

Regulation of fisheries management measures in the Natura 2000 sites in the German EEZ in the North Sea

Proposal

Joint recommendation for fisheries management measures under Article 11 and Article 18 of Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy

Bonn, 23 February 2016

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2 General principles and overview of the proposed measures

2.1 Background

Under Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7, Habitats Directive), EU Member States undertook to establish a consistent network of protected areas. The Natura 2000 sites (also known as Sites of Community Importance or SCI) together with the European bird protection areas known as Special Protection Areas (SPA) pursuant to Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (OJ L 20, p. 7, Birds Directive) comprise the Natura 2000 system of nature protection areas. The aim of this network is to conserve and restore terrestrial and marine biological diversity.

In the German exclusive economic zone (EEZ; zone ranging from 12 to 200 nautical miles from the base line) of the North Sea and the Baltic Sea, the area map contains ten Natura 2000 sites which the Federal Republic of Germany proposed to the European Commission (EU COM) in May 2004. These sites comprise approximately 31% of the area covered by the German EEZ. Two of the Natura 2000 sites for the protection of seabirds have been designated national nature conservation areas since September 2005. The EU recognised the eight other Natura 2000 sites (under the Habitats Directive) in November 2007; their status as Natura 2000 sites (Sites of Community Importance) took legal effect upon publication in January 2008.

Preparatory analyses for the development of fisheries management measures in marine Natura 2000 sites in the German EEZ, made in accordance with the guidelines¹ of the EU Commission, were made available to the Member States concerned within the scope of the 2005-2008 EMPAS project (Environmentally Sound Fisheries Management in Protected Areas[, ICES 2009; Pedersen et al. 2009; BfN 2010 and in the 2011 catalogue of measures, Sell et al. 2011).

2.1.1 Natura 2000 sites in the German EEZ in the North Sea

In the German EEZ in the North Sea, the following Natura 2000 sites have been designated (see Fig. 1): Sylt Outer Reef, Borkum Reef Ground and Dogger Bank as Sites of Community Importance under the FFH Directive, and the Natura 2000 site Eastern German Bight as European Bird Protection Area under the Birds Directive.

¹EU Commission 2008,

http://ec.europa.eu/environment/nature/natura2000/marine/docs/fish_measures.pdf

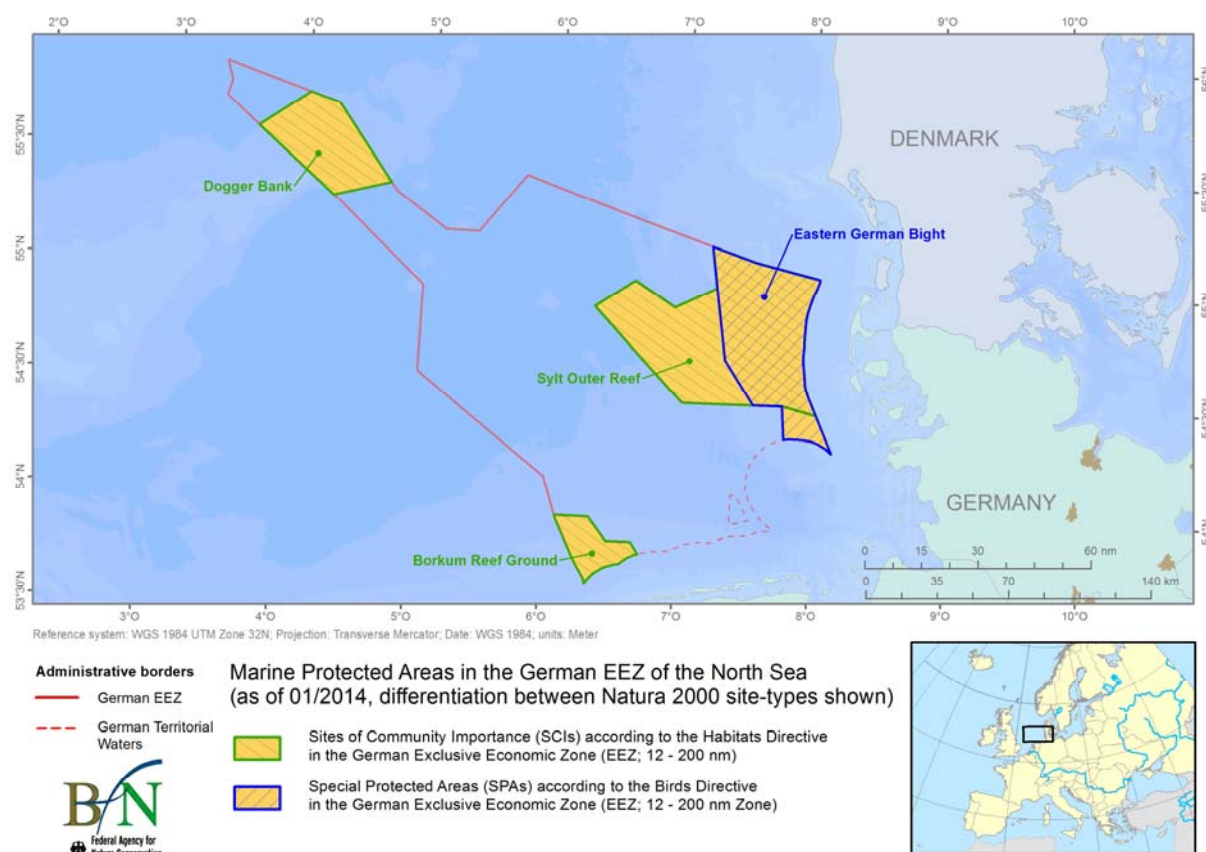


Figure 1: Natura 2000 sites in the German EEZ in the North Sea designated on the basis of the Habitats Directive and the Birds Directive.

2.2 Key objectives and contents of the proposal

In accordance with Article 4, paragraph 4 of the Habitats Directive, once the sites are entered in the European Commission's Community list, Germany is obliged to draft management plans as soon as possible, and at the latest within six years, to ensure the maintenance or restoration of the favourable conservation status of species and habitats.

The European Commission (DG Environment and DG MARE) provided guidelines² in 2008 for the implementation of fisheries management measures in marine Natura 2000 sites. This document outlines requirements (11 points) that Member States should observe when requesting fisheries management measures for their Natura 2000 sites. The present proposal is based on the eleven requirements laid out in these guidelines. Points 1 through 3 were already part of the Federal Government's nomination process, i.e. (1) description of the natural features, (2) scientific rationale and (3) spatial extent of the site boundary.

²EU Commission 2008,
http://ec.europa.eu/environment/nature/natura2000/marine/docs/fish_measures.pdf

In accordance with 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 (OJ L 354, 28.12.2013, p. 22, CFP Basic Regulation), the present document proposes the following fisheries management measures in the Natura 2000 sites in the German EEZ in the North Sea (Fig. 10-16):

I. Protection of the habitat types 1110 'Sandbanks' and 1170 'Reefs'

Natura 2000 sites "Sylt Outer Reef" and "Eastern German Bight"

1. Year-round exclusion of all mobile bottom-contacting gears (for gear codes see Chapter 4.4.1) from the central area of the Natura 2000 site Sylt Outer Reef to protect the habitat type 1170 'Reefs' (Fig. 10).
2. Year-round exclusion of mobile bottom-contacting gears (for gear codes see Chapter 4.4.1) with the exception of traditional shrimp fishing for *Crangon* spp. with beam trawls and bobbin ropes and a mesh size between 16 and 31 mm (metier name TBB CRU_16-31) from the entire eastern part of the Sylt Outer Reef to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs' (Fig. 11).
3. Year-round exclusion of any kind of fisheries from 25% of the area of the Amrum Bank (northern part) in the Natura 2000 site Sylt Outer Reef to protect the habitat type 1110 'Sandbanks' (Fig. 12).

Natura 2000 site "Borkum Reef Ground"

4. Year-round exclusion of all mobile bottom-contacting gears (for gear codes see Chapter 4.4.2) from the entire Natura 2000 site Borkum Reef Ground to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs' (Fig. 15).

Natura 2000 site "Dogger Bank"

5. Year-round exclusion of all mobile bottom-contacting gears (for gear codes see Chapter 4.4.3) (from 50% of the area of the Natura 2000 site Dogger Bank to protect the habitat type 1110 'Sandbanks' (Fig. 16). (*Measure is also the subject of international cooperation between NL, UK and DE*)

II. Protection of harbour porpoises and birds

Natura 2000 sites "Sylt Outer Reef" and "Eastern German Bight"

6. Year-round exclusion of fisheries with set gillnets and entangling nets (for gear codes see Chapter 4.4.1) from the northern and southern part of the Natura 2000 site Eastern German Bight, on the grounds of year-round bird protection in the southern part and a combination of bird and porpoise protection in the northern part of the Natura 2000 site (Fig. 13).
7. Seasonal exclusion of fisheries with set gillnets and entangling nets (for gear codes see Chapter 4.4.1) from the western part of the Natura 2000 site Sylt Outer Reef from 1 March to 31 October to protect harbour porpoises from by-catch in

phases of high animal aggregation during the calving and mating season (Fig. 14).

Natura 2000 sites "Borkum Reef Ground" and "Dogger Bank"

8. With a view to protecting harbour porpoises in spite of the unsatisfactory data situation with regard to by-catches, mandatory use of cameras in conjunction with sensor technology on board of fishing vessels with gillnets and entangling nets in the entire Natura 2000 sites Borkum Reef Ground and Dogger Bank (for gear codes see Chapter 4.4.4).
9. Limitation of fishing effort with passive gears (gillnets and entangling nets, for gear codes see Chapter 4.4.4) to the average intensity of the period 2012-2014 to protect porpoises in the entire area of the Natura 2000 sites Borkum Reef Ground and Dogger Bank.

2.3 International coordination

The Federal Republic of Germany (initiating Member State) is striving to take measures concerning all fishing vessels, including EU vessels with fishing rights in the German EEZ under non-German flag. In accordance with the CFP Basic Regulation and with the aim to apply the measures to all fishing vessels, Germany consulted the Member States concerned, i.e. Denmark, the Netherlands, Belgium, France and the United Kingdom of Great Britain and Northern Ireland.

The fundamentals for the preparation of the international consultations were elaborated in the course of the 2005-2008 EMPAS project [(ICES 2009; Pedersen et al. 2009; BfN 2010)] and, in accordance with the guidelines³ of the EU Commission, provided to the Member States in the 2011 catalogue of measures (Sell et al. 2011).

The first international consultation took place in 2011 in oral and written form. At the invitation of the Federal Ministry of Food and Agriculture (BMEL), a hearing with the Member States concerned was held in Bonn on 13 October 2011. Four Member States (Belgium, Denmark, the Netherlands, the United Kingdom) commented on the proposed measures in writing.

The revised version will now be submitted to the EU Commission, the Member States concerned and the North Sea Advisory Council (NSAC) (for consultation) in accordance with the procedure laid down in Articles 11 and 18 of the CFP Basic Regulation. As soon as an agreement has been reached at expert group level, the joint recommendation for fisheries management measures in Natura 2000 sites in the German EEZ will be adopted by the High Level Group of the Scheveningen Group and submitted to the EU Commission.

³EU Commission 2008,

http://ec.europa.eu/environment/nature/natura2000/marine/docs/fish_measures.pdf

3 Evaluation of fishing activities in Natura 2000 sites

3.1 Data situation

Fishing activities in EU waters are usually documented by time and geographic position. But assessing the fishing effort in Natura 2000 sites via the Electronic Reporting System (ERS), the so-called "e-logbook", alone would be inadequate. The geographic information is limited to the ICES statistical rectangles with a side length of approx. 30*30 nautical miles. The present, detailed geographic analyses are therefore based on Vessel Monitoring System (VMS) data (a satellite based control system). At nationally defined intervals, data on the position, heading and speed of vessels are reported to the fisheries authorities (in Germany: Federal Office for Agriculture and Food; BLE). Under Council Regulation (EC) No 1224/2009 of 20 November 2009 (OJ L 343, 22.12.2009, p. 1, EU Fisheries Control Regulation), VMS is mandatory for EU vessels with a length of 15 metres or more (12 metres or more since 1 January 2012). It can be assumed that over 90% of all fishing vessels in the North Sea are equipped with VMS.

For the German EEZ, the positioning data of all EU vessels that are operating in the protected areas and that are required to use VMS are available. In order to obtain information on the fishing gear used, the VMS data were linked to logbook information based on vessel identification data. But due to the limited access to international logbook data, this was only possible in the case of national fishing vessels. All other vessels therefore had to be identified with the help of the European fleet register to make it possible to ascertain both the ship's size (length, motorisation) and the main fishing gear. It was assumed that the vessels use their main fishing gear during the entire monitoring year. The fact that no changes in gears and target species were taken into account means that the estimates of the fishing effort at regional level might be too low or too high. Finally, the fisheries activities were quantified as annual effort hours on a grid of 0.05°*0.05° (depending on the latitude, this corresponds to an area of approx. 5.6km*3.2km). A distinction was made between beam trawls of large (>221kW) and small (<=221kW) vessels, bottom trawls, gillnets, demersal seines and the use of pots and traps. Due to the additional inclusion of vessels of between 12 and 15 metres' length in the VMS since 2012, only analyses of the past three years (2012-2014) were depicted.

3.2 Fishing activities in the German EEZ in the North Sea

The following fisheries segments were analysed in order to describe the fishing activities in the EEZ in the North Sea (Fig. 2-8). In this context, the joint fishing effort of all EU vessels was analysed and expressed in hours per year (*effort hours*) on a grid of 0.05 x 0.05.

Fisheries segments:

BEAM_large	beam trawl >221kW; mainly mixed flatfish fishing (TBB)
BEAM_small	beam trawl <=221kW; mainly traditional shrimp fishing for <i>Crangon</i> spp. with beam trawls and bobbin ropes and a mesh size between 16 and 31 mm (metier name TBB CRU_16-31).
OTTER	bottom trawl; mainly mixed flatfish fishing (OTB, OTT, PTB)
GILL-TRAMMEL	gillnets and entangling nets (GNS)
SEINES	demersal seines (SDN, SSC)
POTS	pots and traps (FPO)
DREDGE	various dredges (DRB)

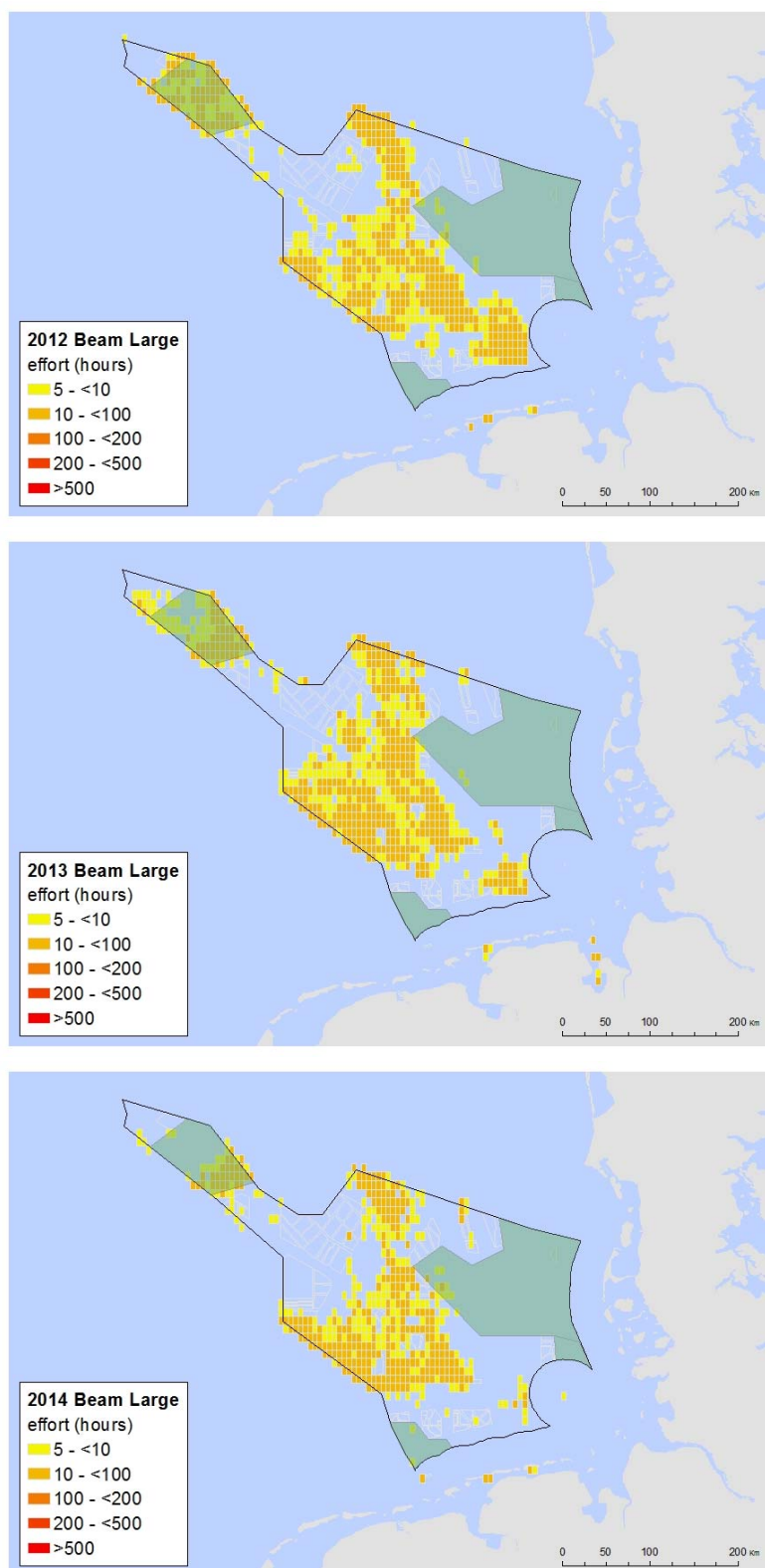


Figure 2: Distribution of international fishing effort for 'large beam trawlers' in hours/year (effort hours) in the German waters of the North Sea, 2012-2014

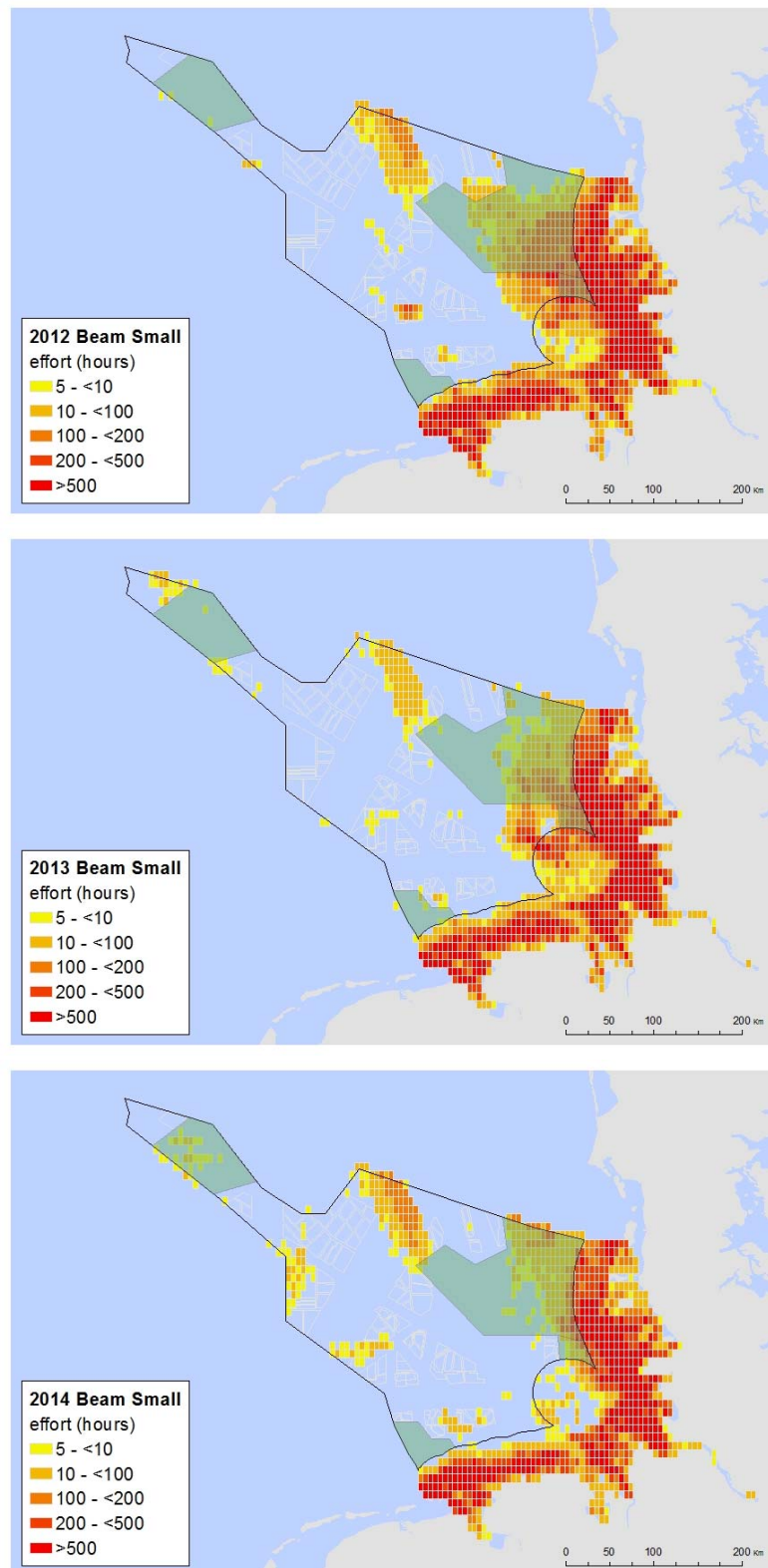


Figure 3: Distribution of international fishing effort for 'small beam trawlers' in hours/year (effort hours) in the German waters of the North Sea, 2012-2014

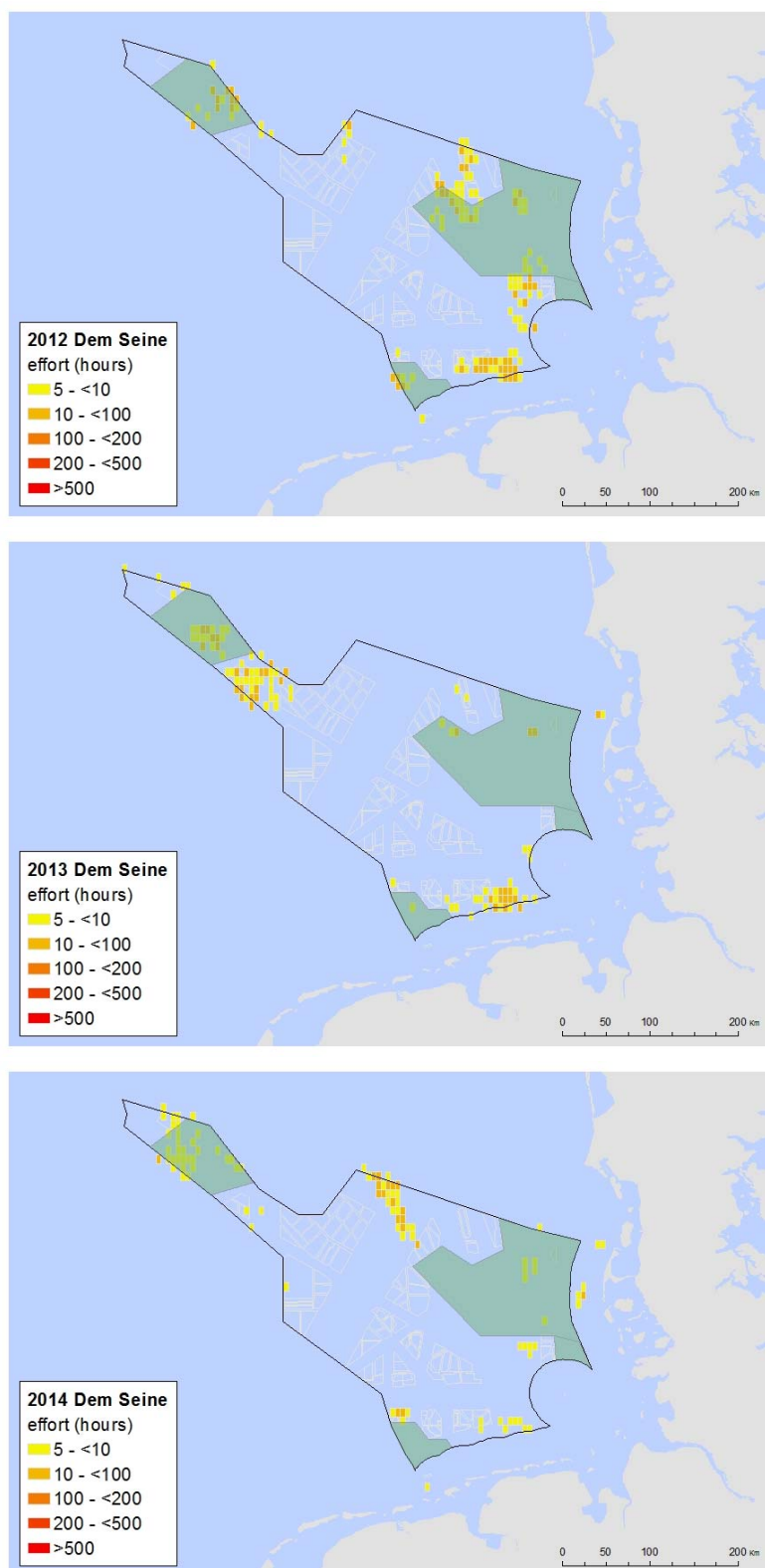


Figure 4: Distribution of international fishing effort for demersal seiners in hours/year (effort hours) in the German waters of the North Sea, 2012-2014

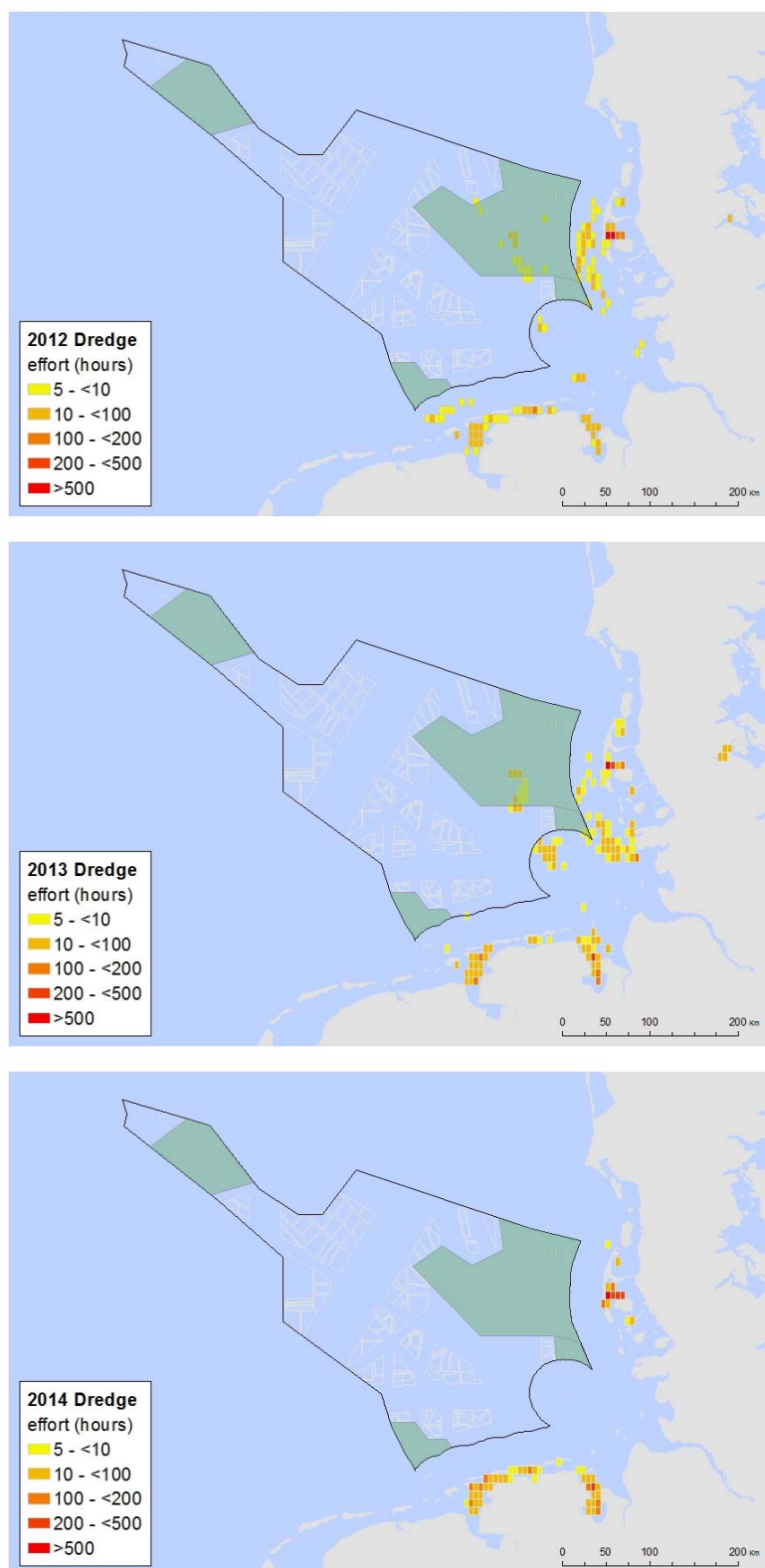


Figure 5: Distribution of international fishing effort for dredges in hours/year (effort hours) in the German waters of the North Sea, 2012-2014

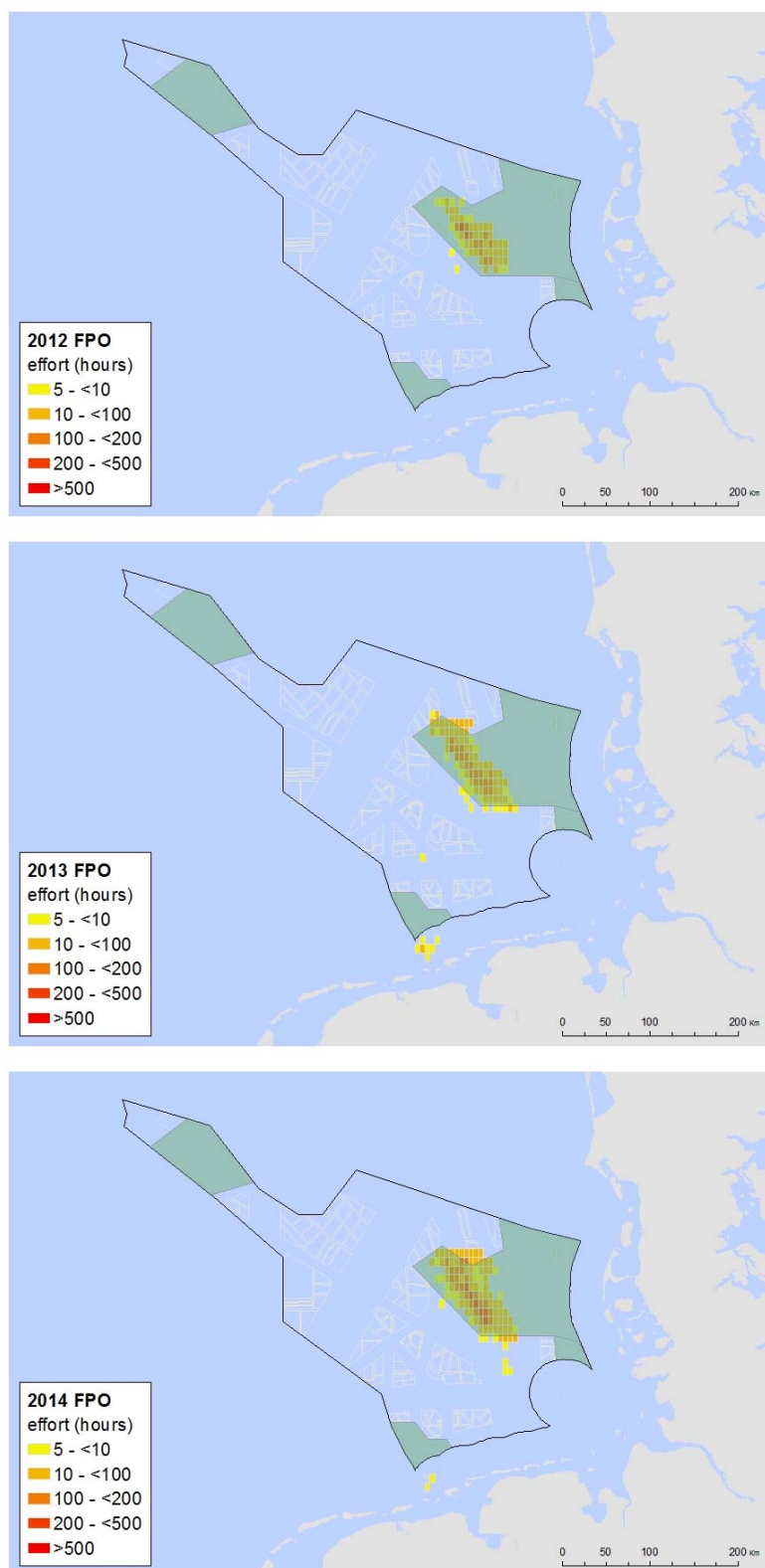


Figure 6: Distribution of international fishing effort for pots and traps in hours/year (effort hours) in the German waters of the North Sea, 2012-2014

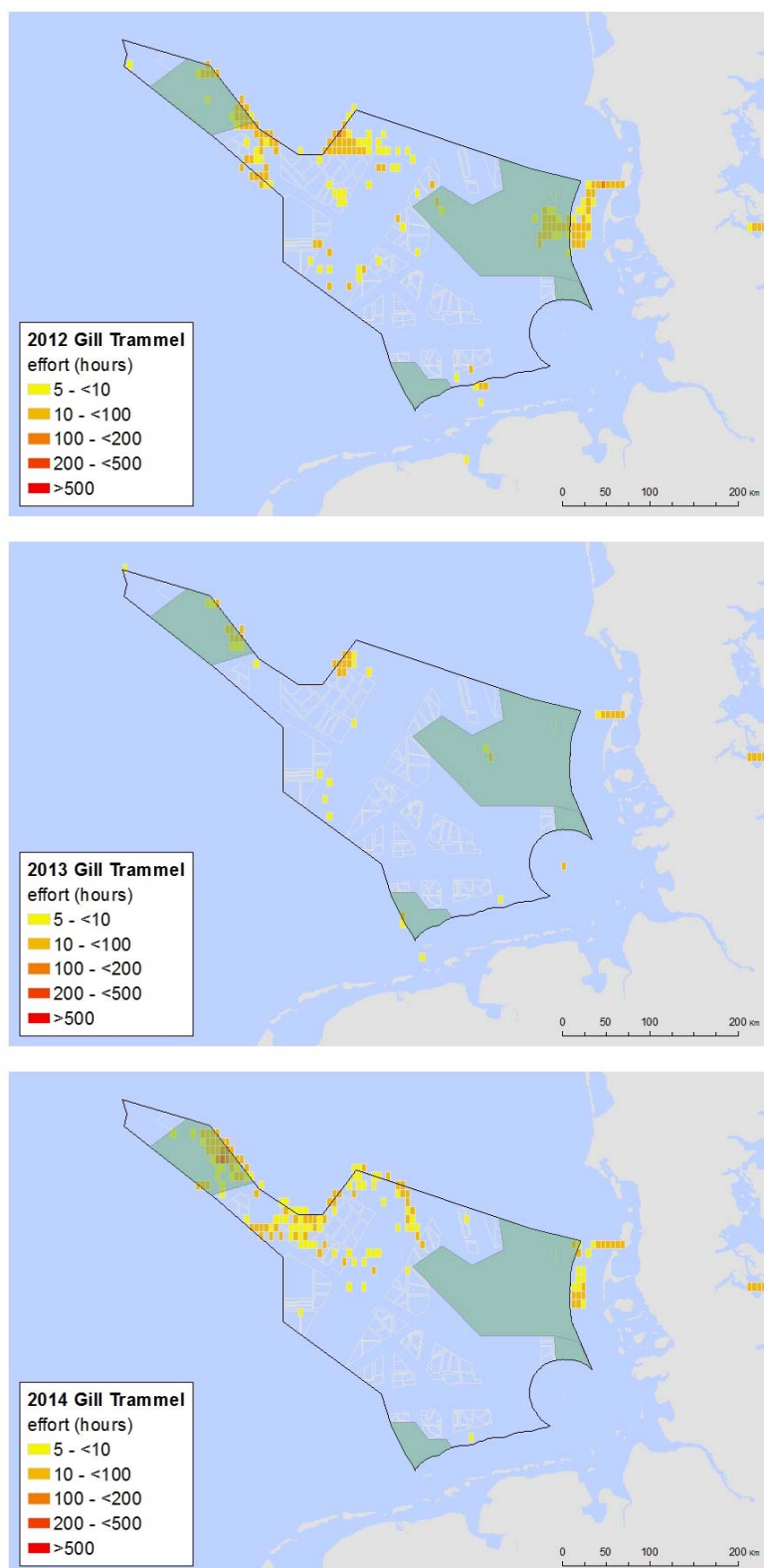


Figure 7: Distribution of international fishing effort for set nets and entangling nets in hours/year (effort hours) in the German waters of the North Sea, 2012-2014

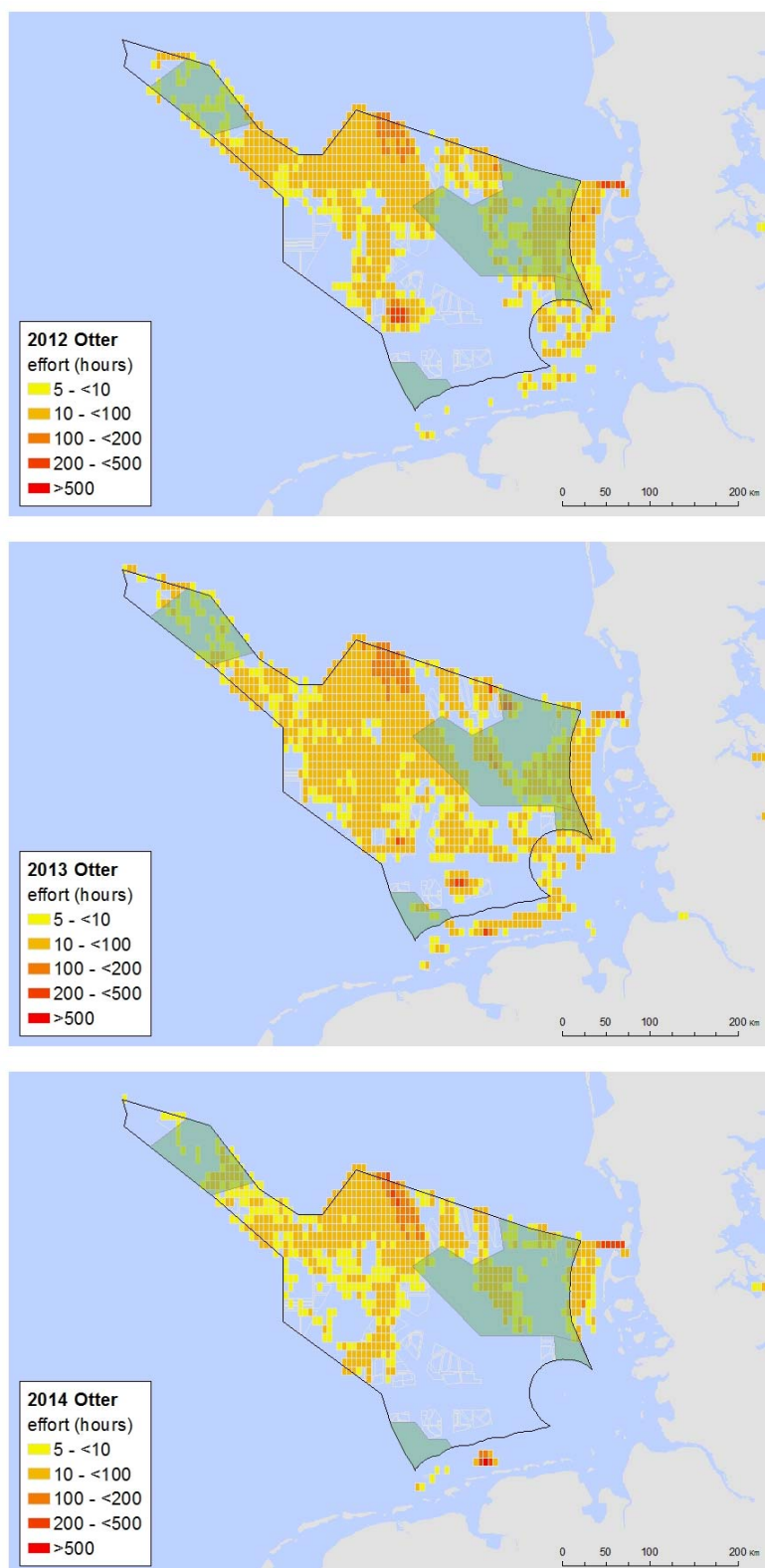


Figure 8: Distribution of international fishing effort for bottom trawls in hours/year (effort hours) in the German waters of the North Sea, 2012-2014

4 Assessment of the main conflicts between protected species/habitats and fishing activities

4.1 Benthic habitats

The analysis of the main risks arising from bottom-contacting fishing gear for benthic habitats and species is presented in detail in the measure report (Sell et al. 2011). The scientific basis for the assessment of the conflict potential between the impact of fisheries on the one hand and benthic habitats and communities on the other hand included the findings from the FishPact project (Schröder et al. 2008) and earlier EU projects such as MAFCONS (Managing Fisheries to Conserve Groundfish and Benthic Invertebrate Species Diversity) and IMPACT (e.g., Jennings et al. 2001; Hiddink et al. 2006; Kaiser et al. 2006; ICES 2008; Fock 2011).

The mortality of benthic organisms, differentiated by infauna (living within the bottom substratum) and epifauna (living on the bottom substratum), can be the direct result of mechanical damage or the result of being unwanted by-catch which is then returned to the sea, something only the fewest organisms survive. Generally speaking, mobile bottom trawling impacts long-lived species significantly more than short-lived opportunistic species. Furthermore, the epifauna is in most cases more sensitive than the infauna to the effects of bottom trawling.

In the Natura 2000 sites Sylt Outer Reef and Eastern German Bight, most fish are caught by small beam trawls and bottom trawls. In addition, set nets and entangling nets as well as demersal seines and pots are used in this area (Fig. 2-8). All in all, it can be said that fisheries have a moderate to high impact on the benthic communities in this protected area (Schröder et al. 2008, Fock et al. 2011, Stelzenmüller et al. 2015). The intensity of the fishing effort in the Natura 2000 site Borkum Reef Ground is lower than in the Natura 2000 sites Sylt Outer Reef/Eastern German Bight and Dogger Bank; fishing with bottom trawls, gillnets and entangling nets, demersal seines and small beam trawls is less intense in this area. The impact of fisheries on the benthic communities in this area can be classified as low (Schröder et al. 2008, Fock et al. 2011, Stelzenmüller et al. 2015). Fisheries in the Natura 2000 site Dogger Bank use bottom trawls, set nets and entangling nets, seines and large and small beam trawls. The impact of fisheries on the benthic communities in this area can be classified as moderate to high (Schröder et al. 2008, Fock et al. 2011, Stelzenmüller et al. 2015).

Model results show that continued fishing pressure in the above-mentioned protected areas of the German EEZ will change the composition of the benthic communities there and reduce their total biomass. Especially the population sizes of benthic species with low growth rates, late sexual maturity and low fecundity will be reduced by 70% to 90% as compared to undisturbed populations (see Fig. 9).

The modelled demographic reactions of the zoobenthic species show that the first and second fishing events cause the largest relative loss among benthic organisms, while other fishing events further increase the absolute loss but have only little effect on the

relative loss (Cook et al. 2013, Schröder et al. 2008). For this reason, those areas with very little fishing activity have particularly great potential for achieving a favourable conservation status.

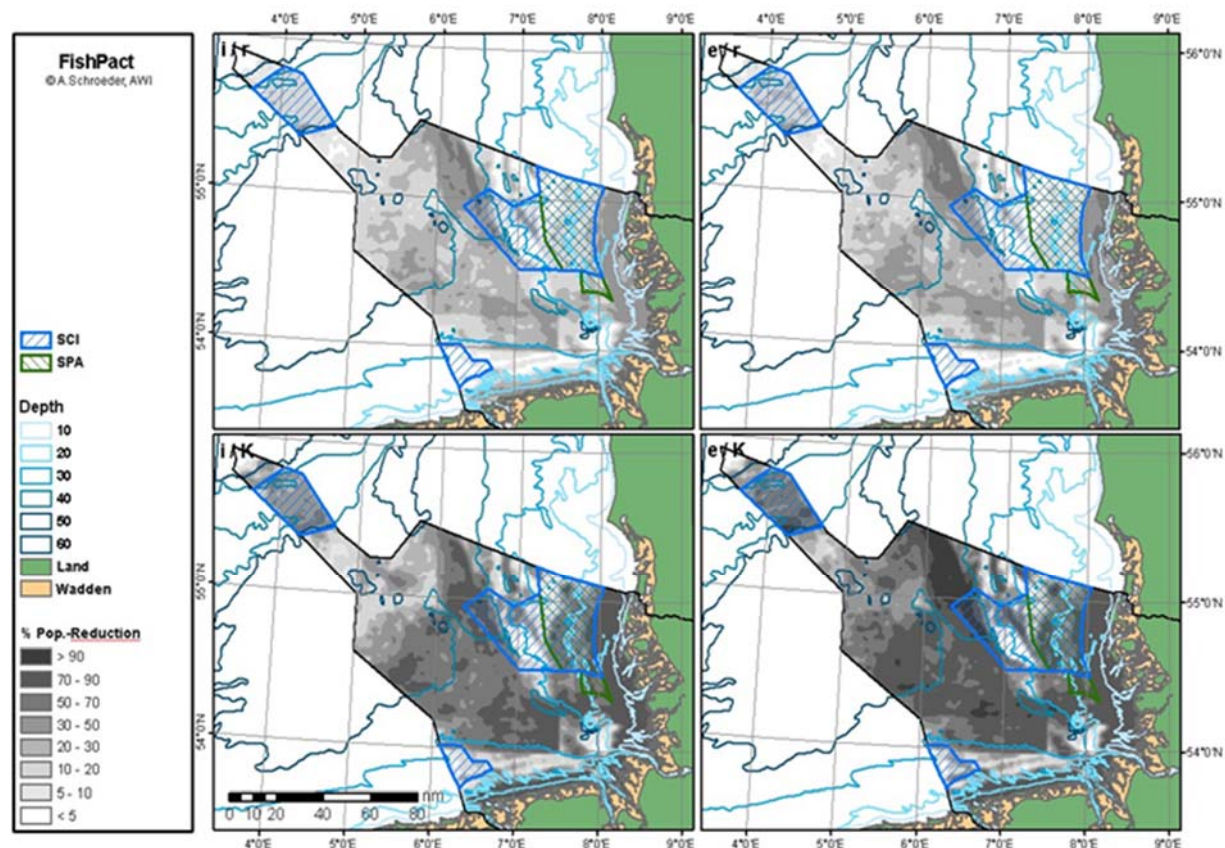


Figure 9: Percentage reduction of the ecotypes (i/r, e/r, i/K, e/K) caused by fishing in the German North Sea EEZ relative to the theoretical undisturbed population density. Abbreviations: i = infauna, e = epifauna, r = r-selected (short-lived, opportunistic) species, k = k-selected (long-lived) species. Map based on Schröder et al. (2008).

4.2 Seabirds

As part of the EMPAS project, the intensity of the conflict between the incidence of seabirds and passive fishing gear (in particular gillnets and entangling nets) was determined on the basis of the geographic and temporal overlapping of fishing effort and the distribution of the protected species in the German EEZ and the bordering coastal areas.

The findings of a study by Zydelis *et al.* (2009) indicate, on the basis of local and small-scale studies, an annual bird by-catch of approximately 90,000 birds in the North Sea and the Baltic Sea. There is already a national nature conservation ordinance in place for the Eastern German Bight bird protection area (Ordinance issued by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety on 15 September 2005 on the establishment of the Eastern German Bight Nature Conservation Area; Federal Law Gazette Part I, p. 2782).

Eastern German Bight

Passive set-net fisheries using gillnets and entangling nets represent a major threat to seabirds as the birds become entangled and drown when diving for prey fish or benthic food (Zydelis et al. 2009).

Bird species diving for food are particularly at risk of being by-catch in set-net fisheries. In the Natura 2000 site Eastern German Bight, this particularly applies to the following species: red-throated diver, black-throated diver, common guillemot, razorbill and northern gannet (Sonntag & Garthe 2010). These species feed on mobile fish species and chase their food underwater in horizontal dives. In this area, the two diver species can only be observed during the winter months while auk species and northern gannet are present all year round.

So far, there are only a few published studies available on the by-catch of birds in set nets in the German North Sea (Vinther 1995), and fishing activity with set nets is currently rather low (Fig. 7). But there is information from neighbouring North Sea waters available (e.g. Denmark: common scooter, velvet scooter (Durinck et al. 1993), Norway: common guillemot, black guillemot etc. (Follestad & Runde 1995), Scotland: common guillemot, razorbill (Murray et al 1994) substantiating the fundamental problems there. Vinther (1995) documented the by-catch of common guillemot and northern fulmar in Danish set-net fisheries.

4.3 Harbour porpoises

The risk of being by-caught in set gillnets or entangling nets poses a particular threat for harbour porpoises (Kock & Benke 1996; Berggren & Carlström 1999; Northridge & Hammond 1999; Vinther 1999; Kaschner 2003; Herr et al. 2009; ICES 2009). This resulted in very high rates of by-caught harbour porpoises in set nets, e.g. 4,500-7,000 animals/year during the period 1992-98 in the North Sea by Danish set-net fisheries (Vinther 1999). The study conducted by Vinther (1999) showed that high by-catch rates of harbour porpoises occurred in gillnets and entangling nets of cod and turbot fisheries. ICES (2010) examined the by-catch rates in the North Sea collected by observers at sea and calculated lower figures than Vinther (1999).

The potential threat to harbour porpoises (*Phocoena phocoena*) posed by passive fishing gear was analysed in the course of the EMPAS project on the basis of the temporal and geographic distribution of harbour porpoises and set nets (Herr et al. 2009, ICES 2009). The analysis revealed a positive geographic and temporal correlation between the occurrence of harbour porpoises and fisheries activities with gillnets and entangling nets, and a risk potential resulting from this.

Sylt Outer Reef

The analysis of the distribution of harbour porpoises and fishing activities in the German EEZ in the North Sea showed a high level of seasonal overlap between harbour porpoises and fishing with set nets in summer (June – August), particularly in the Natura 2000 site Sylt Outer Reef (Scheidat et al. 2006; Gilles et al. 2008, Herr et al.

2009). Harbour porpoises are present throughout the year in the Natura 2000 site Sylt Outer Reef and are therefore always at risk of being by-caught in gillnets and entangling nets (Gilles et al. 2014).

The intensity of fishing activities with set nets in the North Sea is at present comparatively low (Fig. 7) and harbour porpoise by-catch has not been determined to date in the Natura 2000 site Sylt Outer Reef. Despite this, by-catch in set-net fisheries represents a potential high risk due to the site's enormous importance as breeding and feeding grounds for harbour porpoises which are concentrated here during the summer months (June – August) (Herr et al. 2009, see Appendix 1, Fig. S2 c-d).

Dogger Bank

In the Natura 2000 site Dogger Bank, harbour porpoises are mainly present during the spring and summer months (March – August) (Herr et al. 2009). In this area, gillnets and entangling nets are primarily used during the second half of the year (June – December) and the total fishing effort with these nets is comparatively low in the Natura 2000 site Dogger Bank (see Fig. 7). The concrete by-catch risk for harbour porpoises posed by fisheries using gillnets and entangling nets in the Natura 2000 site Dogger Bank cannot, at present, be conclusively assessed.

Borkum Reef Ground

The harbour porpoise population in the southern part of the German North Sea was analysed with the help of flight survey data from the period 2002-2015. Monitoring results of the Federal Agency for Nature Conservation (BfN) show that harbour porpoise densities in spring (March – May) in the southern German North Sea during the period 2008-2015 were higher than during the period 2002-2007 (Peschko et al. 2016, Appendix 1, Fig. S2a-b). In addition, it was documented that the Natura 2000 site Borkum Reef Ground was in summer increasingly used by mother/calf pairs between 2008 and 2012 (Viquerat et al. 2015, Appendix 1, Fig. 2 2c-d). Absolute densities are lower than those in the Natura 2000 site Sylt Outer Reef (Appendix 1, Fig. S2a-d).

4.4 Summary of proposed measures

Annex III to Regulation (EU) No 1379/2013 of the European Parliament and of the Council of 11 December 2013 on the common organisation of the markets in fishery and aquaculture products (OJ L 354, 28.12.2013, p. 1) and the Commission Implementing Regulation (EU) No 404/2011 of 8 April 2011 (OJ L 112, 30.4.2011, p. 1) serve as references for gear classification and gear codes.

4.4.1 Proposed measures for the Natura 2000 sites Sylt Outer Reef and Eastern German Bight

4.4.1.1 Measure 1 (Fig. 10): Year-round exclusion of all mobile bottom-contacting gears from the central area of the Natura 2000 site Sylt Outer Reef to protect the habitat type 1170 'Reefs'

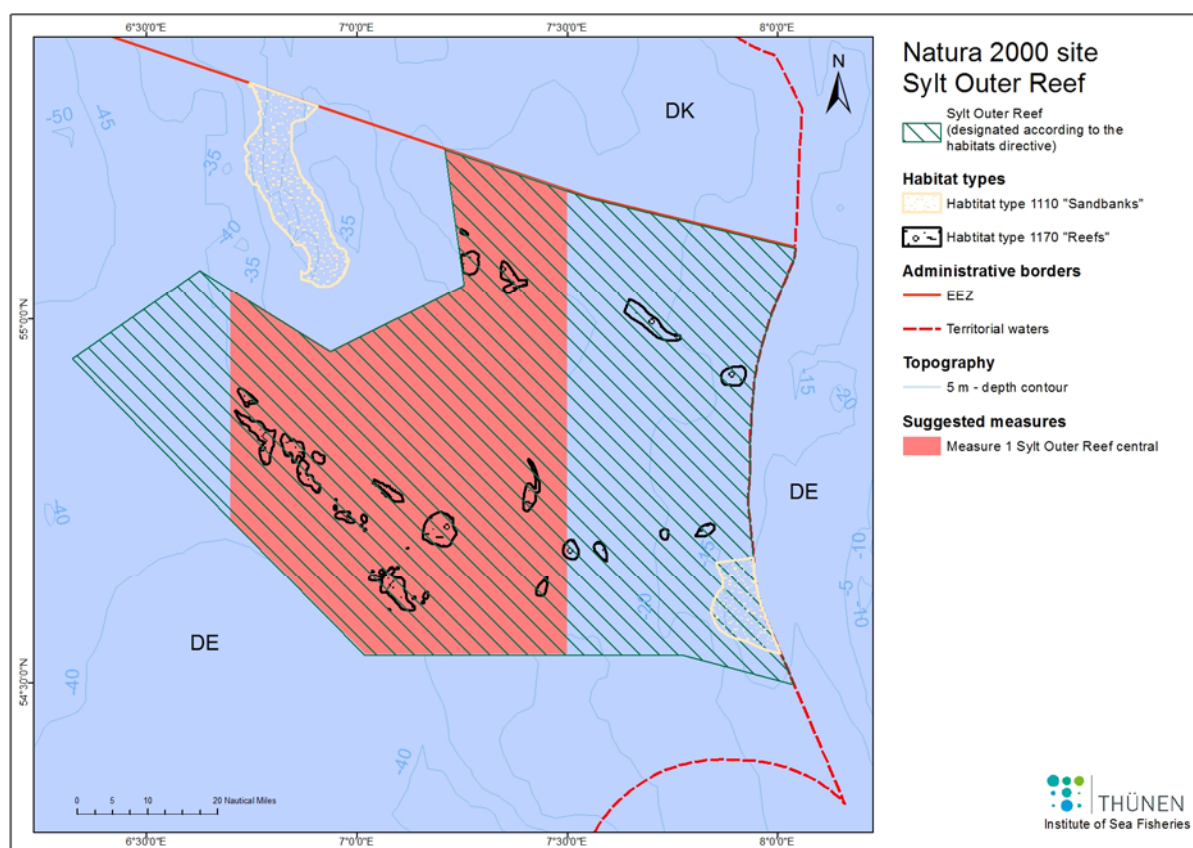


Figure 10, Measure 1: Reefs: Year-round exclusion of all mobile bottom-contacting gears from the central area of the Natura 2000 site Sylt Outer Reef.

This includes the following gear types:

- beach seines SB
- Danish seines SDN
- Scottish seines SSC
- pair seines SPR

- beam trawls TBB
- bottom otter trawls OTB
- bottom pair trawls PTB
- otter twin trawls OTT
- boat dredges DRB
- hand dredges used on board a vessel DRH
- mechanised dredges including suction dredges HMD
- bottom trawls (in general) TB
- nephrops bottom trawls TBN
- shrimp bottom trawls TBS
- seines (unspecified) SX
- boat seines SV

Rationale:

Measure 1 (Fig. 10) aims to provide efficient protection of the reef habitats and of its typical benthic communities in the central western part of the Natura 2000 site Sylt Outer Reef against damage by fisheries with mobile bottom-contacting gears. In terms of nature conservation, these reefs are in particularly high need of protection as they have so far been relatively undisturbed by fisheries with mobile bottom-contacting gears and therefore have a great development potential to achieve a "favourable conservation status" (ICES 2009, Schröder et al. 2008, Fock et al. 2011). The exclusion of mobile bottom-contacting gears is the most effective management measure to ensure the conservation or restoration of the favourable conservation status of the relevant Natura 2000 habitat types and the habitat types under Annex III Table 1 of Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (OJ L 164, 25.6.2008, p. 19, Marine Strategy Framework Directive) (ICES 2008).

Measure 1 also aims to maintain and restore the specific ecological values and functions of the Natura 2000 site Sylt Outer Reef, especially a natural or near-natural character of species-rich gravel, coarse sand and shell-gravel areas and the varied, diverse and closely linked benthic communities in the central western part of the protected area which is characterised by a special ecological linkage between reefs, coarse and medium sands (see Appendix 1).

Measure 1 therefore serves both the protection of the natural habitat types of Community interest under Annex 1 of the Habitats Directive and the protection of the biotope type 'Species-rich gravel, coarse sand and shell-gravel areas' which mainly occurs in the central part of the Natura 2000 site Sylt Outer Reef.

4.4.1.2 Measure 2 (Fig. 11): Year-round exclusion of mobile bottom-contacting gears with the exception of traditional shrimp fishing for *Crangon* spp. with beam trawls and bobbin ropes and a mesh size between 16 and 31 mm (metier name TBB_CRU_16-31) from the eastern part of the Sylt Outer Reef to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs'

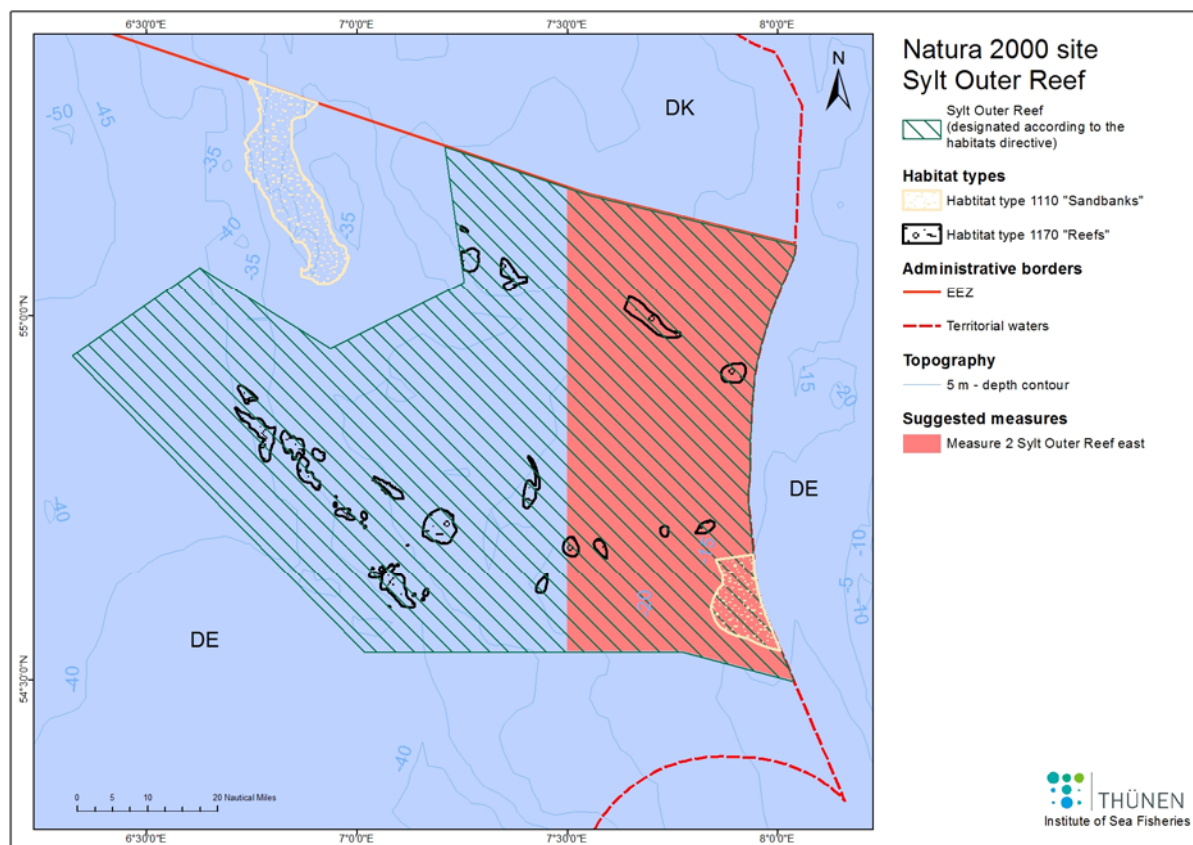


Figure 11, Measure 2: Year-round exclusion of mobile bottom-contacting gears with the exception of shrimp fisheries with bobbin ropes and a mesh size between 16 and 31 mm (metier name TBB CRU_16-31) from the eastern part of the Natura 2000 site Sylt Outer Reef to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs'.

Measure 2 (Fig. 11) aims to protect sandbanks and reefs in the eastern part of the Sylt Outer Reef.

This includes the following gear types:

- beach seines SB
- Danish seines SDN
- Scottish seines SSC
- pair seines SPR
- beam trawls TBB (except: metier name TBB_CRU_16-31, see below)
- bottom otter trawls OTB
- bottom pair trawls PTB
- otter twin trawls OTT
- boat dredges DRB
- hand dredges used on board a vessel DRH

- mechanised dredges including suction dredges HMD
- bottom trawls (in general) TB
- nephrops bottom trawls TBN
- shrimp bottom trawls TBS
- seines (unspecified) SX
- boat seines SV

An exception is made for traditional shrimp fishing for *Crangon* spp. with beam trawls and bobbin ropes and a mesh size between 16 and 31 mm (metier name TBB CRU_16-31).

Rationale:

Measure 2 (Fig. 11) aims to protect the habitat types 'Sandbanks' and 'Reefs' in the eastern part of the Sylt Outer Reef under the Habitats Directive and the benthic habitat types under Annex III Table 1 of the Marine Strategy Framework Directive against the negative impact of mobile bottom-contacting gears. Beam trawls used for shrimp (*Crangon crangon*) fishing are equipped with bobbin ropes which have minor adverse effects compared with the tickler chains used for flatfish fishing.

4.4.1.3 Measure 3 (Fig. 12): Year-round exclusion of any kind of fisheries from 25% of the area of the Amrum Bank (northern part) in the Natura 2000 site Sylt Outer Reef.

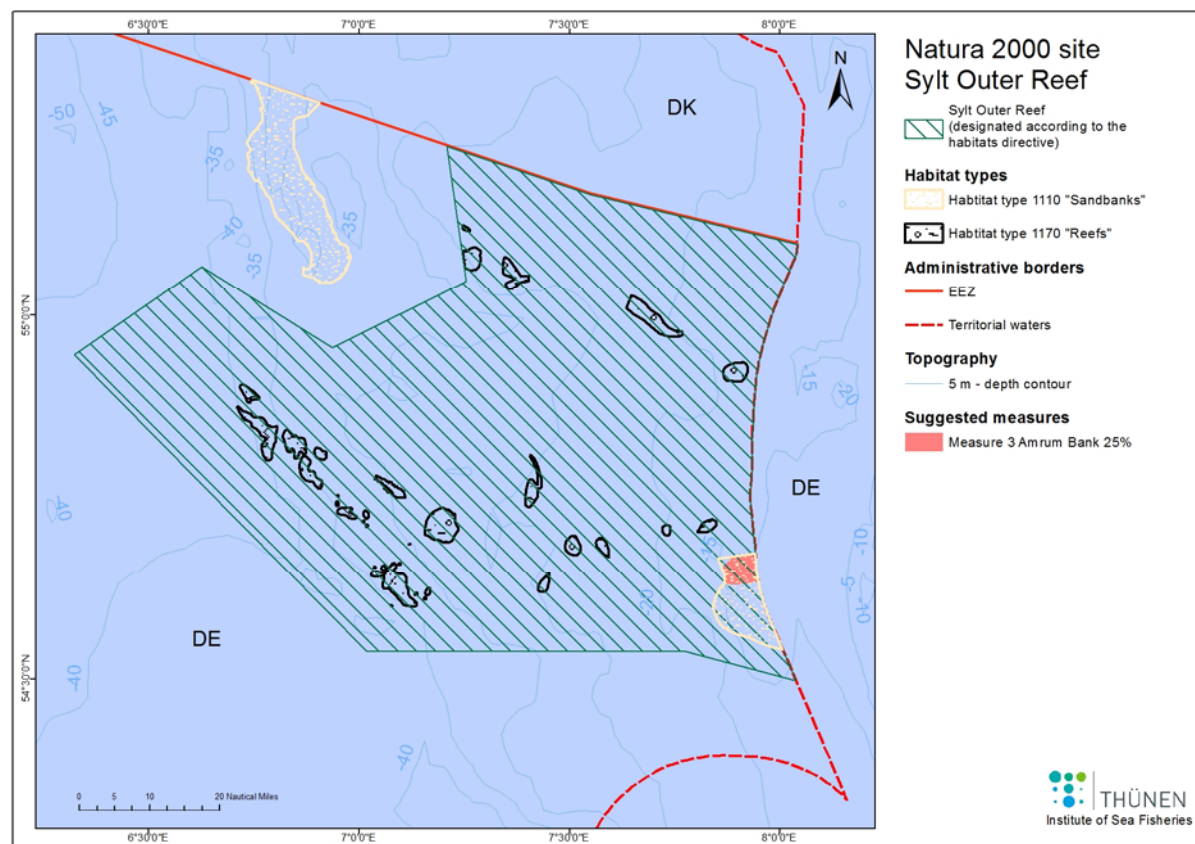


Figure 12, Measure 3: Year-round exclusion of any kind of fisheries from 25% of the area of the Amrum Bank (northern part) in the Natura 2000 site Sylt Outer Reef (see area marked in red).

Rationale:

Measure 3 (Fig. 12) aims especially to protect the Amrum Bank under the Habitats Directive and the benthic habitat types under Annex III Table 1 of the Marine Strategy Framework Directive in the eastern part of the Natura 2000 site Sylt Outer Reef.

As a typical sandbank of the North Frisian marine area, the Amrum Bank is ecologically characterised by a mosaic of various, habitat-typical biotope types with a likewise characteristic diversity of species.

4.4.1.4 The model results obtained by Schröder et al. (2008) for the demographic development of the zoobenthic species in the Amrum Bank area show that the current fishing effort with mobile bottom-contacting gears leads to a particularly severe reduction of long-lived species. The favourable conservation status of the benthic communities that are characteristic of this sandbank cannot be achieved at the current fishing effort (Schröder et al. 2008). The exclusion of mobile bottom-contacting fisheries is the most effective management measure to ensure the conservation or restoration of the favourable conservation status of the relevant habitat types (ICES

2008, 2009). Measure 4 (Fig. 13): Year-round exclusion of fisheries with set gillnets and entangling nets to protect the endangered seabird populations (red-throated and black-throated divers, razorbills and guillemots in particular) in the Natura 2000 site Eastern German Bight and harbour porpoises in the Natura 2000 site Sylt Outer Reef.

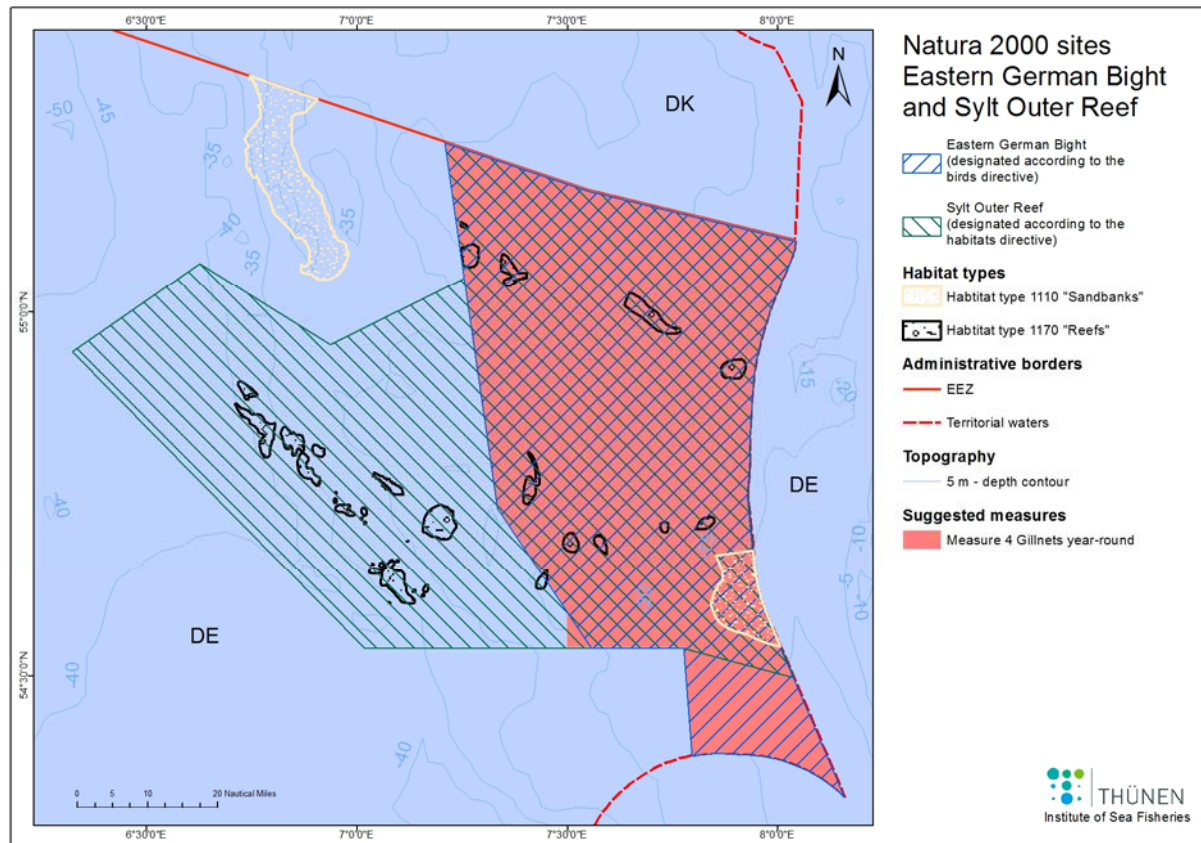


Figure 13, Measure 4: Year-round exclusion of fisheries with set gillnets and entangling nets to protect the endangered and declining seabird populations in the Natura 2000 site Eastern German Bight and harbour porpoises in the Natura 2000 site Sylt Outer Reef.

This includes the following gear types:

- gillnets GN
- set (anchored) gillnets GNS
- driftnets GND
- encircling gillnets GNC
- trammel nets GTR
- combined trammel and gillnets GTN

Geographically and temporally differentiated exclusion of fisheries with set gillnets and entangling nets from the Natura 2000 site Eastern German Bight in order to achieve the conservation objectives:

- Northern area: Exclusion of fisheries with set gillnets and entangling nets during the winter months from 1 October until 15 May to protect the red-throated and black-throated diver populations (red-throated divers in particular), razorbills and guillemots.
- Southern area: Year-round exclusion of fisheries with set gillnets and entangling nets to protect the two diver populations (red-throated divers in particular) and auk species during the winter months (October-May) as well as the breeding auk species of Helgoland in summer (June-September).
- In addition, the measure aims to avoid harbour porpoise by-catches in gillnets and entangling nets in the Natura 2000 site Sylt Outer Reef (which geographically overlaps with the Natura 2000 site Eastern German Bight) seasonally in phases of high animal aggregation during the calving and mating season between 1 March and 31 October.

Rationale:

The year-round closure is based on a combination of protection requirements regarding harbour porpoises and seabirds.

The Natura 2000 site Sylt Outer Reef shows the highest concentrations of harbour porpoises (spring/summer) and mother/calf pairs (summer) in the entire German North Sea (Appendix 1, Fig. S2 a-d) and therefore plays a central role for the conservation of this species in the German marine area (Gilles & Siebert 2010, Viquerat et al. 2015). The Natura 2000 site Sylt Outer Reef continues to be of great importance as feeding habitat for harbour porpoises (Herr et al. 2009). The high number of mother/calf pairs shows the important function of this area as a nursery and breeding habitat for harbour porpoises (see Appendix 1).

Measure 4 (Fig. 13) also aims to avoid by-catches of endangered and declining sea-bird populations (especially red-throated and black-throated divers, razorbills and guillemots) in the Natura 2000 site Eastern German Bight. According to Sonntag & Garthe (2010), each year the bird populations are mainly concentrated in very similar geographic regions, and the geographic and temporal incidence of the seabird species in the Natura 2000 site Eastern German Bight has remained relatively unchanged over the past ten years. It can therefore be assumed that the proposed measure will have a positive effect on the development of the population levels of the endangered species listed in Annex I of the Birds Directive and on the regularly occurring migratory bird species in the entire German EEZ in the North Sea.

The measure is based on the recommendations by Sonntag & Garthe (2010) founded on data on the incidence and distribution of seabirds in the German EEZ in the North Sea. These data were obtained from a seabird monitoring scheme performed on behalf

of the Federal Agency for Nature Conservation (BfN) (e.g. Markones et al. 2014, 2015) and from other research programmes.

The Natura 2000 site Eastern German Bight is the most important wintering area for red-throated and black-throated divers in the entire German EEZ in the North Sea (see Appendix 1). And a lot of other migratory bird species also use the bentho-pelagic fish stocks in this area as their forage base. The demarcation of the area was based on the main areas of distribution of red-throated and black-throated divers and the incidence of sandwich, common and Arctic tern and little and common gull. In the southern part of this area are the feeding grounds of the bird species black-legged kittiwake, common guillemot, razorbill, northern fulmar and northern gannet which in Germany breed only on the island of Helgoland (Sonntag & Garthe 2010).

4.4.1.5 Measure 5 (Fig. 14): Seasonal exclusion of fisheries with set gillnets and entangling nets from the western part of the Natura 2000 site Sylt Outer Reef during the period 1 March–31 October to protect harbour porpoises in the Natura 2000 site Sylt Outer Reef

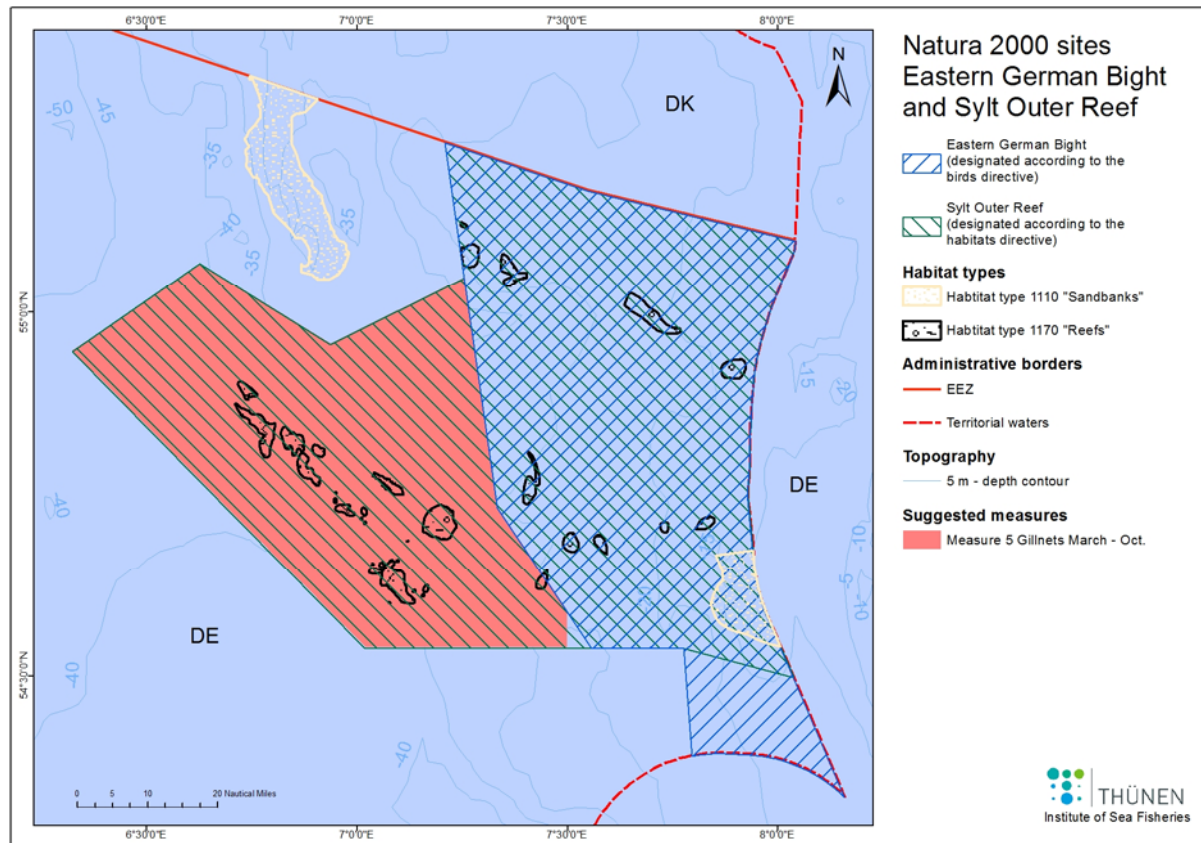


Figure 14, Measure 5: Seasonal exclusion of fisheries with set gillnets and entangling nets from the western part of the Natura 2000 site Sylt Outer Reef during the period 1 March–31 October to protect harbour porpoises.

The seasonal closure refers to the period 1 March – 31 October.

This includes the following gear types:

- gillnets GN
- set (anchored) gillnets GNS
- driftnets GND
- encircling gillnets GNC
- trammel nets GTR
- combined trammel and gillnets GTN

Rationale:

Measure 5 (Fig. 14) aims to protect harbour porpoises from by-catch in set gillnets and entangling nets. The risk of harbour porpoises getting caught in set nets can be assessed as high. Above all, harbour porpoises regularly get caught in bottom-set nets (e.g. single-wall set nets used for cod fishing or trammel nets used for flatfish fishing) (Perrin et al. 1994, Kock & Benke 1995, Vinther 1999).

Measure 5 aims to avoid harbour porpoise by-catches in the Natura 2000 site Sylt Outer Reef in phases of high animal aggregation during the calving and mating season by excluding gillnets and entangling nets during the period 1 March–31 October (see Appendix 1).

4.4.2 Proposed measures for the Natura 2000 site Borkum Reef Ground

4.4.2.1 Measure 6 (Fig. 15): Year-round exclusion of all mobile bottom-contacting gears from the entire Natura 2000 site Borkum Reef Ground to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs'

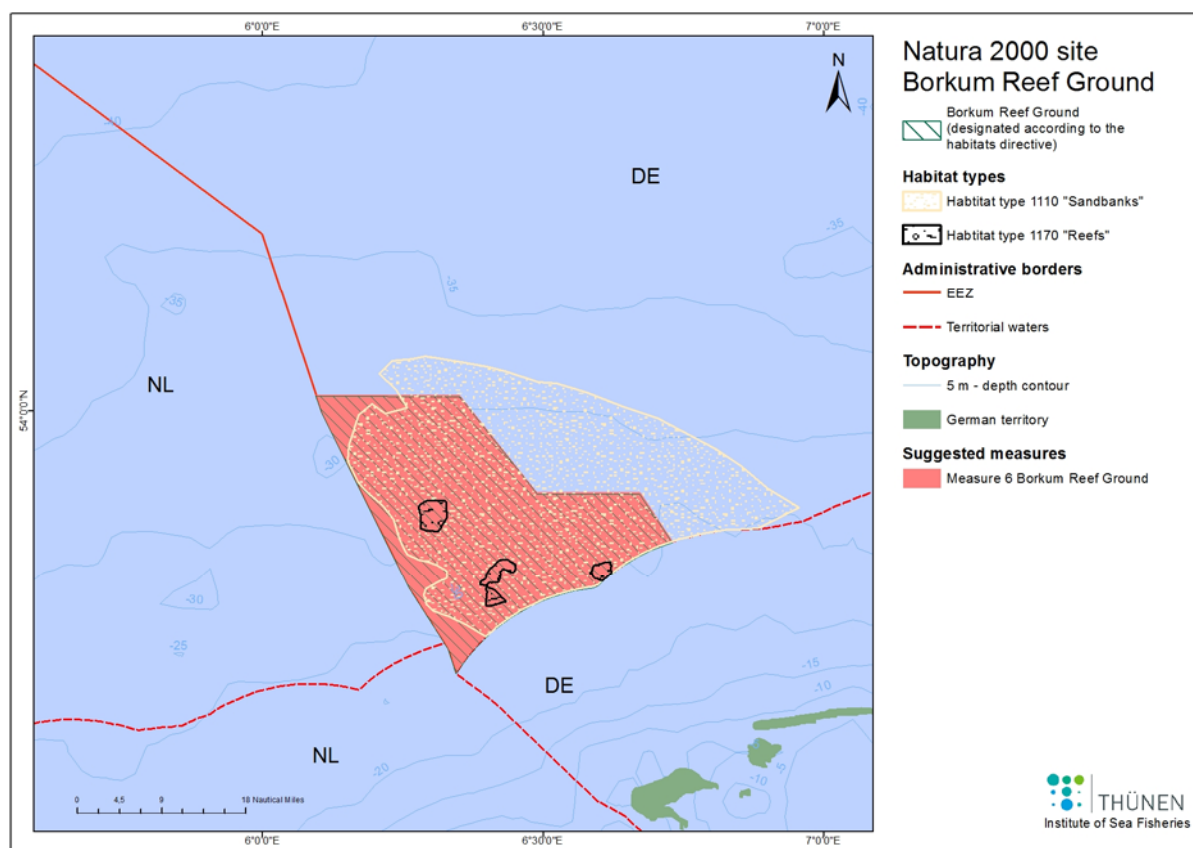


Figure 15, Measure 6: Year-round exclusion of all mobile bottom-contacting gears from the entire Borkum Reef Ground Natura 2000 site to protect the habitat types 1110 'Sandbanks' and 1170 'Reefs'.

This includes the following gear types:

- beach seines SB
- Danish seines SDN
- Scottish seines SSC
- pair seines SPR
- beam trawls TBB
- bottom otter trawls OTB
- bottom pair trawls PTB
- otter twin trawls OTT
- boat dredges DRB
- hand dredges used on board a vessel DRH
- mechanised dredges including suction dredges HMD
- bottom trawls (in general) TB
- nephrops bottom trawls TBN
- shrimp bottom trawls TBS
- seines (unspecified) SX
- boat seines SV

Rationale:

Measure 6 (Fig. 15) aims, in the Natura 2000 site Borkum Reef Ground, to provide efficient protection of the habitat types Reefs and Sandbanks under the Habitats Directive, of the benthic habitat types under Annex III Table 1 of the Marine Strategy Framework Directive, and of their benthic communities, against the negative impact of mobile bottom-contacting gears. The complex habitat and substrate structure with mosaic-like sandbank and reef structures and the species-rich benthic communities specifically adapted to those conditions in the Natura 2000 site Borkum Reef Ground have been described in several studies (Figge 1981; Rachor & Nehmer 2003).

The modelled biological reactions of the populations to bottom trawling of varying intensity show that one single fishing activity per year already causes the greatest absolute loss in benthic organisms (Schröder et al. 2008). The exclusion of mobile bottom-contacting fisheries is the most effective management measure to ensure the conservation or restoration of the favourable conservation status of the relevant habitat types in the Natura 2000 site Borkum Reef Ground (ICES 2008).

4.4.3 Proposed measures for the Natura 2000 site Dogger Bank

4.4.3.1 Measure 7

Measure 7, aimed at protecting the habitat type 1110 'Sandbanks', is discussed within the scope of the work of the Dogger Bank Steering Group (DBSG), which is composed of representatives from the EU Member States United Kingdom, the Netherlands and Germany. It will be presented to the Scheveningen Group in the form of a "Joint recommendation" for all Natura 2000 sites on the Dogger Bank drafted by Germany, the Netherlands and the United Kingdom.

4.4.4 Joint measures for the Natura 2000 sites Dogger Bank and Borkum Reef Ground

4.4.4.1 Measure 8: Mandatory use of cameras in conjunction with sensor technology

In order to record the by-catch of harbour porpoises, the use of cameras to monitor the species fished in the Natura 2000 sites Borkum Reef Ground and Dogger Bank is mandatory for all fisheries using gillnets and entangling nets. The camera recordings, together with the other electronically collected data, are analysed by the competent fishing authority (BLE). The monitoring and reporting obligations under Council Regulation (EC) No 812/2004 of 26 April 2004 laying down measures concerning incidental catches of cetaceans in fisheries and amending Regulation (EC) No 88/98 (OJ L 150, 30.4.2004, p. 12) also apply in this regard.

The use of cameras is mandatory for fishing vessels using the following gears:

- gillnets GN
- set (anchored) gillnets GNS
- driftnets GND
- encircling gillnets GNC
- trammel nets GTR
- combined trammel and gillnets GTN

Rationale:

Becoming by-caught in gillnets and entangling nets represents a major threat to harbour porpoises (Perrin et al. 1994, Kock & Benke 1995, Vinther 1999).

The exact by-catch risk for harbour porpoises posed by fisheries using gillnets and entangling nets in the Natura 2000 sites Borkum Reef Ground and Dogger Bank cannot, at present, be conclusively assessed due to insufficient by-catch data (samples taken on a random basis in accordance with Council Regulation (EC) No 812/2004) and insufficient fishing effort data with regard to the length and height of the nets, their soaking time and mesh size. The mandatory use of cameras in fisheries with gillnets and entangling nets in the above-mentioned Natura 2000 sites will therefore help to answer the question whether Measure 9 will be sufficient (see Chapter 4.4.2 and Chapter 4.4.3) to achieve the conservation objective for harbour porpoises. Camera surveillance in conjunction with sensor technology can support the identification of the fishing effort in set-net fisheries.

4.4.4.2 Measure 9: Limitation of fishing effort with passive gears (gillnets and entangling nets) to the average intensity of the period 2012-2014 to protect harbour porpoises in the Natura 2000 sites Borkum Reef Ground and Dogger Bank.

This includes the following gear types:

- gillnets GN
- set (anchored) gillnets GNS
- driftnets GND
- encircling gillnets GNC
- trammel nets GTR
- combined trammel and gillnets GTN

The fishing effort with gillnets and entangling nets is limited to the average intensity of the period 2012-2014. To this end, the Member States report to the competent German fisheries authority (BLE) the fishing effort of their vessels in accordance with Article 14(2) and (5), Article 27(1) and Article 111(1) of Regulation (EU)

No 1224/2009 to allow for the calculation of the fishing effort in fishing days, duration of the fishing trip, and mesh size and dimension used for the respective geographical location. During a transitional period of three years, the precise values for the fishing effort will be compared with the data provided by the satellite monitoring system and a reference value for the period 2012-2014 determined. This reference value will be published by the BLE three years after the entry into force of this provision. If the threshold value is exceeded in the following years, the Member States will be informed by the BLE and will then ensure compliance with this measure in accordance with Art. 26 of Regulation (EC) No 1224/2009.

Rationale:

Measure 9 aims to minimise the by-catch of harbour porpoises in gillnets and entangling nets in the Natura 2000 sites Borkum Reef Ground and Dogger Bank.

The freezing of fishing effort with gillnets and entangling nets in the Natura 2000 sites aims to avoid a further intensification of the already existing conflict between harbour porpoises and set-net fisheries in the two Natura 2000 sites.

5 CONTROL AND ENFORCEMENT

5.1 Basis

Effective controls aimed at the successful implementation of the proposed fisheries measures (see Chapter 6.4) are absolutely necessary to achieve the conservation objectives in the marine Natura 2000 sites in the German EEZ in the North Sea. Fisheries control and monitoring measures must be suitable and ensure that all fishing activities in a Natura 2000 site are recorded and reported to the competent authority (BLE).

The control and monitoring measures in the German Natura 2000 sites are carried out by the Federal Office for Agriculture and Food (BLE). Under Section 2(6) of the Sea Fisheries Act, the Federal Agency for Nature Conservation (BfN) is to be involved when it comes to determining the type and scale of the measures to monitor compliance with fisheries regulations. The following specific strategies for the control and monitoring of Natura 2000 sites will be laid down and introduced at the same time the protected areas become effective.

The provisions of Regulation (EU) No 1224/2009 (EU Fisheries Control Regulation) shall apply to all fishing vessels intending to enter into or transit through the specific fishing restricted areas laid down in chapter 4.4.

Transit through a fishing restricted area within the Natura 2000-sites is allowed for all fishing vessels that are not authorised to fish in these areas subject to the following conditions:

- a. all gears carried on board are lashed and stowed during the transit; and
- b. the speed during transit is not less than six knots except in case of force majeure or adverse conditions. In such cases, the master shall immediately inform the fisheries monitoring centre of the flag Member State which shall then inform the competent authorities of the coastal Member State.

In addition, cameras in conjunction with sensor technology are to be used in certain cases (see Chapter 4.4.4).

Compliance with the requirements is controlled by the BLE by evaluating the VMS data (see 5.2) and the electronic logbook data on the fishing gear used that have been transmitted in accordance with Regulation (EC) No 1224/2009, as well as by on-the-spot monitoring (e.g. with ships) and inspections of catches, catch records and fishing gear.

If a vessel has been recorded in a Natura 2000 site, an activity analysis is carried out on the basis of the existing data. If it is suspected that fishing vessels do not comply with the applicable fisheries measures in the relevant area, on-the-spot controls are

to be carried out on board of the vessels. In addition, vessel owners can be contacted in order to inform them about the conservation measures in Natura 2000 sites or to announce official measures. In the Dogger Bank and Borkum Reef Ground protected areas, catches and by-catches must also be documented with the help of camera surveillance and sensor technology.

The basic principles of a successful implementation of the conservation measures in the Natura 2000 sites include control and monitoring measures and the dialogue with the relevant professional groups and their representatives. The control and monitoring measures are therefore regularly checked for effectiveness and suitability and adapted to the requirements of the Common Fisheries Policy and the relevant nature conservation directives.

5.2 VMS

In accordance with Article 50(3) of Regulation (EC) No 1224/2009, the VMS signal rate is to be increased to once every 10 minutes within the marked fishing restricted areas (Fig. 16). This rate is sufficient for the current VMS analysis models.

An alarm zone is established around the fishing restricted areas. In order to ensure that the reporting interval has in fact been decreased by the time the fishing vessel enters the protected area, the competent fisheries authority of the relevant Member State establishes an appropriate 4-nm alarm zone. Upon entry into the alarm zone, the VMS reporting frequency is to be increased to 10-minute intervals which is then to be maintained as long as the vessel remains in the fishing restricted area and in the alarm zone.

The following data are to be transmitted:

- a. position
- b. date and time
- c. heading
- d. speed
- e. external identification mark of the fishing vessel

The competent fishing authority is informed on the entry into, and exit from the alarm zone.

In the Dogger Bank and Borkum Reef Ground protected areas, by-catch of harbour porpoises by fishing vessels mentioned under Measure 8 Chapter 4.4.4.1 must be documented with the help of camera surveillance in conjunction with sensor technology.

Fishing within the alarm zone is not subject to restrictions.

All fishing vessels entering the alarm zone or the fishing restricted area must be equipped with an appropriate VMS system. It is not allowed to enter such areas without this equipment. Both the fishing gear carried on board and fishing gear used are recorded in the electronic logbook.

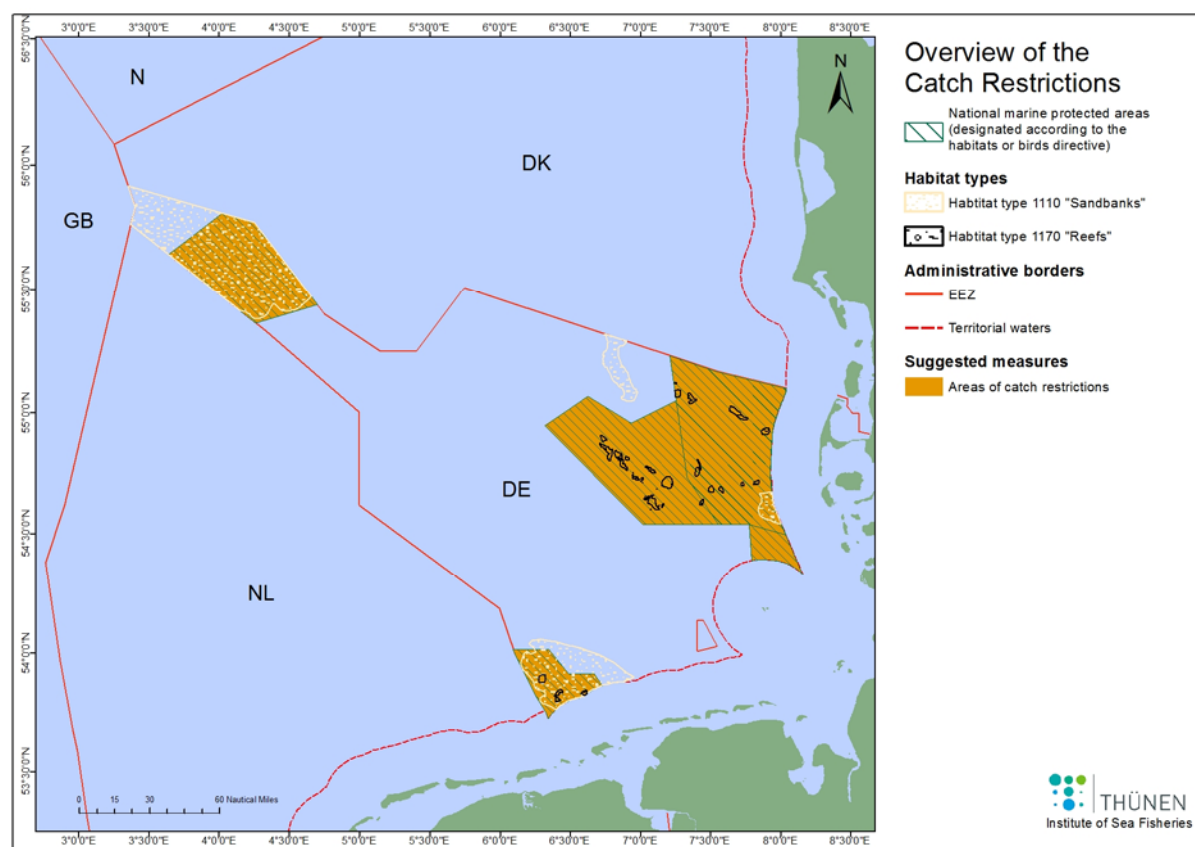


Figure 16: Natura 2000 sites with fishing restricted areas in the German EEZ in the North Sea

5.3 Cameras in conjunction with sensor technology

Remote Electronic Monitoring (REM) with cameras is intended to be an effective instrument to control and record fishing activities and by-catch of protected species. In the Natura 2000 sites Dogger Bank and Borkum Reef Ground, fishing vessels using gillnets and entangling nets are obliged to use cameras in order to collect data on the by-catch of marine mammals (especially harbour porpoises) and to provide these data to the BLE. The camera recordings, in conjunction with the other electronically collected data, are analysed by the competent fishing authority (BLE).

6 Evaluation of the appropriateness of the proposed measures

The German status report for protected species and habitats under the Habitats Directive for the 2007-2012 reporting period⁴ shows that the protected species and habitats in the marine Atlantic biogeographic region (MATL) are in a unfavourable state (Tab. 1).

Table 1: Overview of the conservation status of selected Natura 2000 habitats and species of the German EEZ in the North Sea (Atlantic biogeographic region)

Habitat / Species	Conservation status 2007-2012
Habitat type 1110	Bad conservation status, stagnating (U2 - unfavourable-bad)
Habitat type 1170	Bad conservation status, unknown trend (U2)
Harbour porpoise	Unfavourable conservation status (U1- unfavourable-inadequate)

The relevant reports on the bird populations monitored under the Birds Directive also show negative (all tern species) or stagnating trends (all diver species)⁵.

On account of the most recent assessment (2007-2012 reporting period) of the relevant protected species and habitats in the German EEZ in the North Sea, fisheries measures are required to improve the conservation status of species and habitats. According to the Habitats Directive, improving the conditions in the designated Natura 2000 sites is the most important instrument to achieve a favourable conservation status for the habitat types 'Reefs' and 'Sandbanks'. In order to achieve this favourable conservation status, the Habitats Directive provides that any interference shall be subject to a cumulative assessment of its implications for the site. But the assessment of the implications for the site under the Habitats Directive does not apply to commercial fisheries in the EEZ as these are governed within the framework of the Common Fisheries Policy. As a consequence, measures aimed at improving the conservation status under the provisions of Article 6(1) of the Habitats Directive must be implemented in the form of management measures under Articles 8 and 11 of the CFP Basic Regulation.

The proposed measures are therefore necessary and appropriate in order to achieve a favourable conservation status for the species and habitats in the German EEZ in the North Sea.

⁴ https://circabc.europa.eu/sd/a/dcb49f6a-543c-4f4d-b0af-5ec6597decfc/DE_20140528.pdf

⁵

http://www.bfn.de/fileadmin/MDB/documents/themen/monitoring/Ueberwinterer_bestand_trend_barfrei.pdf

7 Estimation of potential displacements of fisheries activities

7.1 Changes as a result of the measures

Figures 3 and 9 show that commercial fisheries only operate with low intensity in Natura 2000 sites. The exception are in-shore fisheries with small beam trawls (especially shrimp fisheries). They partly operate in the Natura 2000 site Sylt Outer Reef but are not directly concerned by Measure 2.

It can therefore be assumed that Measures 1-7 alone will only lead to minor displacements of commercial fisheries activities.

But Measure 8 in particular leads to additional costs for fisheries using gillnets and entangling nets (set-net fisheries) which might make the use of the Natura 2000 sites Borkum Reef Ground and Dogger Bank unattractive. Displacements of set-net fisheries to areas outside of Natura 2000 sites therefore appear possible. But as the effort documented by VMS analyses is so low, it is not to be expected that fisheries activities in areas outside of Natura 2000 sites will increase significantly.

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9 Appendices

9.1 Appendix 1: Documentation of the incidence of protected habitats and species in Natura 2000 sites

9.1.1 Benthic habitat types described as 'Reefs' and 'Sandbanks'

Annex I of the Habitats Directive lists natural habitats of Community interest whose conservation throughout Europe requires special conservation areas to be designated at national level. Two of these habitat types occur in the marine areas of the German EEZ in the North Sea: 'Reefs' and 'Sandbanks'. A major aspect for the selection and identification of the protection areas in the German EEZ in the North Sea under the Habitats Directive was the mapping of the benthic habitat types 'Sandbanks' and 'Reefs' (Boedecker *et al.* 2006; Rachor 2006; Zettler & Gosselck 2006). Figure 2 shows the current knowledge about the distribution of the habitat types 'Sandbanks' and 'Reefs' in the German EEZ in the North Sea.

The recorded percentages of the habitat types in the German North Sea waters show that 79% of the habitat type 'Sandbanks' occur in the German EEZ and 21% in coastal waters. A study on the spatial distribution of reefs revealed that 53% of this habitat type are located in the German EEZ (Boedecker *et al.* 2006; Rachor 2006; Zettler & Gosselck 2006).

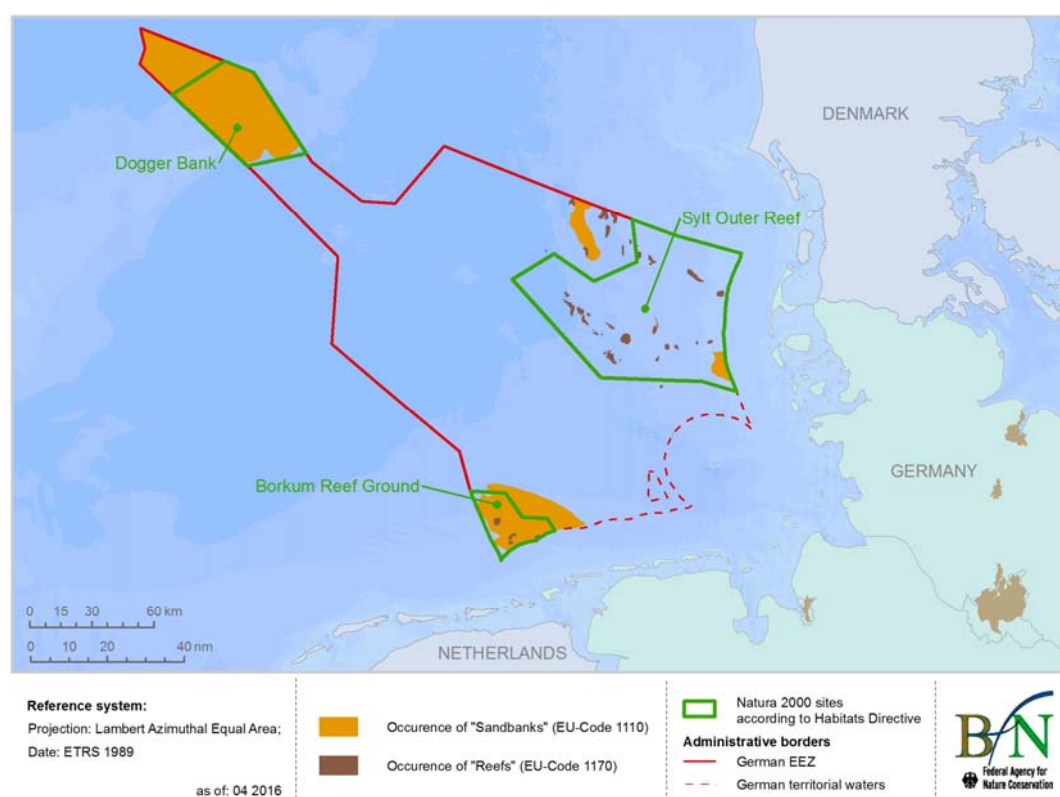


Figure S1a: Distribution of the habitat types 'Sandbanks' (1110) and 'Reefs' (1170) in the German EEZ in the North Sea, and Natura 2000 sites designated under the Habitats Directive (as of 2015). Note: It can be expected that further reefs and sandbanks will be detected in the course of current and future habitat mapping activities in the entire German waters of the North Sea.

Dogger Bank

The Dogger Bank (Fig. S1a) with an area of almost 18,000 km² is the largest sandbank in the entire North Sea dividing the sea into the ecologically distinct northern and southern regions. It is representative of the open sublittoral zone of the central North Sea and, at the same time, a typical offshore sandbank in accordance with Annex I of the Habitats Directive (Anonymous 2007a). The Dogger Bank area in the central part of the North Sea is of overall importance to an endofauna adapted to substrate shifting as a 'stepping stone' for the distribution of fauna elements of the entire North Sea area, as feeding ground for seabirds and marine mammals and as feeding and spawning ground for fish. The German Dogger Bank Natura 2000 site extends over an area of approx. 1,624 km².

Sylt Outer Reef

The Natura 2000 site Sylt Outer Reef comprises the outer grounds off Sylt and Amrum and the moraine ridge of the north eastern flank of the Elbe glacial valley. This area contains essential and representative examples of the habitat types 'Sandbanks' (1110) and 'Reefs' (1170). In addition, the Natura 2000 site Sylt Outer Reef contains the ideal type of the biotope type 'Species-rich gravel, coarse sand and shell-gravel areas' which is officially protected under Section 30 (2) no. 1, sixth sentence, of the Federal Nature Conservation Act (see Fig. S1b).

The close relationship between reefs and coarse-sand/gravel and fine-/medium-sand biotopes has created particularly high diversity of biotopes and habitats. This unique biotope complex in the German North Sea has not only led to the development of various typical communities but has also conserved a high number of endangered and rare species in this area (Rachor & Nehmer 2003). As a typical sandbank of the North Frisian marine area, the Amrum Bank is ecologically characterised by a mosaic of various, habitat-typical biotope types with a characteristic diversity of habitats. Predominant are coarse-sand/gravel slopes and fine-sand areas (Rachor & Nehmer 2003).

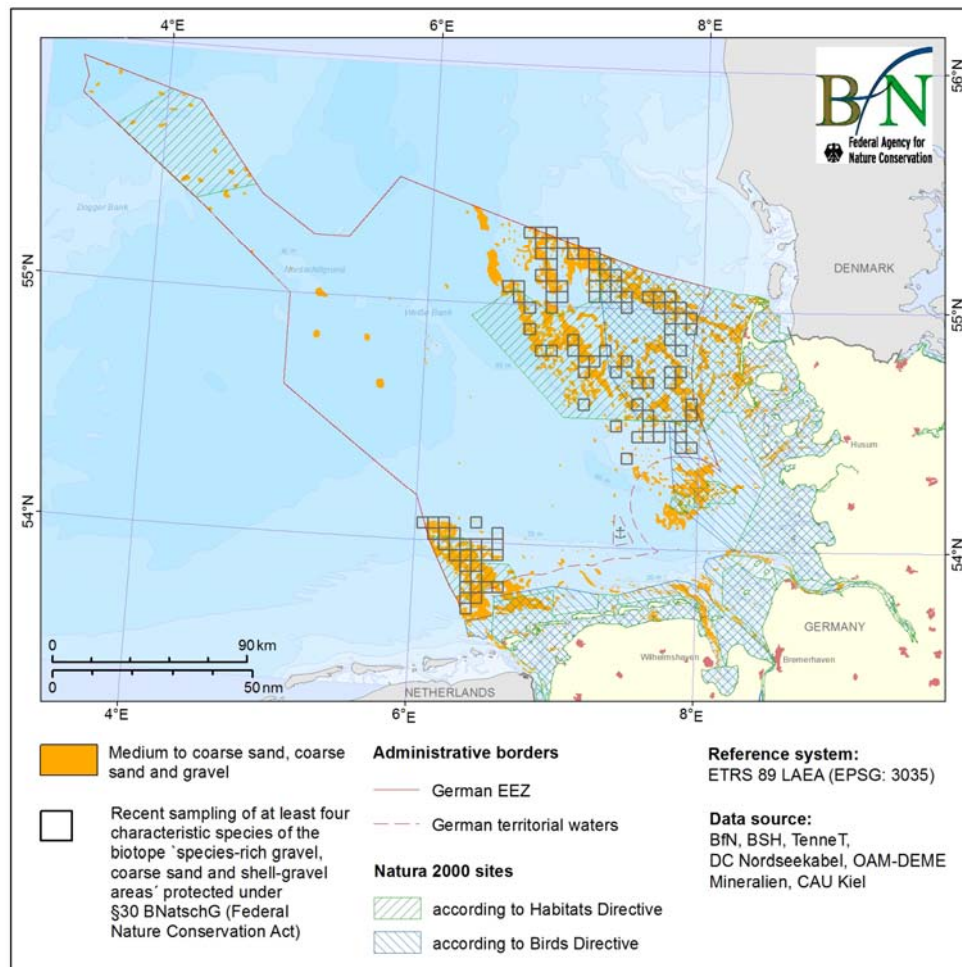


Fig. S1b: Distribution of sediments and characteristic species of the biotope type 'Species-rich gravel, coarse sand and shell-gravel areas' in the German EEZ in the North Sea which is protected under Section 30 of the Federal Nature Conservation Act. Note: The distribution shown on the map only represents the current state of knowledge (2013) and must probably be revised in the years to come as a result of further mapping activities.

Borkum Reef Ground

A characteristic feature is the high substrate and habitat diversity of the sandbank in the Natura 2000 site Borkum Reef Ground with its interspersed stony reefs. In addition to the coarse-sand communities typical for sandbank habitats (*Goniadella*-*Spisula* community), a small-scale, mosaic-like mixture of benthic communities occurs in this area. The characteristic epifauna with plumose anemones, dead man's fingers, sea cypress hydroid, ascidians, moss animals, sponges and diverse crustacean species is also represented on the reefs. The special ecological quality of the protection zone, which is characterised by its particular diversity of species, is based on the close relationship between these two habitat types. Since the beginning of scientific studies in 1998, a total of 165 species could be identified for the macrozoobenthos alone, including a high number of Red List species (Krause et al. 2006; Rachor & Nehmer, 2003). The Natura 2000 site Borkum Reef Ground extends over an area of 625 km².

9.1.2 Marine mammals

A number of projects – e.g. SCANS (Small Cetacean Abundance in the North Sea and adjacent waters), MINOS, or EMSON (survey of marine mammals and seabirds in the German EEZ in the North Sea and the Baltic Sea) – were conducted to examine the incidence and distribution of marine mammals (Gilles et al. 2006). A long-term monitoring programme for marine mammals in the German EEZ was then developed on the basis of these results. With a view to identifying population sizes and the geographic-temporal distribution of marine mammals, animals are counted at regular intervals by vessels and aircraft along set transects (Gilles et al. 2014, Viquerat et al. 2015). Further research projects examining the spatial and temporal distribution of harbour seals in the German North Sea with the help of telemetric methods are mainly conducted by the coastal federal states.

Three marine mammal species which are protected under Annex II of the Habitats Directive live in the German EEZ in the North Sea:

- Harbour porpoise (*Phocoena phocoena*)
- Harbour seal (*Phoca vitulina vitulina*)
- Grey seal (*Halichoerus grypus*)

Being an Annex IV species, harbour porpoises are also subject to strict general protection under Articles 12 and 16 of the Habitats Directive. The geographic distribution of harbour porpoises in the German EEZ and the coastal waters of the North Sea is shown in Figures 2 a-d.

In the North Sea, local densities of up to 5 animals/km² have been observed (Scheidat et al. 2006). However, harbour porpoises are not evenly distributed in the North Sea. Their distribution and density are subject to strong seasonal fluctuations. Aggregations with very high local densities and a high proportion of mother/calf pairs (in summer) occur regularly in spring and summer, during calving time and the subsequent mating season, and particularly in the Natura 2000 site Sylt Outer Reef (Fig. S2a-d) (Scheidat et al. 2006; Gilles et al. 2014).

A recent evaluation of the spatial distribution of harbour porpoise calves in the German EEZ in the North Sea for the summer period 2008-2012 shows a significantly increased distribution of mother/calf pairs in the Natura 2000 site Borkum Reef Ground as compared to the period 2002-2007 (Viquerat et al 2015) (Fig. S2c-d). This could indicate that the Borkum Reef Ground is of a certain importance as a potential calving habitat.

Other marine mammals identified in the German North Sea EEZ are the white-beaked dolphin (*Lagenorhynchus albirostris*), white-sided dolphin (*Lagenorhynchus acutus*) and the minke whale (*Balaenoptera acutorostrata*), with the minke whale being one of the regularly sighted species (Gilles et al. 2014).

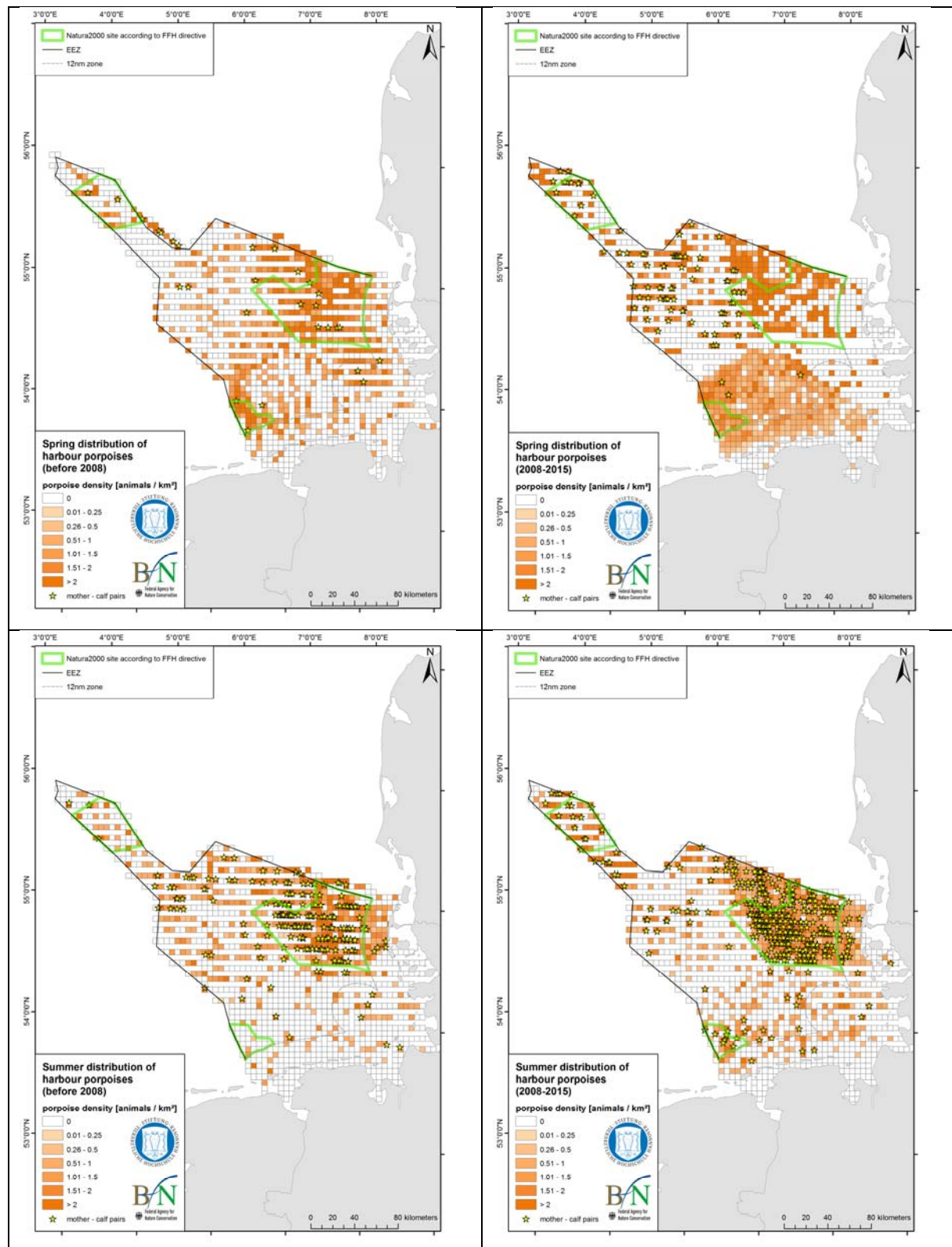


Fig. S2a-d: Overview of the average spatial distribution of harbour porpoises in the German North Sea in spring (March-May) and summer (June-August) of the years 2002–2007 and 2008–2015. Mother/calf sightings are marked with asterisks. The density calculation is based on the aggregation of flight count data collected under good and moderate conditions in ETRS 1989 grid cells (BfN monitoring, Viquerat et al. 2015).

9.1.3 Seabirds

The BfN has conducted a number of research projects to survey the concentration areas of resting and migratory birds in the area of the German North Sea and Baltic Sea (Garthe 2006, Garthe et al. 2010). The following research projects were particularly important for determining the special protection areas in the German EEZ: Survey of marine mammals and seabirds in German EEZ in the North Sea and Baltic Sea, EMSON, (Garthe & Sonntag 2004, Sonntag et al. 2007); Survey of resting migratory birds in the German EEZ in the North Sea and Baltic Sea (Garthe 2003).

In addition, data on the geographic and temporal distribution of seabirds in the German marine area are regularly collected by way of monitoring under the EU Birds Directive and within the scope of environmental impact studies (Markones et al. 2014, 2015, Garthe et al. 2015).

The species mentioned in Annex I to the Birds Directive are to be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. In this connection, particular account is to be taken of:

- a) species in danger of extinction;
- b) species vulnerable to specific changes in their habitat;
- c) species considered rare because of small populations or restricted local distribution.

Member States are to take conservation measures in order to ensure their survival and reproduction in their area of distribution. These measures explicitly include classifying the territories that are most suitable in terms of number and size as Special Protection Areas.

The following six species listed in Annex i to the Birds Directive occur in the marine areas in the German EEZ in the North Sea:

- Red-throated diver (*Gavia stellata*)
- Black-throated diver (*Gavia arctica*)
- Arctic tern (*Sterna paradisaea*)
- Common tern (*Sterna hirundo*)
- Sandwich tern (*Sterna sandvicensis*)
- Little gull (*Hydrocoloeus minutus*)

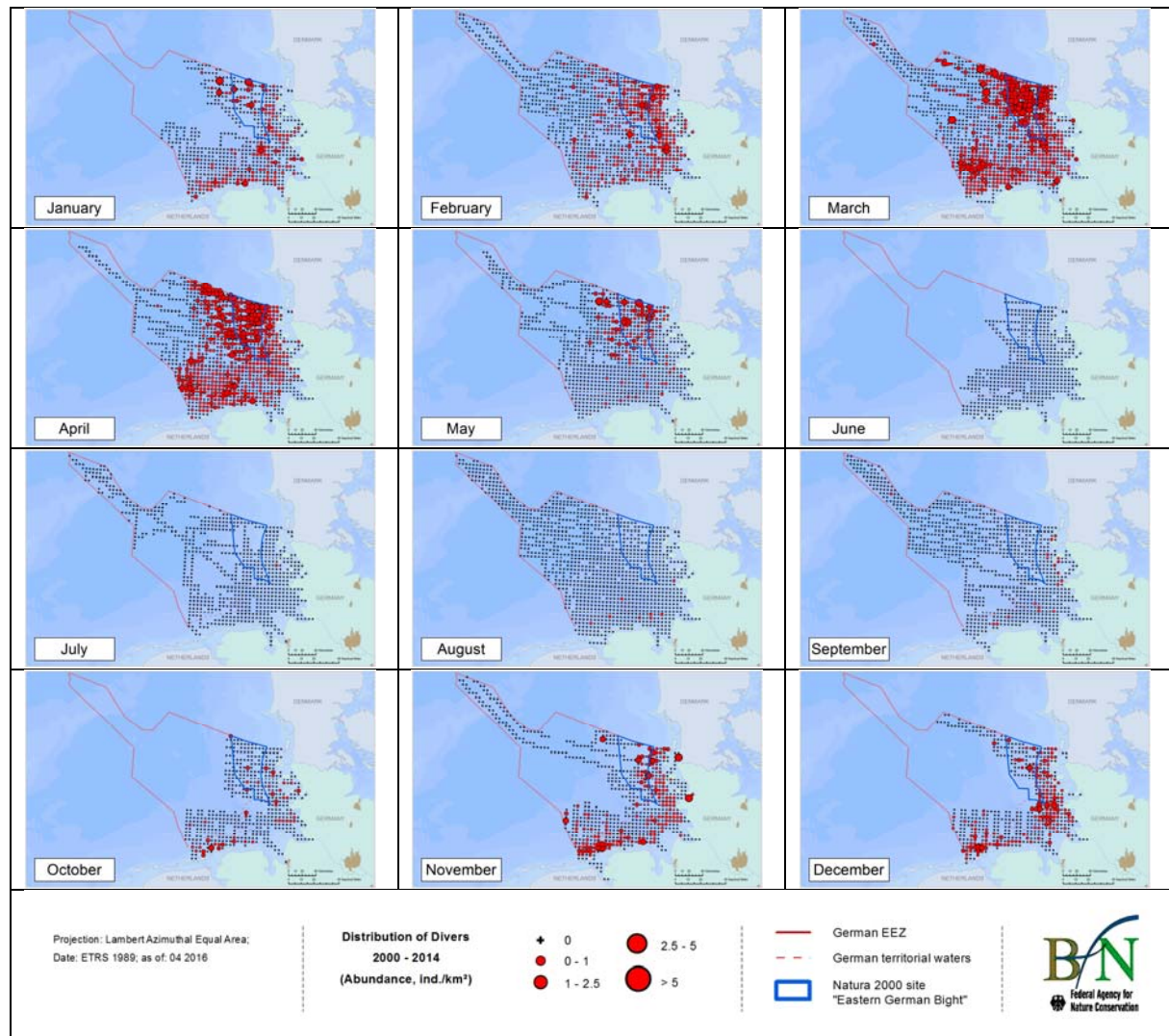


Figure S3: Abundance of gaviiformes (*Gavia* sp.) in the German North Sea in the course of the year (medium density per month) in the years 2000-2014 (source: BfN monitoring data)

In addition to this however, Article 4(2) of the Birds Directive stipulates that regularly occurring migratory species must also be protected through measures which develop and maintain their breeding, moulting and wintering areas and staging posts along their migration routes. This also includes avoiding pollution or the deterioration of habitats or any disturbances affecting the birds. The functional capacity of flyways must be preserved. In addition to the species listed in Annex I, a total of a further 19 species – mainly seaducks, gulls and auks – are also of relevance to the potential designation of protection areas.

Natura 2000 site Eastern German Bight

The Natura 2000 site Eastern German Bight is the most important wintering area for red-throated and black-throated divers in the entire German EEZ in the North Sea (see Fig. S3). And a lot of other migratory bird species also use the benthopelagic fish

stocks in this area as their forage base. The demarcation of the protection area was based on the main areas of distribution of red-throated and black-throated divers and the occurrence of sandwich, common and Arctic tern and little and common gull. In the southern part of this area are the feeding grounds of the bird species black-legged kittiwake, common guillemot, razorbill, northern fulmar and northern gannet which in Germany exclusively breed on the island of Helgoland. In addition to the birds breeding on Helgoland, lesser black-backed gulls also use this area as a feeding habitat throughout the year.

9.1.4 Fish

A research project on the Natura 2000 sites in the North Sea and the Baltic Sea examined the incidence and distribution of fish that are specified in Annex II to the Habitats Directive as being subjects of special protection (Thiel & Backhausen 2006, Thiel & Winker 2007).

The following anadromous fish species listed in Annex II to the Habitats Directive could be identified in the German EEZ in the North Sea: sea lamprey (*Petromyzon marinus*, Linnaeus 1758), river lamprey (*Lampetra fluviatilis*, Linnaeus 1758), allis shad (*Alosa alosa*), twait shad (*Alosa fallax*, Linnaeus 1758). Twait shad was the most common fish species specified in Annex II to the Habitats Directive in the German EEZ. This study reported the greatest abundance of twait shad in the outer estuaries of the Ems, Elbe and Weser rivers.

With regard to the marine Natura 2000 sites in the German EEZ in the North Sea, no special fisheries measures were developed for the fish species under Annex II to the Habitats Directive as the populations of these species are mainly threatened by the man-made changes to inland waters and the resulting lack of spawning and nursery areas. The measures proposed here can reduce the additional burden to these populations due to fish harvesting in marine waters.

9.2 Appendix 2: Geographic coordinates of the proposed measures 1-9

9.2.1 Measure 1

Measure 1 refers to the central area of the Natura 2000 site Sylt Outer Reef.

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	7° 30,000'	54° 32,331'
1	7° 1,228'	54° 32,331'
2	6° 42,000'	54° 43,637'
3	6° 42,000'	55° 2,528'
4	6° 56,281'	54° 57,420'
5	7° 15,411'	55° 2,896'
6	7° 12,669'	55° 13,907'
7	7° 30,000'	55° 10,604'

9.2.2 Measure 2

Measure 2 refers to the eastern part of the Natura 2000 site Sylt Outer Reef.

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	8° 2,293'	54° 29,927'
1	7° 46,700'	54° 32,330'
2	7° 33,563'	54° 32,331'
3	7° 30,000'	54° 32,331'
4	7° 30,000'	55° 10,604'
5	7° 33,079'	55° 10,017'
6	7° 33,081'	55° 10,017'
7	7° 33,081'	55° 10,017'
8	7° 33,084'	55° 10,016'
9	8° 2,660'	55° 5,951'
10	8° 2,562'	55° 5,546'
11	8° 2,490'	55° 5,137'
12	8° 2,339'	55° 4,909'
13	8° 1,579'	55° 3,712'
14	8° 0,904'	55° 2,880'
15	8° 0,652'	55° 2,557'
16	8° 0,415'	55° 2,230'
17	7° 59,542'	55° 0,962'
18	7° 59,299'	55° 0,590'
19	7° 59,077'	55° 0,217'
20	7° 58,517'	54° 59,215'
21	7° 58,437'	54° 59,069'
22	7° 57,797'	54° 57,867'
23	7° 57,584'	54° 57,439'
24	7° 57,395'	54° 57,000'

25	7° 57,237'	54° 56,559'
26	7° 56,977'	54° 55,757'
27	7° 56,820'	54° 55,202'
28	7° 56,709'	54° 54,643'
29	7° 56,535'	54° 53,543'
30	7° 56,475'	54° 53,068'
31	7° 56,374'	54° 51,912'
32	7° 56,224'	54° 50,438'
33	7° 56,197'	54° 50,065'
34	7° 56,154'	54° 49,165'
35	7° 56,147'	54° 48,845'
36	7° 56,154'	54° 48,525'
37	7° 56,179'	54° 47,995'
38	7° 56,162'	54° 47,748'
39	7° 55,931'	54° 46,280'
40	7° 55,866'	54° 45,723'
41	7° 55,844'	54° 45,165'
42	7° 55,869'	54° 44,606'
43	7° 55,939'	54° 44,048'
44	7° 56,676'	54° 39,583'
45	7° 56,744'	54° 39,005'
46	7° 56,863'	54° 38,430'
47	7° 57,028'	54° 37,858'
48	7° 57,239'	54° 37,291'
49	7° 57,499'	54° 36,731'
50	7° 57,618'	54° 36,498'
51	7° 57,864'	54° 36,046'
52	7° 58,141'	54° 35,598'
53	7° 58,449'	54° 35,158'

9.2.3 Measure 3

Measure 3 refers to 25% of the area of the Amrum Bank (northern part) in the Natura 2000 site Sylt Outer Reef.

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	7° 54,105'	54° 37,722'
1	7° 52,190'	54° 37,872'
2	7° 52,089'	54° 38,305'
3	7° 52,016'	54° 38,661'
4	7° 51,812'	54° 39,168'
5	7° 53,094'	54° 39,961'
6	7° 53,658'	54° 40,244'
7	7° 55,026'	54° 40,360'
8	7° 55,795'	54° 40,420'
9	7° 56,530'	54° 40,479'
10	7° 56,538'	54° 40,433'

11	7° 56,547'	54° 40,380'
12	7° 56,555'	54° 40,327'
13	7° 56,564'	54° 40,274'
14	7° 56,573'	54° 40,221'
15	7° 56,582'	54° 40,167'
16	7° 56,590'	54° 40,114'
17	7° 56,599'	54° 40,061'
18	7° 56,608'	54° 40,008'
19	7° 56,617'	54° 39,955'
20	7° 56,625'	54° 39,902'
21	7° 56,634'	54° 39,848'
22	7° 56,643'	54° 39,795'
23	7° 56,652'	54° 39,742'
24	7° 56,660'	54° 39,689'
25	7° 56,669'	54° 39,636'
26	7° 56,678'	54° 39,583'
27	7° 56,684'	54° 39,530'
28	7° 56,690'	54° 39,478'
29	7° 56,697'	54° 39,425'
30	7° 56,703'	54° 39,372'
31	7° 56,709'	54° 39,320'
32	7° 56,715'	54° 39,267'
33	7° 56,721'	54° 39,215'
34	7° 56,728'	54° 39,162'
35	7° 56,734'	54° 39,109'
36	7° 56,735'	54° 39,102'
37	7° 56,744'	54° 39,005'
38	7° 56,777'	54° 38,857'
39	7° 56,779'	54° 38,847'
40	7° 56,789'	54° 38,795'
41	7° 56,800'	54° 38,743'
42	7° 56,811'	54° 38,691'
43	7° 56,822'	54° 38,638'
44	7° 56,832'	54° 38,586'
45	7° 56,843'	54° 38,534'
46	7° 56,854'	54° 38,482'
47	7° 56,865'	54° 38,429'
48	7° 56,880'	54° 38,377'
49	7° 56,888'	54° 38,349'
50	7° 56,894'	54° 38,322'
51	7° 56,947'	54° 38,143'
52	7° 56,955'	54° 38,117'
53	7° 56,970'	54° 38,065'
54	7° 56,979'	54° 38,035'

9.2.4 Measure 4

Measure 4 refers to the Natura 2000 sites Eastern German Bight and Sylt Outer Reef.

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	8° 9,059'	54° 20,717'
1	8° 9,355'	54° 20,331'
2	8° 9,674'	54° 19,952'
3	8° 9,615'	54° 19,985'
4	8° 9,554'	54° 20,020'
5	8° 9,492'	54° 20,055'
6	8° 9,430'	54° 20,090'
7	8° 9,368'	54° 20,125'
8	8° 9,306'	54° 20,160'
9	8° 9,245'	54° 20,194'
10	8° 9,183'	54° 20,229'
11	8° 9,121'	54° 20,264'
12	8° 9,059'	54° 20,299'
13	8° 8,997'	54° 20,334'
14	8° 8,933'	54° 20,367'
15	8° 8,868'	54° 20,400'
16	8° 8,804'	54° 20,433'
17	8° 8,739'	54° 20,466'
18	8° 8,675'	54° 20,499'
19	8° 8,610'	54° 20,532'
20	8° 8,545'	54° 20,565'
21	8° 8,481'	54° 20,598'
22	8° 8,416'	54° 20,631'
23	8° 8,352'	54° 20,664'
24	8° 8,287'	54° 20,697'
25	8° 8,220'	54° 20,729'
26	8° 8,153'	54° 20,760'
27	8° 8,086'	54° 20,791'
28	8° 8,019'	54° 20,823'
29	8° 7,952'	54° 20,854'
30	8° 7,884'	54° 20,885'
31	8° 7,817'	54° 20,917'
32	8° 7,750'	54° 20,948'
33	8° 7,683'	54° 20,979'
34	8° 7,616'	54° 21,011'
35	8° 7,549'	54° 21,042'
36	8° 7,479'	54° 21,072'
37	8° 7,410'	54° 21,101'
38	8° 7,340'	54° 21,131'
39	8° 7,271'	54° 21,160'
40	8° 7,201'	54° 21,190'

41	8° 7,132'	54° 21,219'
42	8° 7,062'	54° 21,249'
43	8° 6,992'	54° 21,279'
44	8° 6,923'	54° 21,308'
45	8° 6,853'	54° 21,338'
46	8° 6,784'	54° 21,367'
47	8° 6,712'	54° 21,395'
48	8° 6,640'	54° 21,422'
49	8° 6,569'	54° 21,450'
50	8° 6,497'	54° 21,477'
51	8° 6,425'	54° 21,505'
52	8° 6,354'	54° 21,533'
53	8° 6,282'	54° 21,560'
54	8° 6,210'	54° 21,588'
55	8° 6,139'	54° 21,615'
56	8° 6,067'	54° 21,643'
57	8° 5,995'	54° 21,670'
58	8° 5,921'	54° 21,696'
59	8° 5,848'	54° 21,722'
60	8° 5,774'	54° 21,748'
61	8° 5,700'	54° 21,774'
62	8° 5,626'	54° 21,799'
63	8° 5,552'	54° 21,825'
64	8° 5,478'	54° 21,851'
65	8° 5,404'	54° 21,877'
66	8° 5,330'	54° 21,902'
67	8° 5,256'	54° 21,928'
68	8° 5,182'	54° 21,954'
69	8° 5,106'	54° 21,977'
70	8° 5,030'	54° 22,001'
71	8° 4,954'	54° 22,025'
72	8° 4,878'	54° 22,048'
73	8° 4,803'	54° 22,072'
74	8° 4,727'	54° 22,096'
75	8° 4,651'	54° 22,119'
76	8° 4,575'	54° 22,143'
77	8° 4,499'	54° 22,167'
78	8° 4,423'	54° 22,190'
79	8° 4,347'	54° 22,214'
80	8° 4,269'	54° 22,235'
81	8° 4,192'	54° 22,257'
82	8° 4,114'	54° 22,278'
83	8° 4,037'	54° 22,300'
84	8° 3,959'	54° 22,321'
85	8° 3,882'	54° 22,343'
86	8° 3,804'	54° 22,364'

87	8° 3,726'	54° 22,386'
88	8° 3,649'	54° 22,407'
89	8° 3,571'	54° 22,429'
90	8° 3,494'	54° 22,450'
91	8° 3,414'	54° 22,470'
92	8° 3,335'	54° 22,489'
93	8° 3,255'	54° 22,509'
94	8° 3,176'	54° 22,528'
95	8° 3,097'	54° 22,547'
96	8° 3,017'	54° 22,567'
97	8° 2,938'	54° 22,586'
98	8° 2,859'	54° 22,606'
99	8° 2,779'	54° 22,625'
100	8° 2,700'	54° 22,644'
101	8° 2,620'	54° 22,664'
102	8° 2,540'	54° 22,681'
103	8° 2,459'	54° 22,698'
104	8° 2,378'	54° 22,716'
105	8° 2,297'	54° 22,733'
106	8° 2,217'	54° 22,750'
107	8° 2,136'	54° 22,767'
108	8° 2,055'	54° 22,785'
109	8° 1,974'	54° 22,802'
110	8° 1,893'	54° 22,819'
111	8° 1,813'	54° 22,837'
112	8° 1,732'	54° 22,854'
113	8° 1,650'	54° 22,869'
114	8° 1,568'	54° 22,884'
115	8° 1,486'	54° 22,899'
116	8° 1,404'	54° 22,914'
117	8° 1,322'	54° 22,929'
118	8° 1,240'	54° 22,944'
119	8° 1,158'	54° 22,959'
120	8° 1,076'	54° 22,974'
121	8° 0,994'	54° 22,989'
122	8° 0,912'	54° 23,004'
123	8° 0,830'	54° 23,019'
124	8° 0,747'	54° 23,032'
125	8° 0,664'	54° 23,045'
126	8° 0,581'	54° 23,057'
127	8° 0,498'	54° 23,070'
128	8° 0,414'	54° 23,083'
129	8° 0,331'	54° 23,096'
130	8° 0,248'	54° 23,109'
131	8° 0,165'	54° 23,122'
132	8° 0,082'	54° 23,135'

133	7° 59,998'	54° 23,148'
134	7° 59,915'	54° 23,160'
135	7° 59,914'	54° 23,161'
136	7° 59,913'	54° 23,161'
137	7° 59,747'	54° 23,181'
138	7° 59,663'	54° 23,192'
139	7° 59,579'	54° 23,202'
140	7° 59,495'	54° 23,213'
141	7° 59,411'	54° 23,223'
142	7° 59,327'	54° 23,234'
143	7° 59,242'	54° 23,244'
144	7° 59,158'	54° 23,255'
145	7° 59,109'	54° 23,261'
146	7° 58,988'	54° 23,276'
147	7° 58,055'	54° 23,367'
148	7° 57,115'	54° 23,434'
149	7° 56,171'	54° 23,474'
150	7° 54,798'	54° 23,513'
151	7° 54,707'	54° 23,516'
152	7° 54,615'	54° 23,519'
153	7° 54,523'	54° 23,521'
154	7° 54,432'	54° 23,524'
155	7° 54,340'	54° 23,527'
156	7° 54,248'	54° 23,529'
157	7° 54,157'	54° 23,532'
158	7° 54,089'	54° 23,534'
159	7° 52,688'	54° 23,574'
160	7° 51,716'	54° 23,589'
161	7° 50,746'	54° 23,576'
162	7° 49,776'	54° 23,536'
163	7° 48,813'	54° 23,469'
164	7° 47,855'	54° 23,376'
165	7° 46,700'	54° 32,330'
166	7° 33,563'	54° 32,331'
167	7° 30,000'	54° 32,331'
168	7° 30,012'	54° 35,405'
169	7° 20,091'	54° 43,973'
170	7° 15,411'	55° 2,896'
171	7° 12,669'	55° 13,907'
172	7° 33,079'	55° 10,017'
173	7° 33,081'	55° 10,017'
174	7° 33,081'	55° 10,017'
175	7° 33,084'	55° 10,016'
176	8° 2,660'	55° 5,951'
177	8° 2,562'	55° 5,546'
178	8° 2,490'	55° 5,137'

179	8° 2,339'	55° 4,909'
180	8° 1,579'	55° 3,712'
181	8° 0,904'	55° 2,880'
182	8° 0,652'	55° 2,557'
183	8° 0,415'	55° 2,230'
184	7° 59,542'	55° 0,962'
185	7° 59,299'	55° 0,590'
186	7° 59,077'	55° 0,217'
187	7° 58,517'	54° 59,215'
188	7° 58,437'	54° 59,069'
189	7° 57,797'	54° 57,867'
190	7° 57,584'	54° 57,439'
191	7° 57,395'	54° 57,000'
192	7° 57,237'	54° 56,559'
193	7° 56,977'	54° 55,757'
194	7° 56,820'	54° 55,202'
195	7° 56,709'	54° 54,643'
196	7° 56,535'	54° 53,543'
197	7° 56,475'	54° 53,068'
198	7° 56,374'	54° 51,912'
199	7° 56,224'	54° 50,438'
200	7° 56,197'	54° 50,065'
201	7° 56,154'	54° 49,165'
202	7° 56,147'	54° 48,845'
203	7° 56,154'	54° 48,525'
204	7° 56,179'	54° 47,995'
205	7° 56,162'	54° 47,748'
206	7° 55,931'	54° 46,280'
207	7° 55,866'	54° 45,723'
208	7° 55,844'	54° 45,165'
209	7° 55,869'	54° 44,606'
210	7° 55,939'	54° 44,048'
211	7° 56,676'	54° 39,583'
212	7° 56,744'	54° 39,005'
213	7° 56,863'	54° 38,430'
214	7° 57,028'	54° 37,858'
215	7° 57,239'	54° 37,291'
216	7° 57,499'	54° 36,731'
217	7° 57,618'	54° 36,498'
218	7° 57,864'	54° 36,046'
219	7° 58,141'	54° 35,598'
220	7° 58,449'	54° 35,158'
221	8° 2,293'	54° 29,927'

9.2.5 Measure 5

Measure 5 refers to the western part of the Natura 2000 site Sylt Outer Reef during the period 1 March – 31 October.

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	6° 56,281'	54° 57,420'
1	7° 15,411'	55° 2,896'
2	7° 20,091'	54° 43,973'
3	7° 30,012'	54° 35,405'
4	7° 30,000'	54° 32,331'
5	7° 1,228'	54° 32,331'
6	6° 19,442'	54° 56,834'
7	6° 37,750'	55° 4,018'

9.2.6 Measure 6

Measure 6 refers to the entire Natura 2000 site Borkum Reef Ground.

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	6° 29,396'	53° 54,884'
1	6° 40,414'	53° 54,884'
2	6° 43,914'	53° 51,809'
3	6° 43,601'	53° 51,754'
4	6° 42,666'	53° 51,559'
5	6° 41,747'	53° 51,337'
6	6° 40,849'	53° 51,089'
7	6° 39,972'	53° 50,814'
8	6° 39,120'	53° 50,515'
9	6° 38,294'	53° 50,192'
10	6° 37,494'	53° 49,845'
11	6° 36,725'	53° 49,475'
12	6° 35,989'	53° 49,082'
13	6° 35,510'	53° 48,930'
14	6° 34,570'	53° 48,854'
15	6° 33,639'	53° 48,752'
16	6° 32,715'	53° 48,625'
17	6° 31,804'	53° 48,472'
18	6° 30,905'	53° 48,294'
19	6° 30,022'	53° 48,092'
20	6° 29,157'	53° 47,864'
21	6° 28,310'	53° 47,614'
22	6° 27,484'	53° 47,339'
23	6° 26,680'	53° 47,042'
24	6° 25,902'	53° 46,722'
25	6° 25,150'	53° 46,382'
26	6° 24,425'	53° 46,020'
27	6° 23,730'	53° 45,640'

28	6° 23,067'	53° 45,240'
29	6° 22,435'	53° 44,822'
30	6° 21,837'	53° 44,388'
31	6° 21,275'	53° 43,937'
32	6° 20,750'	53° 43,471'
33	6° 20,536'	53° 43,854'
34	6° 20,322'	53° 44,238'
35	6° 20,108'	53° 44,622'
36	6° 19,894'	53° 45,006'
37	6° 19,437'	53° 45,432'
38	6° 18,980'	53° 45,858'
39	6° 18,523'	53° 46,284'
40	6° 18,066'	53° 46,710'
41	6° 17,608'	53° 47,135'
42	6° 17,151'	53° 47,561'
43	6° 16,693'	53° 47,987'
44	6° 16,235'	53° 48,413'
45	6° 15,777'	53° 48,838'
46	6° 15,371'	53° 49,319'
47	6° 14,964'	53° 49,801'
48	6° 14,557'	53° 50,282'
49	6° 14,151'	53° 50,763'
50	6° 13,744'	53° 51,245'
51	6° 13,336'	53° 51,726'
52	6° 12,929'	53° 52,207'
53	6° 12,522'	53° 52,688'
54	6° 12,114'	53° 53,170'
55	6° 11,706'	53° 53,651'
56	6° 11,298'	53° 54,132'
57	6° 10,890'	53° 54,613'
58	6° 10,482'	53° 55,094'
59	6° 10,074'	53° 55,575'
60	6° 9,665'	53° 56,056'
61	6° 9,257'	53° 56,537'
62	6° 8,848'	53° 57,018'
63	6° 8,439'	53° 57,499'
64	6° 8,030'	53° 57,980'
65	6° 7,620'	53° 58,461'
66	6° 7,211'	53° 58,942'
67	6° 6,801'	53° 59,423'
68	6° 6,391'	53° 59,903'
69	6° 6,111'	54° 0,393'
70	6° 5,831'	54° 0,882'
71	6° 5,758'	54° 1,010'
72	6° 21,123'	54° 0,985'

9.2.7 Measure 7

Measure 7 refers to 50% of the area of the Natura 2000 site Dogger Bank.

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	3° 38,254'	55° 38,734'
1	4° 1,073'	55° 48,576'
2	4° 1,146'	55° 48,608'
3	4° 1,224'	55° 48,595'
4	4° 2,138'	55° 48,445'
5	4° 3,051'	55° 48,294'
6	4° 3,964'	55° 48,143'
7	4° 4,877'	55° 47,992'
8	4° 5,791'	55° 47,840'
9	4° 6,703'	55° 47,689'
10	4° 7,616'	55° 47,538'
11	4° 8,529'	55° 47,386'
12	4° 9,442'	55° 47,235'
13	4° 10,354'	55° 47,083'
14	4° 11,266'	55° 46,931'
15	4° 12,179'	55° 46,779'
16	4° 13,091'	55° 46,627'
17	4° 14,003'	55° 46,475'
18	4° 14,915'	55° 46,322'
19	4° 15,497'	55° 45,898'
20	4° 16,079'	55° 45,474'
21	4° 16,661'	55° 45,050'
22	4° 17,243'	55° 44,626'
23	4° 17,824'	55° 44,201'
24	4° 18,405'	55° 43,777'
25	4° 18,986'	55° 43,353'
26	4° 19,567'	55° 42,928'
27	4° 20,148'	55° 42,504'
28	4° 20,728'	55° 42,079'
29	4° 21,308'	55° 41,655'
30	4° 21,888'	55° 41,230'
31	4° 22,216'	55° 40,990'
32	4° 0,000'	55° 41,195'
33	4° 0,000'	55° 39,000'
34	4° 6,000'	55° 39,000'
35	4° 12,000'	55° 33,000'
36	4° 15,000'	55° 33,000'
37	4° 15,000'	55° 27,000'
38	4° 4,429'	55° 27,000'
39	4° 3,745'	55° 27,309'
40	4° 3,008'	55° 27,643'
41	4° 2,270'	55° 27,976'

42	4° 1,532'	55° 28,309'
43	4° 0,794'	55° 28,642'
44	4° 0,056'	55° 28,975'
45	3° 59,318'	55° 29,308'
46	3° 58,579'	55° 29,641'
47	3° 57,840'	55° 29,974'
48	3° 57,101'	55° 30,306'
49	3° 56,362'	55° 30,639'
50	3° 55,622'	55° 30,972'
51	3° 54,883'	55° 31,304'
52	3° 54,143'	55° 31,636'
53	3° 53,403'	55° 31,969'
54	3° 52,662'	55° 32,301'
55	3° 51,922'	55° 32,633'
56	3° 51,181'	55° 32,965'
57	3° 50,440'	55° 33,297'
58	3° 49,699'	55° 33,629'
59	3° 48,958'	55° 33,961'
60	3° 48,216'	55° 34,293'
61	3° 47,474'	55° 34,625'
62	3° 46,732'	55° 34,956'
63	3° 45,990'	55° 35,288'
64	3° 45,248'	55° 35,619'
65	3° 44,505'	55° 35,951'
66	3° 43,762'	55° 36,282'
67	3° 43,019'	55° 36,613'
68	3° 42,276'	55° 36,945'
69	3° 41,533'	55° 37,276'
70	3° 40,789'	55° 37,607'
71	3° 40,045'	55° 37,938'
72	3° 39,301'	55° 38,269'
73	3° 38,557'	55° 38,600'

9.2.8 Measures 8 and 9

Measures 8 and 9 refer to the Natura 2000 sites Borkum Reef Ground and Dogger Bank.

9.2.8.1 Borkum Reef Ground

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	6° 29,396'	53° 54,884'
1	6° 40,414'	53° 54,884'
2	6° 43,914'	53° 51,809'
3	6° 43,601'	53° 51,754'

4	6° 42,666'	53° 51,559'
5	6° 41,747'	53° 51,337'
6	6° 40,849'	53° 51,089'
7	6° 39,972'	53° 50,814'
8	6° 39,120'	53° 50,515'
9	6° 38,294'	53° 50,192'
10	6° 37,494'	53° 49,845'
11	6° 36,725'	53° 49,475'
12	6° 35,989'	53° 49,082'
13	6° 35,510'	53° 48,930'
14	6° 34,570'	53° 48,854'
15	6° 33,639'	53° 48,752'
16	6° 32,715'	53° 48,625'
17	6° 31,804'	53° 48,472'
18	6° 30,905'	53° 48,294'
19	6° 30,022'	53° 48,092'
20	6° 29,157'	53° 47,864'
21	6° 28,310'	53° 47,614'
22	6° 27,484'	53° 47,339'
23	6° 26,680'	53° 47,042'
24	6° 25,902'	53° 46,722'
25	6° 25,150'	53° 46,382'
26	6° 24,425'	53° 46,020'
27	6° 23,730'	53° 45,640'
28	6° 23,067'	53° 45,240'
29	6° 22,435'	53° 44,822'
30	6° 21,837'	53° 44,388'
31	6° 21,275'	53° 43,937'
32	6° 20,750'	53° 43,471'
33	6° 20,536'	53° 43,854'
34	6° 20,322'	53° 44,238'
35	6° 20,108'	53° 44,622'
36	6° 19,894'	53° 45,006'
37	6° 19,437'	53° 45,432'
38	6° 18,980'	53° 45,858'
39	6° 18,523'	53° 46,284'
40	6° 18,066'	53° 46,710'
41	6° 17,608'	53° 47,135'
42	6° 17,151'	53° 47,561'
43	6° 16,693'	53° 47,987'
44	6° 16,235'	53° 48,413'
45	6° 15,777'	53° 48,838'
46	6° 15,371'	53° 49,319'
47	6° 14,964'	53° 49,801'
48	6° 14,557'	53° 50,282'
49	6° 14,151'	53° 50,763'

50	6° 13,744'	53° 51,245'
51	6° 13,336'	53° 51,726'
52	6° 12,929'	53° 52,207'
53	6° 12,522'	53° 52,688'
54	6° 12,114'	53° 53,170'
55	6° 11,706'	53° 53,651'
56	6° 11,298'	53° 54,132'
57	6° 10,890'	53° 54,613'
58	6° 10,482'	53° 55,094'
59	6° 10,074'	53° 55,575'
60	6° 9,665'	53° 56,056'
61	6° 9,257'	53° 56,537'
62	6° 8,848'	53° 57,018'
63	6° 8,439'	53° 57,499'
64	6° 8,030'	53° 57,980'
65	6° 7,620'	53° 58,461'
66	6° 7,211'	53° 58,942'
67	6° 6,801'	53° 59,423'
68	6° 6,391'	53° 59,903'
69	6° 6,111'	54° 0,393'
70	6° 5,831'	54° 0,882'
71	6° 5,758'	54° 1,010'
72	6° 21,123'	54° 0,985'

9.2.8.2 Dogger Bank

ID	Longitude WGS84 (E)	Latitude WGS84 (N)
0	4° 41,963'	55° 26,384'
1	4° 15,650'	55° 21,905'
2	4° 15,516'	55° 21,967'
3	4° 14,781'	55° 22,301'
4	4° 14,047'	55° 22,636'
5	4° 13,313'	55° 22,970'
6	4° 12,578'	55° 23,304'
7	4° 11,843'	55° 23,638'
8	4° 11,108'	55° 23,972'
9	4° 10,373'	55° 24,306'
10	4° 9,637'	55° 24,640'
11	4° 8,901'	55° 24,974'
12	4° 8,165'	55° 25,308'
13	4° 7,429'	55° 25,642'
14	4° 6,693'	55° 25,975'
15	4° 5,956'	55° 26,309'
16	4° 5,219'	55° 26,643'
17	4° 4,482'	55° 26,976'

18	4° 3,745'	55° 27,309'
19	4° 3,008'	55° 27,643'
20	4° 2,270'	55° 27,976'
21	4° 1,532'	55° 28,309'
22	4° 0,794'	55° 28,642'
23	4° 0,056'	55° 28,975'
24	3° 59,318'	55° 29,308'
25	3° 58,579'	55° 29,641'
26	3° 57,840'	55° 29,974'
27	3° 57,101'	55° 30,306'
28	3° 56,362'	55° 30,639'
29	3° 55,622'	55° 30,972'
30	3° 54,883'	55° 31,304'
31	3° 54,143'	55° 31,636'
32	3° 53,403'	55° 31,969'
33	3° 52,662'	55° 32,301'
34	3° 51,922'	55° 32,633'
35	3° 51,181'	55° 32,965'
36	3° 50,440'	55° 33,297'
37	3° 49,699'	55° 33,629'
38	3° 48,958'	55° 33,961'
39	3° 48,216'	55° 34,293'
40	3° 47,474'	55° 34,625'
41	3° 46,732'	55° 34,956'
42	3° 45,990'	55° 35,288'
43	3° 45,248'	55° 35,619'
44	3° 44,505'	55° 35,951'
45	3° 43,762'	55° 36,282'
46	3° 43,019'	55° 36,613'
47	3° 42,276'	55° 36,945'
48	3° 41,533'	55° 37,276'
49	3° 40,789'	55° 37,607'
50	3° 40,045'	55° 37,938'
51	3° 39,301'	55° 38,269'
52	3° 38,557'	55° 38,600'
53	3° 38,254'	55° 38,734'
54	4° 1,073'	55° 48,576'
55	4° 1,146'	55° 48,608'
56	4° 1,249'	55° 48,591'
57	4° 2,138'	55° 48,445'
58	4° 3,051'	55° 48,294'
59	4° 3,964'	55° 48,143'
60	4° 4,877'	55° 47,992'
61	4° 5,791'	55° 47,840'
62	4° 6,703'	55° 47,689'
63	4° 7,616'	55° 47,538'

64	4° 8,529'	55° 47,386'
65	4° 9,442'	55° 47,235'
66	4° 10,354'	55° 47,083'
67	4° 11,266'	55° 46,931'
68	4° 12,179'	55° 46,779'
69	4° 13,091'	55° 46,627'
70	4° 14,003'	55° 46,475'
71	4° 14,915'	55° 46,322'
72	4° 15,497'	55° 45,898'
73	4° 16,079'	55° 45,474'
74	4° 16,661'	55° 45,050'
75	4° 17,243'	55° 44,626'
76	4° 17,824'	55° 44,201'
77	4° 18,405'	55° 43,777'
78	4° 18,986'	55° 43,353'
79	4° 19,567'	55° 42,928'
80	4° 20,148'	55° 42,504'
81	4° 20,728'	55° 42,079'
82	4° 21,308'	55° 41,655'
83	4° 21,888'	55° 41,230'
84	4° 22,468'	55° 40,806'
85	4° 23,047'	55° 40,381'
86	4° 23,627'	55° 39,956'
87	4° 24,206'	55° 39,531'
88	4° 24,785'	55° 39,107'
89	4° 25,364'	55° 38,682'
90	4° 25,942'	55° 38,257'
91	4° 26,520'	55° 37,832'
92	4° 27,098'	55° 37,407'
93	4° 27,676'	55° 36,982'
94	4° 28,254'	55° 36,557'
95	4° 28,831'	55° 36,131'
96	4° 29,409'	55° 35,706'
97	4° 29,986'	55° 35,281'
98	4° 30,563'	55° 34,856'
99	4° 31,139'	55° 34,430'
100	4° 31,716'	55° 34,005'
101	4° 32,292'	55° 33,580'
102	4° 32,868'	55° 33,154'
103	4° 33,444'	55° 32,729'
104	4° 34,019'	55° 32,303'
105	4° 34,595'	55° 31,877'
106	4° 35,170'	55° 31,452'
107	4° 35,745'	55° 31,026'
108	4° 36,320'	55° 30,600'
109	4° 36,894'	55° 30,174'

110	4° 37,468'	55° 29,749'
111	4° 38,043'	55° 29,323'
112	4° 38,617'	55° 28,897'
113	4° 39,190'	55° 28,471'
114	4° 39,764'	55° 28,045'
115	4° 40,337'	55° 27,619'
116	4° 40,910'	55° 27,193'
117	4° 41,483'	55° 26,767'
118	4° 41,991'	55° 26,389'