

The North Sea Regional Advisory Council



NSRAC

Position paper on fisheries management in relation to nature conservation for the combined area of 3 national Natura 2000 sites (SACs) on the Dogger Bank

October 2011

1. Executive Summary

1. This position paper presents the NSRAC's recommendations on a fisheries management plan for the combined Dogger Bank Natura 2000 sites (for habitat H11110 under the EU Habitats Directive) proposed by the Netherlands, Germany and UK, respectively.
2. The position was developed at the invitation of the inter-governmental Dogger Bank Steering Group (DBSG) which, in turn, emerged out of the Dutch FIMPAS (Fisheries Measures in Protected Areas) process.
3. The paper complements and informs the parallel scoping plan by the DBSG to develop a joint inter-governmental proposal on fisheries measures for the Dogger Bank Natura 2000 area.
4. The NSRAC paper was developed as a result of five meetings of its Dogger Bank focus group in 2011, including two workshops, and facilitated by the MASPNOSE (Marine Spatial Planning in the North Sea) project.
5. The paper outlines a number of constraints on the NSRAC's progress in relation to data gaps and other uncertainties in knowledge, and also in relation to the DBSG process. These constraints have implications – which the paper addresses – for the transparency and alignment of the stakeholder and inter-governmental/ICES process going forward.
6. Partly as a result of these constraints, the position paper does not recommend a prescriptive, quantified plan but does identify the elements of a zoning proposal for applying fisheries measures, and a number of related conditions, to meet the objective of restoring the area to favourable conservation status.
7. Key elements of this approach are, for each of the key sub-habitats on the Dogger Bank, the introduction of no-take zones, a percentage open to only low impact fishing gear, and a cap on fishing effort in the remaining area, but this scenario does not preclude other options. An experimental approach should be applied, with adaptive management as fisheries and fishing gears evolve. Co-management is recommended as the only way to maintain the effective engagement of stakeholders.
8. The next steps in the process are described. The NSRAC focus group is committed to cooperate in aligning its approach with that of the DBSG in preparation for the Stakeholders' meeting in Dublin, 7-8 November, 2011.

2. Introduction

2.1 Purpose and Scope of Plan

2.1.1 Goals and Objectives

The initial goal was to develop a NSRAC position paper on a fisheries management plan in relation to nature conservation, including a zoning proposal, for the combined area covered by the three national Natura 2000 sites of the Dogger Bank.

Due to a number of constraints, it has not been possible to produce a zoning proposal. The key constraints have been:

- **Incomplete fisheries data:**
Although the fishing sector provided a number of data sets it was only a few days before the second NSRAC Focus Gp Workshop (30-31 Aug 2011) that ICES was able to provide us with a data from the most recent Member State data call on the Dogger Bank.
- **Lack of ecological data and detailed information on the conservation objectives:**
Only after the second Focus Gp Workshop were we informed that detailed information was available that was compiled in May by ICES¹ for the inter-governmental Dogger Bank Steering Group (DBSG).

The Focus Group's progress was thus hampered by only recently been privy (via observer status for the DBSG's 20 Sep 2011 meeting) to the scoping proposal of the DBSG and its deliberations.

Considerably more work will be necessary to deliver a zoning proposal. The scope of the NSRAC initiative is therefore essentially to recommend the procedure and elements necessary for such a zoning proposal.

2.1.2 Role of the NSRAC

Dutch, German, UK and Danish fleets, and to a lesser extent vessels from Belgium, France, and Norway, operate freely across the boundaries of the emerging Dogger Bank Natura 2000 complex, comprised of adjoining Special Areas of Conservation (SAC) designations (current status of is SCI: Site of Conservation Importance for, respectively, the Netherlands and Germany; and candidate SAC in the case of the UK) .

Since the inauguration of the NSRAC Spatial Planning Working Group in 2005, therefore, a major and long-standing concern of the North Sea Regional Advisory Council (NSRAC) has been the need to arrive at common fisheries management

¹ The FIMPAS3 workshop (Jan 2011) invited ICES to prepare advice on: (i) inventory of natural values and benthic communities; (ii) integration of conservation objectives at operational level; (iii) analysis and evaluation of different proposals.

measures for the complex to ensure a coherent and harmonised management regime for mobile fishing gears which meets the conservation objectives of the sites.

From the outset, the NSRAC recognised that serious risks arose from the unilateral approach being taken by the three Member States to their respective parts of the Dogger Bank, notably in respect of the qualifying features they each recognised, the resulting conservation objectives and the ultimate fisheries management measures required to meet these. In regard to each of these elements, the different Member States have also progressed to different national timelines, adding to the difficulty of achieving a joined up approach.

The NSRAC challenged the Member States to adopt, and the Commission to promote, a much-needed cooperative approach, a challenge which was finally taken up by the Dutch FIMPAS project (Fisheries Measures in Protected Areas) which aims to propose fisheries measures for three Natura 2000 sites in the Dutch Exclusive Economic Zone (EEZ) by the end of 2011: Frisian Front, Cleaver Bank and Dogger Bank. Three FIMPAS workshops examined the interactions between fisheries and nature conservation values on each of these sites and made preliminary proposals for management measures.

To deliver its advice, the NSRAC Spatial Planning Working Group set up a focus group of interested NSRAC stakeholders (see Annex 1 for members). The development of the plan has been facilitated by David Goldsborough of the Centre for Marine Policy (Wageningen UR) as part of their EU-funded MASPNOSE Project (EU Preparatory Action on Marine Spatial Planning in the North Sea), of which NSRAC is an official partner. The Dogger Bank is one of two trans-national areas being addressed by MASPNOSE which focuses on trans-boundary maritime spatial planning, with a particular role in bridging across stakeholders representing different marine activities.

2.1.3 Recipients of the plan

The plan will be submitted as a position paper to the NSRAC Executive Committee in Boulogne-sur-Mer, 10-11 Oct 2011 for adoption. Thereafter, this paper will be addressed to the chair of the DBSG. By this route, the NSRAC paper will be tabled at the Stakeholder meeting of the *Dogger Bank ICES Process* in Dublin on November 7-8, 2011 at which the relevant Member States will finalise their proposals for management of the Dogger Bank taking account of the NSRAC advice. After submitting its paper to the DBSG the NSRAC will also submit its plan to DG Mare (European Commission). It will be ultimately for the European Commission to agree fisheries management measures based on these proposals.

2.2 Legislative authority for the plan (national and international)

Provisions under Article 6 of the Habitats Directive (92/43/EEC) on protected areas oblige each of the three Member States involved to *“take appropriate steps to avoid, in the special areas of conservation [and Special Protection Areas by virtue of Article 7 of the Habitats Directive], the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive.”* Moreover, Article 2 of the Directive places a wider obligation on all Member States to

take measures that are designed to “*maintain and restore, at favourable conservation status*” species and habitats of EU interest.

Even within some of these Member States, however, the policy and legislative framework for agreeing such management measures is not straightforward, involving Ministries responsible for variously fisheries, environment and energy. For example, the northern half of the UK’s Dogger Bank SCI overlaps with a developing windfarm which has a target of at least 9GW output by 2020, which will make it the largest windfarm anywhere in the world. Here, measures to reconcile fisheries with nature conservation and renewable energy are a work in progress. Again, in Germany, the internal policy process to derive fisheries management measures (in Natura 2000 sites in the North and Baltic Seas within the German EEZ) is ongoing, not only towards a formal proposal for the German Dogger Bank SAC but also in terms of committing to any joint proposal for the conjoined SACs.

The plan, however, transcends these national challenges in presenting NSRAC advice directed at all four Member States involved – UK, Netherlands, Germany and Denmark, in pursuit of a *cooperative approach* to managing fisheries on the whole Dogger Bank area under protection. Of these countries, only Denmark has not nominated its part of the Dogger Bank as an SAC and has no plans to do so in future. Nevertheless, Denmark is very willing to participate in the process, having major fisheries interests in the region, particularly its sandeel fishery which grosses around €50m annually, mostly derived from the Dogger Bank slopes.

As noted above, the relevant Member States have conducted a parallel scoping process to the NSRAC to propose fisheries management measures for the Dogger Bank Natura 2000 area. This cooperative approach sought is in keeping with the Marine Strategy Framework Directive (2008/56/EC), e.g. Art 5.2: ‘*Member States sharing a marine region or subregion shall cooperate to ensure that, within each region or subregion, the measures required to achieve the objectives of this Directive...are coordinated across the region or subregion concerned...*’ (See also Art 6 on Regional cooperation). The inter-governmental meeting in May also recognised the need to be ‘mindful’ of the MSFD. The NSRAC focus group discussed the relationship between Natura 2000 in the context of the Dogger Bank, and the Marine Strategy Framework Directive, and was also mindful of the linkages.

The scope of the NSRAC plan addresses the geographical boundaries of the adjoining SACs, focussing on Annex 1 feature H1100 Submerged sandbanks, defined as ‘*sandbanks which are slightly covered by seawater all the time*’. However, the report also addresses – as appropriate – the wider area surrounding these boundaries. This is partly because the surrounding area includes important features which do not fall within the Natura 2000 boundaries and which may potentially be impacted adversely by displacement of fishing activity. The inter-governmental meeting noted that the process should pay close attention to the potential for such displacement.

In terms of the process going forward, the NSRAC has been assured that the Commission will find the NSRAC a compelling signal of transboundary advice representative of the NSRAC’s stakeholder breadth. As such, the plan will be given serious consideration by the Commission and will have a strong influence on the fishery management measures ultimately proposed and implemented. However, although there have been increasing efforts in recent weeks to align the NSRAC initiative with the joint

proposal by the Member States (which will then be submitted to ICES ACOM for advice) for a joint proposal by the Member States, greater clarity on the status of the NSRAC plan in relation to the emerging joint inter-governmental proposal will be sought at the Dublin Stakeholders' meeting on November 7-8. The NSRAC's contribution must be given due weight to maintain the ongoing credibility of such intense stakeholder involvement in the process.

If the NSRAC plan does translate directly into tangible measures, without being heavily compromised by the wider political process, this is likely to be seen by the Commission as a demonstration project for stakeholder-led transboundary marine spatial planning, at least in relation to fisheries and nature conservation, that can be replicated in other regional seas and sub-regions where the challenges may be less exacting than those encountered on the Dogger Bank.

3. Description of the Dogger Bank and its features

Fig 1: Location of the Dogger Bank



[source: Wikipedia]

3.1 Regional setting

The Dogger Bank is the most extensive sandbank in the North Sea and straddles the EEZs of the UK, the Netherlands, Germany and Denmark. Most of the bank comprises a shallow and relatively flat 'plateau' which is subject to high energy, hydrographic

conditions, whereas the surrounding slopes are more stable. The predominant habitat is clean sand but some muddy and gravel substrates exist also.

The Dogger Bank is an elongate sandbank located in the central North Sea which extends 324km ENE-WSW and is up to 120km at its widest point. It covers some 17,610 square km (Gubbay *et al*, 2002) with the nearest landmass, Flamborough Head on the north-east coast of England, lying approximately 100km to the south west. The Dogger Bank was formed by glacial processes (Weichsel glacial stage), with Holocene post-sea level rise features superimposed onto the glacial landscape (Emu Ltd, 2010), although the Dogger Bank was probably not completely covered by water until approximately 7,500 years ago.

3.1.1 Bathymetry

Water depth throughout the Dogger Bank and adjacent waters varies considerably, the shallowest areas of the Dogger Bank are no deeper than 18 - 20m, whilst the outer edges extend beyond 50m into the deeper slopes (>80m). The South West Patch is one of the shallowest areas of the Dogger Bank.

3.1.2 Hydrography

The Dogger Bank is influenced by cooler Atlantic water flowing from the north and warmer water from the Channel, resulting in the creation of a front in the northerly region where these two masses meet (JNCC, 2008). As a consequence the Dogger Bank has a considerable influence on water circulation in the southern North Sea. The warmer waters flowing from the Channel, tend to be positioned in the more southerly regions and on the top of the bank, and are additionally augmented by riverine inputs (Kröncke, 1992). These warmer waters appear to be relatively well mixed in comparison to the cooler Atlantic waters which exhibit a degree of seasonal stratification during spring and summer (JNCC, 2008), although in general, the water column over the Dogger Bank itself appears to be relatively well mixed.

Forewind, the consortium looking to develop renewable energy on the Dogger Bank under the Crown Estates 'Round Three' portfolio, have carried out extensive surveys for a range of parameters, including hydrography, bathymetry and sediments, and these surveys are ongoing. Unfortunately, these data for the licensed area, which relates solely to UK sector of the Dogger Bank, are unlikely to be available for some time.

Given the shallow nature of the shallower areas of the Dogger Bank re-suspension and dispersion of sediments from the seabed are common. However, this is more prevalent as a function of wind induced currents and wave action (Gubbay *et al*, 2002) as opposed to tidal velocities. Considerable areas of the Dogger Bank are to be found above the storm-wave base and Klein *et al*. (1999) considered that during storm events, sediment up to medium sand was mobilised in as much as 60m water depth at the northern slope of the Dogger Bank (JNCC, 2008). It is widely thought that tidal velocities throughout the

Dogger Bank are considered to be insufficient to initiate significant sediment transportation.

3.1.3 Sedimentary Environment

The seabed around the central North Sea is comprised generally of various grades of sand (coarse, medium & fine), gravel and fine grained muddy sediments, the latter of which may be found in many of the depressions such as Oyster Ground and also those north west of the Dogger Bank (Gubbay *et al*, 2008). The JNCC (2008) states that the sediments of the Dogger Bank, consist mainly of fine sands with a mud content below 5%, and that in terms of Folk's (1954) classification, they can be best described as sand, slightly gravelly sand, gravelly sand, slightly gravelly muddy sand and muddy sand. Further to this, the mud content increases slightly towards deeper water (Cefas, 2008).

The JNCC (2010) has assigned the Dogger Bank as a "sand bank", although current published information from the BGS (Jeffrey *et al.*, 1988, 1990) suggests that the major part of the Dogger Bank region has very little sand cover (EMU Ltd, 2010). The Eunis classification system indicates that there are five identifiable habitats within the Dogger Bank system, these being Infralittoral fine sand or muddy sand, Infralittoral sandy mud or fine mud, Circalittoral coarse sediment, Infralittoral coarse sediment and Circalittoral fine sand or muddy sand. Of these habitats, the 'data' indicate that the prevalent habitat across the Dogger Bank is the Infralittoral fine sand or muddy sand.

In 2001, a number of samples were taken from the Dogger Bank to inform the UK's DTI Strategic Environmental Assessment (SEA). These samples consisted of mixed sediments, pebbles and shell fragments with sparse encrusting epifauna – typical of much of the Dogger Bank (Gubbay *et al*, 2008). It is probable that these coarse sediments are as a direct result of amplified wave action in the shallower waters, where the finer particulates are moved into suspension and settle out in areas less susceptible to wave action. Although a medium sand substratum was recorded at some sites (BGS, 2001). Emu Ltd (2003, 2007) recorded coarser gravelly sand and sandy gravel substrates with isolated patches of larger pebble and cobble-sized particles in the southern and western sections of the Dogger Bank (JNCC, 2008).

3.2 Biological Environment

The North Sea is a particularly dynamic, productive and complex ecosystem that supports a diverse range of species from planktonic forms and invertebrates to fish, cetaceans and pinnipeds. In the wider North Sea, the Phytoplankton assemblage is dominated by the dinoflagellate genera, which include *Ceratia* (Gubbay *et al*, 2002). Many studies and observations have shown that Phytoplankton biomass has increased significantly over the last 40 years throughout most of the North Sea, and as a result of

enhanced primary production in frontal regions, it is likely that the Dogger Bank region may be more productive than surrounding waters (Nielsen *et al*, 1993).

Historically, and in terms of zooplankton, the copepod genus *Calanus* has contributed the highest abundance in the region of the Dogger Bank and the southern North Sea. However, more recently the zooplankton taken in continuous plankton recorder samples from the central North Sea has changed (see Lindley *et al*, 1995).

Benthic macrofaunal communities (including macrobenthic infauna, epifauna and meiofauna) of the North Sea have been studied extensively (van Moorsel 2011, which see for references). From these studies, species distribution patterns have been identified (Gubbay *et al*, 2002) and in general terms, the distribution of species and wider community patterns imitate general environmental differences within the North Sea in terms of substratum, water depth and water temperature. The assertion by Nielsen *et al*, (1993) that productivity on the Dogger Bank is higher than the surrounding waters, and that this primary productivity occurs all year round, is likely to have a direct effect on macrofaunal communities, as they also exhibit little seasonality (Gubbay *et al*, 2002).

The Dogger Bank is a spawning area for plaice and also supports a wider flatfish community (sole, turbot, dab). Sandeels are especially abundant in sandy areas on the slopes and are prey for several commercial fish species, birds and marine mammals, notably Harbour porpoise. Large and long-lived bivalves such as Flat oyster, Ocean quahog and Horse mussel have disappeared or are still present in low densities. Rays have also been known to concentrate near the Dogger Bank and the wider area is known as a spawning ground for several fish species.

3.3 Fisheries on Dogger Bank

The Dogger Bank is one of the most important fishing grounds in the North Sea, being exploited by several North Sea countries (mainly Netherlands, Belgium, Denmark, Germany, UK, also Norway (sandeels)). The main fisheries are beam trawling (flatfish) and otter board trawling (flatfish and sand eel) plus some Danish seine fishing (flatfish). There was very little gill-net fishing on the Bank in 2006-2008 while in 2009 some Danish gillnet fishing occurred. The Bank is generally known for its high catch rates and low discard rates.

The fleets involved range from smaller gill-net vessels targeting turbot to big industrial vessels targeting sprat and sandeel. Because the Dogger Bank is such an extensive fishing area, the location of effort can move significantly from year to year. The sandeel fishery in particular often has to move around on the bank to find the most productive areas across a range of traditional sandbanks spread out over the area but especially on the edges (slopes). For this reason, this fishery would be very sensitive to the potential of closed areas limiting these options. Under the current management regime, the fishery can in certain years catch up to about 200.000 tons of sandeels on the Dogger Bank. Other fisheries on the Dogger Bank also move around from year to year but, unlike the sandeel fishery, they tend to have a broader distribution.

Over the last 15-20 years there has been a huge reduction (possibly up to 80% according to the sector) in vessels fishing on the Dogger Bank. In the mid-nineties over 200 industrial vessels targeted sandeels but today not more than 30 are left. Similar

capacity declines have been seen in Danish vessels fishing for sprat (from about 100 vessels to around 20) and the Danish seine fishery (from about 100 vessels in the mid-nineties to around 10 vessels).

A comparable reduction has been seen in the UK fleet. In the 1970s, in excess of 200 vessels prosecuted the Dogger Bank fisheries. By the early 1990's the fleet had declined to around 12 anchor seiners, 30 demersal trawlers including pair trawlers, 7 gill netters and a 20-strong anglo-dutch beam trawl fleet. Today there remain 3 vessels anchor seining and a fleet of 22 anglo-dutch vessels comprising 8 beam trawlers, 3 beam trawlers/ twin rigged demersal trawlers, 2 twin rigged demersal trawlers and 4 seine netters (flyshooters)/ twin rigged demersal trawlers, and 5 seine netters (flyshooters).

The Dutch and Belgian beam trawl fleets have also undergone a dramatic reduction. The Dutch catching sector has recognised for some time that there is no sustainable future for their conventional beam-trawl fishery – the vessels burn too much fuel, have been subject to heavy criticism for their benthic and discard impacts, and the economy of the fleet has progressively been undermined by diminishing allocation of fishing opportunities. The Dutch 'Fisheries Innovation Platform' set up in 2007 amounts to a plan for the transition of the entire beam-trawl fleet to more sustainable fishing methods, stimulating innovative demonstration projects on the pulse trawl and 'SumWing' which are being tested to evaluate alleviation of impacts generated by the traditional beam-trawl.

Overall, this international capacity reduction paints a picture of a Dogger Bank today that is not so intensively used as it was 10-15 years ago.

3.4 Impacts of fisheries

The provision of seafood through wild capture fisheries inevitably impacts the populations targeted by the fishery and any by-catch and other species with which the gear interacts. Bottom gear fisheries also impact on the seafloor and the fauna living upon or shallowly buried there.

The degree of impact varies according to a range of factors. It is generally accepted that static/passive and semi passive gears have a lesser impact than towed gears and of the towed gears scallop dredges have a greater impact over beam trawls and beam trawls over otter trawls. There are also variations within gear classes and the dimensions of the gears, towing power, rigging and behaviour of the gear in different sea conditions and upon different habitats will also result in varying impacts.

The sensitivity of the marine fauna to impact and its resilience to recovery will also determine the extent of impact and its duration. Larger-bodied and longer-lived surface species are more vulnerable to impact. Beyond direct impacts to fauna, disturbed areas may attract scavengers and predators (Kaiser and Spenser, 1994). In terms of habitat sensitivity, the flanks of the Dogger Bank with longer-lived and larger species are considered to be more sensitive than the top.

Beyond considering the direct pressure footprint of the gear itself, the extent of fisheries effects at the scale of the Dogger Bank and its implications for ecology are, however, difficult to determine. Although some studies have been carried out in the central-

southern North Sea (e.g. Lindeboom and de Groot 1998), information on specific impacts of gears in the Dogger Bank area is scarce. The FIMPAS 2 Workshop (ICES ACOM 2010) concluded that for H1100 generally, the impact is gauged as 'high' for traditional beam trawls, 'medium' for otter trawls, 'low' for seine nets and gill-nets. It was noted that there is scientific evidence that exclusion of beam-trawls from an area has a positive effect on habitat quality. However, there was disagreement among FIMPAS stakeholders on the impact that beam trawls have on the benthos compared to the natural impact from storms.

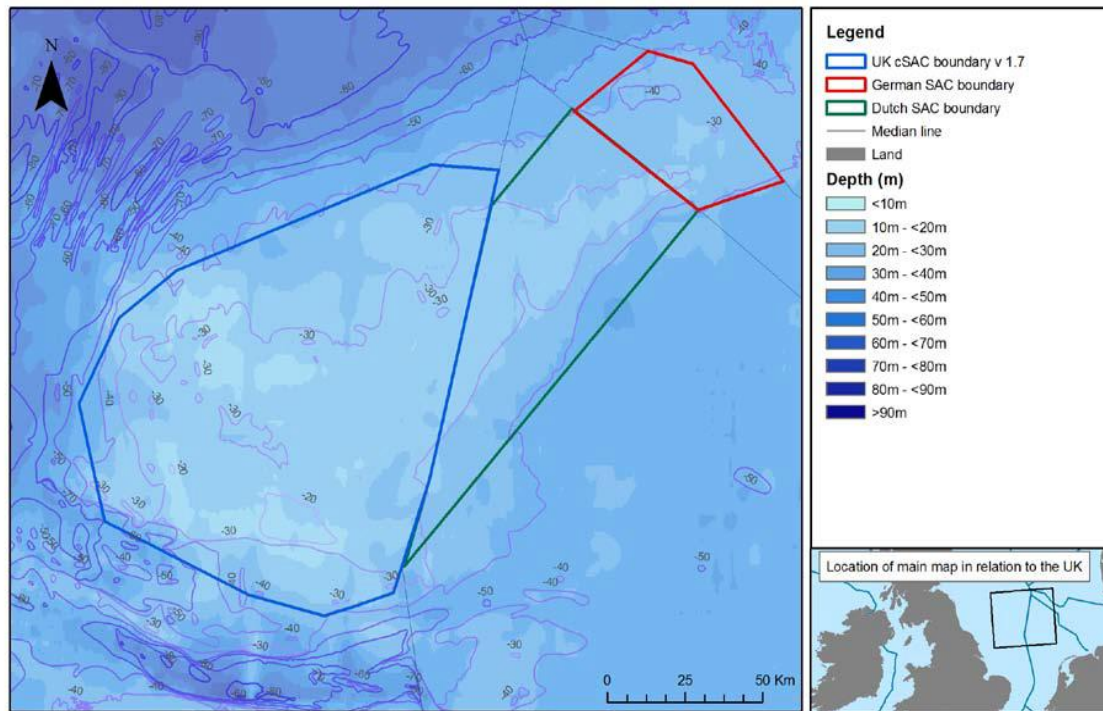
The intensity, duration and distribution of activity over a given area need to be considered in order to understand seabed-induced fisheries impacts at the wider spatial scales of analysis which the Dogger Bank requires. In this context, although it seems clear that the fisheries pressures have declined over the last few decades due to the reduction in vessels prosecuting the fisheries, predictive risk-based approaches to assessing contemporary fisheries impacts from spatial fishing activity data have yet to be applied in the context of Dogger Bank.

An alternative source of evidence comes from temporal analysis of ecological survey data and historical documentation. This includes indicative evidence in the absence of oyster beds around the southern rim of the bank previously recorded in the 19th century, an absence of horse mussels and patch forming filter feeders, and apparent community shifts to species with shorter life cycles. It is also possible that fishing induced changes had already occurred prior to the advent of scientific investigations on the Dogger Bank (van Moorsel, 2011).

4. Dogger Bank Natura 2000 conservation objectives

Under the EU Habitats Directive (92/43/EEC), the Dogger Bank is the most important representative in the North Sea of Annex 1 feature H1100 Submerged sandbanks, defined as '*sandbanks which are slightly covered by seawater all the time*'. The Netherlands, Germany and the UK are all in the process of designating proportions of their EEZs on the Dogger Bank as Special Areas of Conservation (SACs) for feature H1110. Significantly, the respective areas proposed by each of these Member States share some boundaries, forming a mosaic of closely related sites, in effect a trans-national Natura 2000 complex (see Fig 2, below).

Fig. 2: Location of the three national SCIs (JNCC 2011)



Map projected in WGS84 (Zone 31N). World Vector Shoreline © US Defense Mapping Agency. Seabed habitat derived from BGS 1:250,000 seabed sediment maps © Bathymetry © The GEBCO Digital Atlas published by the British Oceanographic Data Centre on behalf of IOC and IHO, 2003. NOT TO BE USED FOR NAVIGATION. The exact limits of the UK Continental Shelf are set out in orders made under section 1(7) of the Continental Shelf Act 1964 (© Crown Copyright). Map copyright JNCC

NB: The boundary of the UK SCI proposed to the Commission (Aug 2011) changed slightly such that the area enclosed became 1233115 ha, 769ha smaller than the area on which the NSRAC was consulted; this reduction was attributed to realignment with the Dutch SCI boundary]

While the terminology differs, all three countries are in agreement that the current conservation status of the Dogger Bank is in unfavourable condition (having candidate SAC status, the UK conservation objectives are currently draft) and in need of restoration. This assessment is based on comparison with similar undisturbed habitats of the same type, which lead to the conclusion that on the Dogger Bank there is a lack of balance in the biotic community characterised by biomass dominated by opportunistic species and lacking long-lived species.

An in-depth overview of the conservation objectives and related definitions (including criteria for selection of typical species) can be found in an ICES background paper²

²Jabobsen, H. (2011) Fisheries measures in off-shore Natura 2000 sites: Dogger Bank – a joint Approach (background paper).

prepared for the Dogger Bank Steering Group. In summary, the conservation objectives are structured in objectives for 1) Habitat type H1110 (sandbanks which are slightly covered by seawater all the time) and 2) marine mammals (harbour porpoise and seals).

4.1 Habitat Type H1110

The overall objectives for the habitat H1110 on the Dogger Bank seem comparable between the three member states. The UK, Germany and the Netherlands aim to *maintain* the surface area or the extent of the habitat, and *improve* on the abiotic preconditions, the physical structure and minimize the disturbance to the benthic community. Also, the habitat needs to be improved by natural processes so that the community is shaped by characteristic long-lived species in natural proportions of size and age. It is agreed that the requirements of a good structure and function can be applied to both benthic communities and fish.

4.2 Marine mammals (Harbour Porpoise and seals)

Harbour porpoise and seals are considered in the German plan by setting conservation objectives for maintenance of *inter alia* the existing stock and the ecological quality of their feeding. The Netherlands and UK plans take a different approach, invoking the need for a North Sea (-wide) Harbour Porpoise Protection Plan to protect these species along with seals.

Sources:

UK: The JNCC reports 'Dogger Bank Draft SAC Selection Assessment Document (Version 5.0)' and 'Dogger Bank Draft Conservation Objectives and Advice on Operations (Version 5.0)'.

DE: The document provided by Jochen Krause '*Erhaltungsziele für das FFH-Gebiet „Doggerbank“ (DE 1003-301) in der deutschen AWZ der Nordsee, Bundesamt für Naturschutz, Stand Januar 2008*' together with the data of the 'Marine Biogeographic Seminar, Galway, 23-25 March 2009'.

NL: The document of Bos et al (2008) containing the Dogger Bank information for the standard data form and the document of Jak et al (2009).

5. Exploring an experimental approach

The aim of the second NSRAC Dogger Bank workshop (Aug 30-31, 2011), building on the previous workshop and associated meetings, was to produce the main ingredients for the NSRAC Focus Group fisheries management proposal for the Dogger Bank. The outcome of this workshop was several maps showing, and documents describing, areas of interest for fisheries and nature conservation on the Dogger Bank and a first *experimental* approach for producing a zoning plan.

The main elements of this experimental approach are:

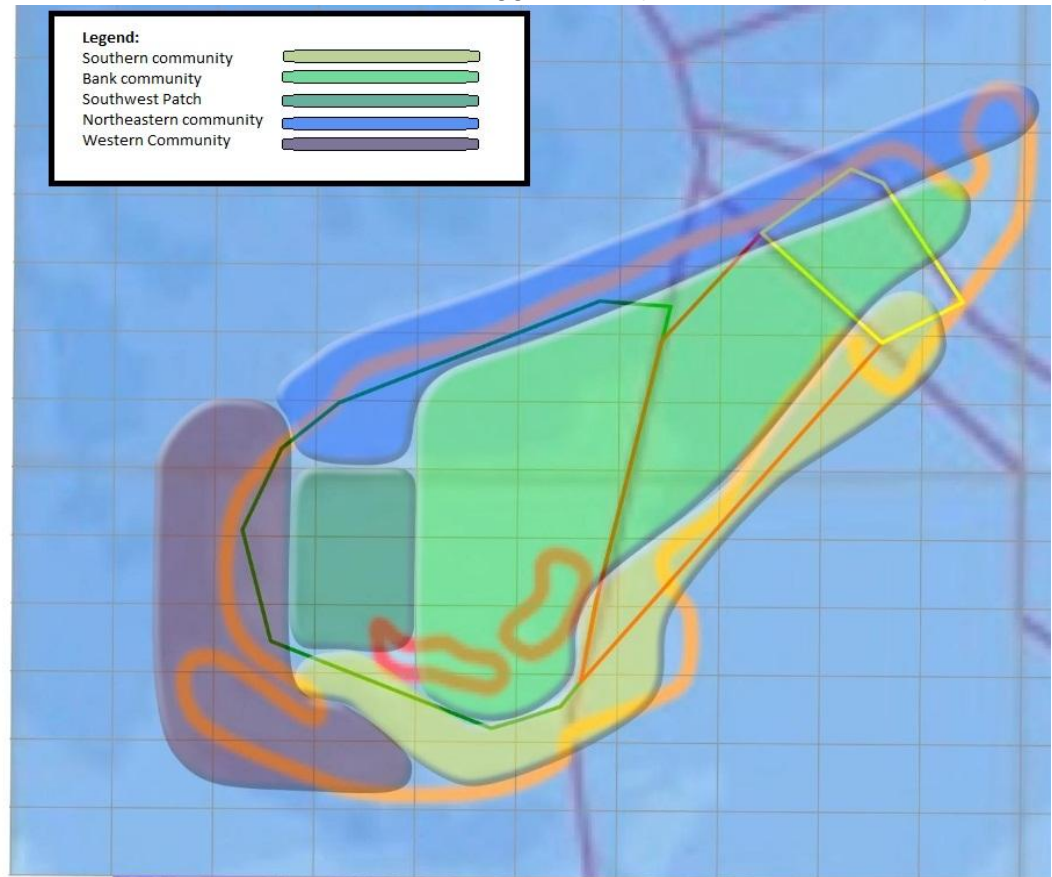
1. The whole Dogger Bank is subdivided into five benthic communities (areas) as described by Wieking and Kröncke (2003 and 2005). See figure 3, below.
2. A possible scenario is that each community (area) could be protected by designating a percentage as a no-take zone, a percentage open to only low impact fishing gear, and a cap on fishing effort in the remaining area, but this scenario does not preclude other options.
3. Due to the more naturally occurring dynamic disturbance of the central part of the Dogger Bank, the fishing constraints can be somewhat lower for this central benthic community than on the edges which support higher biodiversity value.

To see how this experimental approach would apply to the Dogger Bank we conducted a zoning experiment. Three scenarios were defined, see Table 1, below.

Table 1: Three scenarios for the zoning experiment

	No-take area (%)	Low impact gear area (%) around No-take area	Effort cap fisheries in the remaining area (%)
Scenario 1	10	10	80
Scenario 2	30	10	60
Scenario 3	50	10	40

Figure 3: The five benthic communities of the Dogger Bank (source: van Moorsel 2011)



The boundaries of the five benthic communities, i.e. the main ecological data, were derived from a map produced by van Moorsel (2011). The Fishing effort was derived from an ICES data set of fisheries data for the period 2007-2009. This data was only recently compiled as a result of a data call to Member States on fisheries data. GIS-referenced maps were produced showing fishing effort for: Otter Trawl, Beam Trawl, Sandeel Otter Trawl, and the combination of the three. Images showing the result of this zoning experiment for the three scenarios are shown in figures 4, 5 and 6, below.

The assignment for this zoning experiment was to ensure that each benthic community was included and that the zones were also distributed more or less evenly across the three Member States. **Note: these images only reflect a first application of the proposed experimental approach to illustrate how the three scenarios for fisheries management and nature conservation would look on a geo-referenced map of the Dogger Bank.**

Figure 4: Scenario 1 (10-10-80)

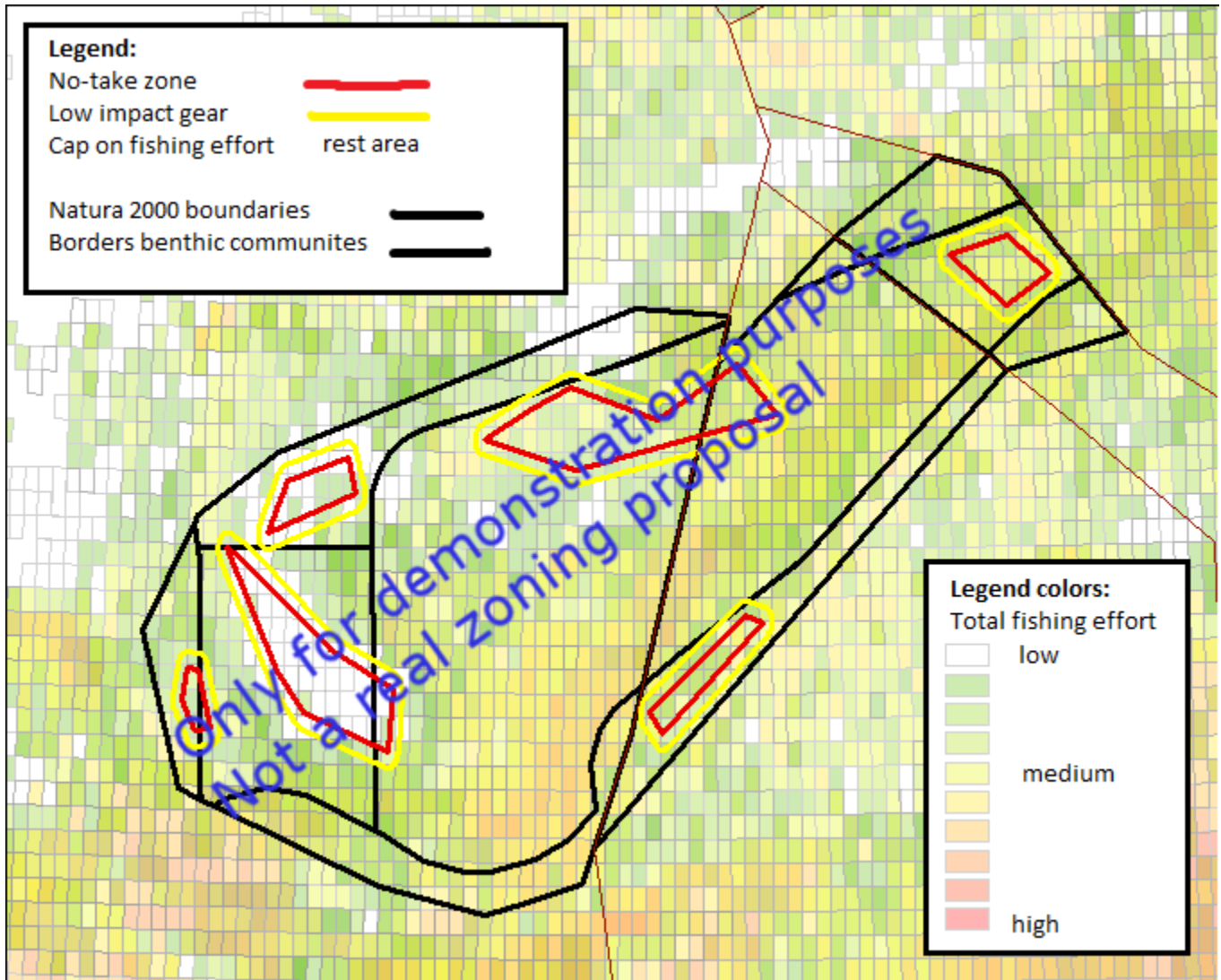


Figure 5: Scenario 2 (30-10-60)

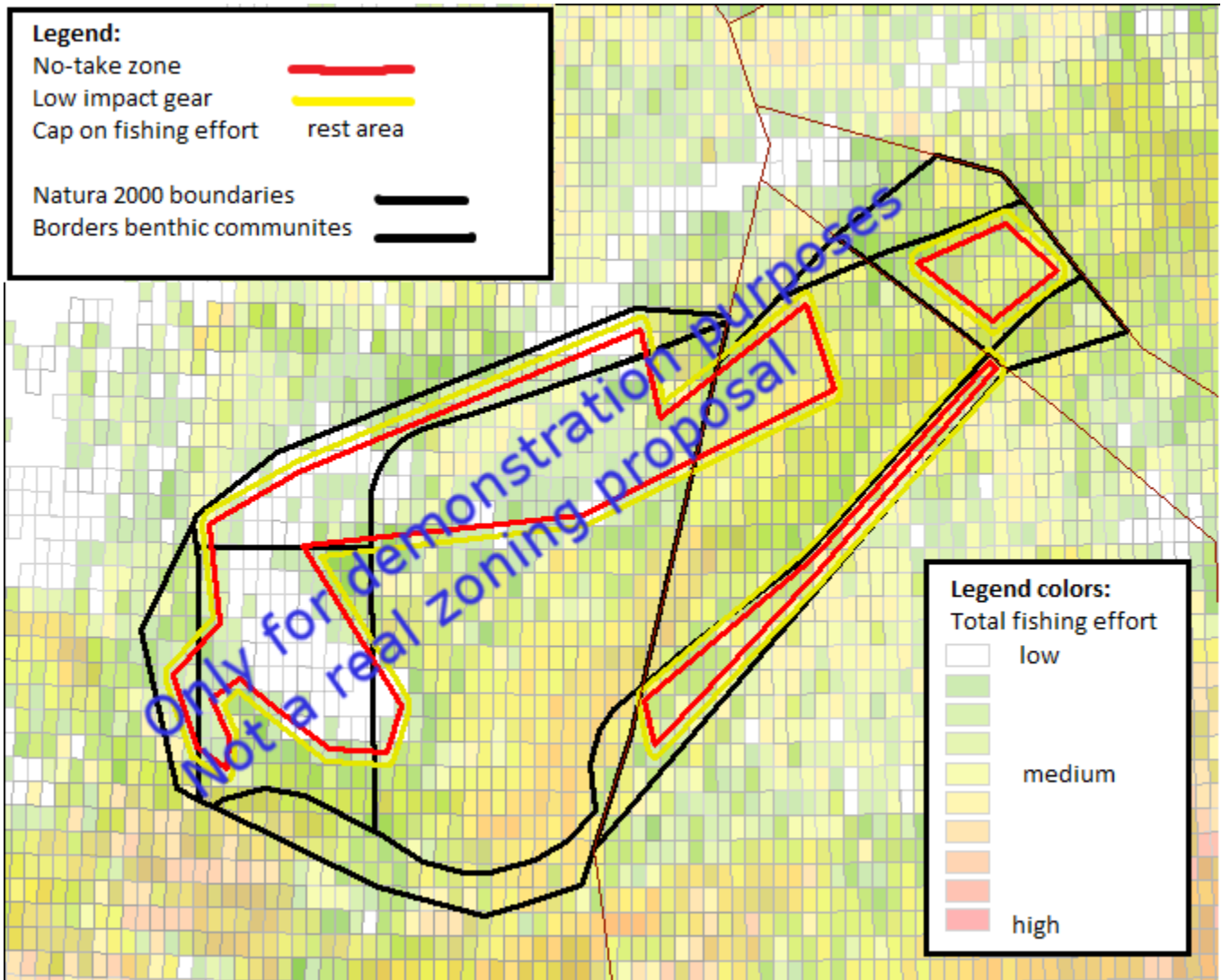
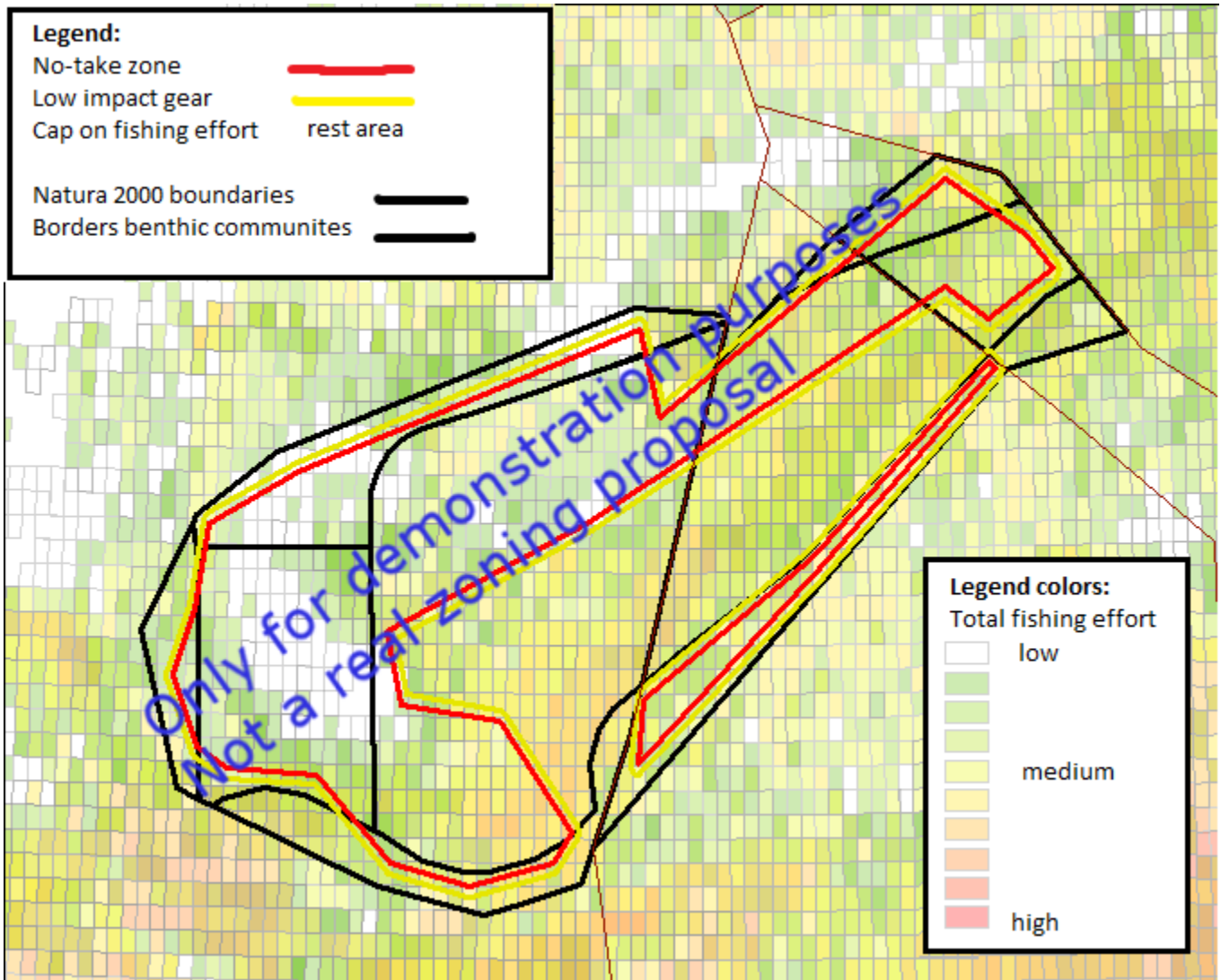


Figure 6: Scenario 3 (50-10-40)



6. Recommendations for elements of a zoning proposal

At the third NSRAC Dogger Bank focus group meeting (Oct 3, 2011), a first evaluation of this experimental approach in combination with the experience gathered from the two previous workshops led to the following conclusions for producing a zoning proposal for the Dogger Bank:

1. A zoning proposal needs to be simple and straightforward. Even the 'tested' -- relatively simple -- experimental approach already leads to several complicating issues e.g. related to enforcement.
2. Zoning should be carried out in order to reach the conservation objectives and to create research areas (e.g. experimental closures of subareas).
3. Only a limited number of zoning categories should be used. In our experimental approach we distinguish three zones: no-take, low-impact gear, and a cap on fishing effort. ICES has proposed four categories: no fishing, no fishing with bottom contacting gears, no fishing with heavy gears, and fishing with all gear types. We feel that it is important that the defined categories are clear and that the underlying criteria are robust and applicable, e.g. which specific gears are considered to be low-impact gears.
4. The focus group's first discussions were limited to spatial restrictions on fishing but temporal aspects (e.g. closed periods, promoting transitions to fisheries with lower impacts) should also be examined in future now that detailed temporal data are available.
5. Although a zoning proposal may be restricted to the legal boundaries of the three Natura 2000 sites the measures designed should address potentially harmful effects of displacing fishing effort, e.g. from relatively ecologically resilient fishing grounds to ecologically more vulnerable areas around the Dogger Bank. (The Focus Group observed that several ecologically important areas are also located outside of the Natura 2000 areas but relatively close to the Dogger Bank).
6. As our current understanding of the conservation status of the Dogger Bank is limited we are strongly in favour of adaptive management. Adaptive management is a structured, iterative process of optimal decision making in the face of uncertainty, with an aim of reducing uncertainty over time via system monitoring. This would include notably the promotion of fishing methods that reduce bottom impact.
7. In our view the Dogger Bank should have a co-management structure. Co-management is a process of management in which government shares power with resource users, with each given specific rights and responsibilities relating to information and decision-making. The NSRAC Focus Group is confident that as

stakeholders they can add to the overall quality of the management process on the Dogger Bank.

8. The development of windfarms in the Dogger Bank area should be taken into account and the co-existence of fisheries with windfarm development plans (e.g. Forewind) should be further explored.
9. Phased implementation of a zoning plan should be linked to a clear time schedule. Periodic review based on monitoring results is crucial and after each cycle the management plan should be reviewed and updated.
10. The zoning proposal should also be seen as a scientific experiment focused at learning how the Dogger Bank responds to different fisheries regimes. For this experiment to be a success, tailored monitoring is crucial.
11. A monitoring and evaluation programme is needed to quantify a representative habitat. Monitoring of impact is key and should result in adaptation of management measures accordingly. This also requires a baseline to be determined for achieving favourable conservation status of each of the five benthic communities on the Dogger Bank Natura 2000 area.
12. We propose that ICES develops advice on a monitoring and enforcement programme for the Dogger Bank Natura 2000 area on behalf of all involved Member States. A steering group of stakeholders should be established for assisting this programme.

6. Reflection on the process so far

The NSRAC Focus Group encountered several hurdles during their Dogger Bank process. As a result of time constraints set by the FIMPAS time schedule most of the work had to be carried out during the summer months of 2011. Procedural obstacles to alignment between the NSRAC Focus Group process and the inter-governmental DBSG process also compromised the effectiveness of the NSRAC Focus Group advice. As a result the NSRAC Focus group wants to continue to be part of the zoning process and its management as the work is not yet complete.

Although there have been serious concerns about the availability and accessibility of data and knowledge, the NSRAC Focus Group is now convinced that, in close collaboration with the responsible authorities and supporting scientists, a high quality management proposal can be produced. Before the next steps can be carried out it is important that the available data and knowledge are summarized and prepared so they can be used to produce an effective management proposal.

We have clearly identified that gaps exist in ecological, biological and fisheries (impact) data. Translation of existing data into formats that are understandable and accessible

for all stakeholders involved is important for the process on the Dogger Bank. From our process we have learned that complete transparency is essential for creating an atmosphere in which stakeholders can exchange views based on available data. In our view the best way forward is to produce a management proposal including an extensive monitoring and evaluation programme and to learn as data and knowledge become available.

Understanding of the interaction between bottom gear fisheries and the benthos remains limited with some evidence suggesting impacts but there remains a poor understanding of the relationship between benthos type and fisheries as well as potential positive feedback mechanisms.

The NSRAC Focus Group has made a considerable investment in time to progress the issue of management of the Dogger Bank. Key in this process were a number of meetings and workshops. Representatives of DG Mare observed both workshops (Hermina Busschbach at the 1st, Elizabeth Guttstein at the 2nd) while Hans Lassen (ICES) also attended the 2nd workshop. The table below provides an overview of these meetings and the main objective of each one.

The NSRAC process could not have delivered this paper without the resources, scientific expertise and facilitation provided by the MASPNOSE project, for which the NSRAC is extremely grateful. The NSRAC is critically aware of the extent to which it needs this kind of support and expertise in order to translate stakeholder knowledge into policy advice in a more effective and timely way. The NSRAC cannot always rely, however, on accessing support of the kind delivered through the EU-funded MASPNOSE project, which points to the need for the upcoming European Maritime and Fisheries Fund (EMFF) to provide a mainstream source of financial support to the NSRAC and the other RACs for strengthening and elaborating the advice they provide.

Finally, further to the material presented in this position paper, the NSRAC focus group collated, with the help of MASPNOSE, substantial additional information, insights and experience that the group plans to include in a supporting document (in prep) to this paper, and which the group would like to input to the follow-up process.

Date	Location	Objective
May 4th 2011	Brussels, NSRAC SPWG meeting	Views on the plans of Forewind to build wind farms on the Dogger Bank and to discuss the request by FIMPAS to develop a NSRAC proposal on fisheries management on the Dogger Bank. MASPNOSE attended the meeting to explain in which way MASPNOSE could facilitate the process. A NSRAC focus group was chosen at this meeting that would focus on developing the fisheries management proposal for the Dogger Bank.
June 6th 2011	London, NSRAC Focus Group meeting	Scoping meeting for the NSRAC Focus Group (NSRAC FG) to define and agree on the terms of reference (TOR) for developing a fisheries management proposal for the Dogger Bank.
June 21st & 22nd 2011	Amsterdam, NSRAC Dogger Bank workshop 1	The emphasis of this workshop was defining the required building blocks for the management proposal. A key issue was discussing available and required knowledge and data for such an exercise. The table contents of the management proposal was defined and agreed. Required actions to prepare for the second workshop were discussed and tasks and responsibilities were assigned.
August 30th & 31st 2011	Amsterdam, NSRAC Dogger Bank workshop 2	The main objective of this workshop was to define the ingredients for a NSRAC management proposal, including a zoning plan, for the Dogger Bank. At this workshop two Maptables were used to examine data and draw areas of interest. Twenty invited stakeholders carried out four assignments: Examination of the data, first classification of the Dogger Bank, zoning proposals and detailing the position paper.
October 3rd 2011	Amsterdam, NSRAC Focus Group meeting	Discuss and write the position paper in response to the initial FIMPAS request and agree on the elements for the supporting document.

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