	sebastian.villasante@usc.es
Vrgoc, Nedo	Institute of Oceanography and Fisheries, Split, Setaliste Ivana Mestrovica 63, 21000 Split, Croatia	vrgoc@izor.hr

Background Documents

Background documents are published on the meeting's web site on:
<https://stecf.jrc.ec.europa.eu/reports/env-impacts>

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at: https://europa.eu/european-union/contact_en

On the phone or by email

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696, or
- by electronic mail via: https://europa.eu/european-union/contact_en

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: https://europa.eu/european-union/index_en

EU publications

You can download or order free and priced EU publications from EU Bookshop at: <https://publications.europa.eu/en/publications>. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en).

STECF

The Scientific, Technical and Economic Committee for Fisheries (STECF) has been established by the European Commission. The STECF is being consulted at regular intervals on matters pertaining to the conservation and management of living aquatic resources, including biological, economic, environmental, social and technical considerations.

The European Commission's science and knowledge service

Joint Research Centre

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.



EU Science Hub
ec.europa.eu/jrc



@EU_ScienceHub



EU Science Hub - Joint Research Centre



Joint Research Centre



EU Science Hub



Publications Office
of the European Union

doi:10.2760/422631

ISBN 978-92-76-11227-3