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Networks of Protected Areas in the Maritime Environment

A report for the Review of Marine Nature Conservation and the Marine Stewardship process on a stakeholder workshop held in London on 19 June 2003

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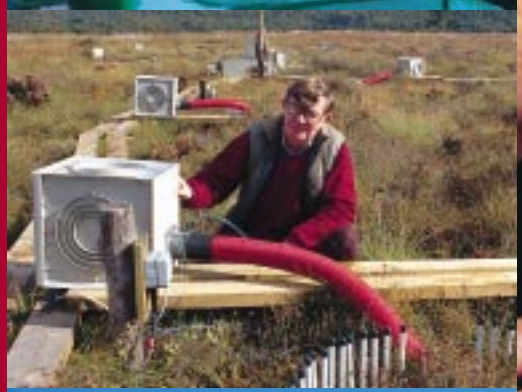

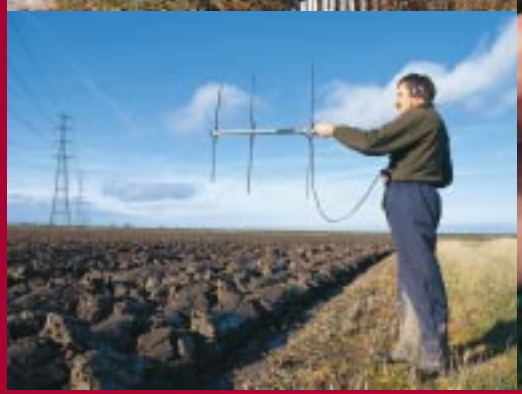

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Executive summary

On 19 June 2003, English Nature hosted a stakeholder workshop on networks of protected areas in the maritime environment. This was not only one of the first events of its kind in Europe, but also a key milestone for the UK in initiating discussions on the implications of internationally agreed network targets with a wide range of relevant stakeholders. The editing of these workshop proceedings has been light in order to accurately present the findings of the group rapporteurs and note takers.

Prominent messages from the stakeholder workshop are:

- There is a need for Government to confirm the scope, nature and role of maritime protected areas (MPAs) and networks, through the Review of Marine Nature Conservation (RMNC) process and in a European context via the EU Marine Thematic Strategy;
- We have enough information to start building networks now;
- A focus is required on ecosystem recovery, not on maintaining biodiversity and ecosystems in a poor condition;
- A shift in mind-set needs to occur from just rare and threatened habitats and species to involve marine landscape and ecosystem considerations;
- Full representation of biodiversity, replication of sites, and creating areas of permanent closure are fundamental elements to networks;
- Existing MPAs are important as the building blocks of an evolving network;
- Networks are more than just a patchwork of sites and need to be designed; and
- Mechanisms need to be created to achieve local community ownership and buy-in.

Government, accordingly, has an important leadership role to play on MPA networks through the RMNC and the Marine Stewardship process, particularly on integrating fisheries and nature conservation, by raising the profile of this issue across other government departments, and by providing effective policy and legislative frameworks to enable stakeholders to implement networks by the existing international agreed timetables.

In compiling these proceedings, English Nature would like to thank the speakers, the working session chairs, note takers and a wide range of organisations and individuals who participated in the workshop, including Defra, CEFAS, Sea Fisheries Committees, Marine Biological Association, RSPB, The Wildlife Trusts, MCS, Marine Biological Association, University of York, University of Plymouth and Associated British Ports. Thanks also go to Kirsty Dernie, previously of English Nature, for her assistance in organising the event and to Bob Empson from Whitemaple Consulting for facilitating the day.

Individuals and organisations have not been held directly attributable to the views they expressed at the workshop. The authors accept all responsibility for any inaccuracies in the way in which views may have been recorded.

Kate Bull & Dan Laffoley
September 2003

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1. Introduction

1.1 At the September 2002 World Summit on Sustainable Development (WSSD) in Johannesburg, the UK, along with other countries, committed to 'the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012'. This expands from a European context on commitments agreed at the 5th North Sea Ministerial Conference 2002 and has recently been reaffirmed by the joint OSPAR/HELCOM ministerial meeting in Bremen in June 2003 (see Annex A). Thus there is no doubt that the requirement for implementing networks of protected areas has therefore been established and agreed by the UK.

1.2 The Government's vision "to provide for clean, healthy, safe, productive and biologically diverse oceans and seas" as advocated in the Marine Stewardship Report '*Safeguarding our Seas*' (Defra, 2002), focuses on the need for an ecosystem approach and improved governance through integrated stewardship of the maritime environment. Human pressures continue to affect and modify the variety of species and habitats that live in the sea and the quality of maritime ecosystems is in decline despite a general increase in environmental awareness by all sectors and uses (Covey & Laffoley, 2002). In the development of a Maritime Strategy, English Nature is focusing on a number of key issues, including the use of networks of protected areas to promote the recovery of our coasts and seas.

1.3 At one of the first events of its kind in Europe, a wide range of organisations including Defra, JNCC and the statutory nature conservation agencies, Sea Fisheries Committee representatives, NGOs, industry and academic institutions met on 19th June 2003 (see Annex B for agenda) to discuss networks of protected areas in the maritime environment. Discussions focused on MPA tools including sustainable multiple-use areas (i.e. *Natura 2000* sites implemented under the Habitats Directive) and temporary or permanent non-extractive use areas, termed in this report as Highly Protected Marine Areas (HPMAs). The latter are currently used in fisheries management and are now being discussed under the Convention on Biological Diversity as part of an overall management framework. The overall intention of the day was to develop thinking and identify a common agenda on what networks of MPAs should deliver and to tighten links to the RMNC, the Irish Sea Pilot and to Government's Marine Stewardship process.

1.4 The outputs of the workshop, in the form of this report, will accordingly contribute understanding towards the WSSD commitment on MPA networks, and will help to inform discussions occurring under the EU Marine Thematic Strategy, the Habitats Directive and implementation of the *Natura 2000* network in the European Union, and commitments to implement a network of well managed MPAs under OSPAR. The workshop also offers a perspective from the UK that will inform discussions at the IUCN World Parks Congress, and the subsequent development of a Global Strategy for Representative Networks of Marine Protected Areas. This in turn will contribute towards discussions on MPAs under the Jakarta Mandate of the Convention on Biological Diversity in Malaysia in 2004.

2. Background

2.1 An overall framework for improved stewardship of the maritime environment through an ecosystem approach is agreed at global, European and national levels and its implementation is being explored by a wide range of bodies from Government (Defra, 2002), through to English Nature and others. The proposed implementation framework and approach advocated by JNCC and the country agencies (Laffoley *et al*, 2000, 2002, 2003) being tested through the Defra-led Irish Sea Pilot, identifies four nested spatial scales, and includes the need for further development of the role of networks of marine and coastal protected areas (MCPAs)[1], including multiple-use Special Areas of Conservation (SACs, (*Natura 2000* sites)), and non-extractive use HPMAs.

2.2 Multiple-use MPAs are a management tool, with limited protective measures focused on sustainable use, to maintain ecological processes and functionality at the 'landscape' level (e.g. estuaries, bays, sediment systems). By contrast, HPMAs are principally a protective tool to promote recovery of ecosystem structure (e.g. physical structure of habitats, fish spawning/breeding habitats etc). Together, and as part of an overall framework including wider sea-use planning, these complementary tools can be used to halt biodiversity decline and contribute to the recovery of the maritime environment. This framework has already been recommended, by the Subsidiary Body for Scientific, Technical and Technological advice (SBSTTA), in 2003, to the Conference of Parties of the Convention on Biological Diversity, as a key implementation element of the Jakarta Mandate on marine and coastal biodiversity.

2.3 In Callum Robert's opening presentation at the workshop, the principles were given that in order to maximise the effectiveness of recovery and maintenance of biodiversity within MPAs, such sites should be part of an ecologically coherent, appropriately designed network of representative areas, covering all ecosystems and habitats (i.e. not just those that are rare, threatened and vulnerable). Each representative area should be suitably replicated to include natural variations, and for insurance against unforeseen natural or anthropogenic disasters. The network design of these areas should allow for the natural drift of larvae (where it is known to occur) from one reserve to another and to maximise the variety and number of connections.

2.4 Despite progress made in designating multiple-use sites in the UK (the Habitats Directive's *Natura 2000* network), greater integration of effort between conservation and fisheries management is needed and relatively little planning has occurred with respect to the position of these sites (likewise for HPMAs) within a self-sustaining and ecologically coherent network. Therefore the science and principles of network design and the key players involved in the implementation of such networks now requires further development in order for the UK Government to fulfil its international obligations.

2.5 This workshop was held in order to make a significant contribution to this requirement from the stakeholder perspective. The following sections document the outcome of discussions following the themes, as set out in the workshop programme (see Annex

[1] The term Marine and Coastal Protected Area (MCPA) is used by the Convention on Biological Diversity (to which the UK is a signatory country), but for simplification, will be referred to as Maritime Protected Area (MPA) throughout the remainder of this document.

B). A full list of participants is given in Annex C. An 'at a glance' summary of the key stakeholder messages is provided in Table 1.

3. What are networks and what should they achieve?

3.1. Introduction

3.1.1 Networks of MPAs need to be objective and criteria driven, with greater clarity about what a network is and what it will achieve if the process is to gain acceptance and ownership from stakeholders across the board. This equates to a clear explanation of what is needed and why, based on concisely defined conservation objectives, ensuring that theoretical problems do not constrain from the outset. MPAs are just one tool in the toolbox for an ecosystem-based approach to stewardship of the maritime environment, and form part of a framework for the delivery of this approach.

3.2. Objectives of a network

3.2.1 A series of overall objectives for networks of MPAs were suggested. These included:

- Recovery of ecosystem structure and function;
- Maintenance and enhancement of ecosystem goods and services (including public perception of the value of protecting the marine environment);
- Sustainability, insurance and risk management (HPMAs can be used as backup for the potential failures of sustainable multiple-use areas. HPMAs will give us that insurance and tell us how and what the marine environment should really look like);
- The coherence of fisheries management and nature conservation;
- Clear links with social and economic interests in relation to inshore and coastal areas;
- The building of strong links with 'protection' of local communities and enhancement of cultural values; and
- Promoting a 'sea change' in people's behaviour and attitude towards the marine environment.

3.3. Definitions of network

3.3.1 Although it was agreed that a 'user friendly' definition of 'network' is required, it was not possible to achieve this at the workshop. A series of suggestions were, however, presented including:

- A series of linked sites which contribute towards maintaining system integrity;
- Sites linked by ecological processes (and not just an administrative network);
- A series of geographically disparate units connected by something in common (the sea, management or reasons for selection);

Table 1. Summary of key stakeholder messages

Question	Key messages
What are networks and what should they achieve?	• One tool used as part of a wider framework for the ecosystem-based approach to stewardship of the maritime environment; • Recovery of ecosystem structure and function; • Appropriately planned to be more than just a collection/patchwork of sites; • Sustainability of ecosystem goods and services; • Based on sound but simple conservation objectives and criteria; • Strategic and opportunistic; and • Wider community benefits.
What principles should underpin network design?	• Representivity (of all biodiversity, not just rare or threatened species and habitats, 'special areas' or biodiversity hot spots); • Resilience and replication/variability (able to cope with natural change and any possible anthropogenic 'disasters' (e.g. oil spills), allowing connectivity); • Longevity/permanence; • Precautionary (use of best available evidence) but pragmatic; and • Equity (ensuring those displaced are benefited elsewhere).
Who should be involved in identifying, planning and monitoring the network and how?	• Involvement of all key stakeholders is important but nature conservation should remain the primary driver; • Agreement and ownership of objectives at the national level is a primary consideration; • Ownership and buy-in from as much local and cross-sectoral involvement as possible; and • Involving key stakeholders in particular fishermen and local communities in network monitoring.
How can current MPA initiatives fit into the network?	• There is much confusion over the definition of MPA and what are considered to be existing MPAs; • Recognition of the importance of the achievements of existing multiple-use *Natura 2000* sites and the need to build on these initiatives, but highlighting that they alone are not enough to recover ecosystem structure and function; and • General agreement that other initiatives (e.g. windfarms, oil rigs and fisheries closures) might contribute to a network, but alone are not an appropriate network.
What information do we require to develop networks – do we know enough already?	• Clear view that enough is known to make a start (must avoid 'paralysis by analysis'); • Prioritisation of additional information requirements should be based on the principles and objectives of the network; and • Key principle should be 'learning by doing', but with additional robust, accessible scientific information feeding into the ongoing process.
How do we measure our success	• Development of 'rule of thumb' targets and indicators at the network level (e.g. species richness, biomass, structure and function) that are not labour or data intensive; and • Expect to see benefits in the wider environment such as increased tourism, greater local community ownership and compliance, but recognising that cause and effect relationships are inherently difficult to establish.

- A mechanism to build a system of resilience; and
- More than just a collection of sites.

3.3.2 Network dynamics are currently too focused on specific habitats and species and these are often considered in isolation of each other. More emphasis on *process* and *recovery* of ecosystems rather than isolated protection of selected habitats and species is required. Areas important for ecosystem functionality, based around the ecosystem approach should be identified. However, if networks and their component MPAs must address the delivery of goods and services provided by marine ecosystems as well as the protection and management of single species and fisheries, the network may well need to look different in each case.

3.3.3 Networks should encompass seascape, cultural and historical features (e.g. wrecks) as part of their added value and should essentially be about allowing sustainable development that takes account of these factors. (This was agreed to be true only as long as the definition of sustainable development, which allows for setting aside some areas from certain uses including nature conservation, is followed).

3.3.4 Individual areas within the network could be selected in the context by which the wider resource (i.e. marine biodiversity) is managed, conserved and restored, and the contribution areas will make to the wider network. Linkages should be established between individual sites, and the network should cover the full range of biodiversity and geology, but with room for the special and rare habitats and species. Coverage should also enable the delivery of national initiatives such as Sensitive Marine Areas, Habitat Action Plans and Species Action Plans. In addition, there is the need to look at networks from the perspective of the ecology of organisms. Marine species have very open life histories and may range across 10's of kms to 1000's of kms. Networks are therefore important because metapopulations require a mechanism for exchange to sustain populations and ecosystem structure. A network therefore has to encompass the scale(s) at which organisms live (i.e. the dispersal of larvae), movement of animals and interactions with the chemical and physical environment.

3.3.5 The requirement of a systematic approach to creating a network, and whether just a collection of sites or the selection of a large proportion of the sea could act as a network, was challenged. Issues of scale and the need to focus on the seascape, habitat and species level were agreed. If the purpose of the network is the achievement of recovery, then very large scales (e.g. the Irish Sea) may well need to be considered, but with areas selected on a much more pragmatic level. The dilemma over the inclusion of depleted sites as MPAs for recovery was also raised here.

4. What principles should underpin network design?

4.1 Groups generally agreed similar principles of network design, which followed those of Ballantine, 1997:

- Representative of **all** biodiversity, including rare and threatened habitats and species (this may well require a different way of thinking/working than at present);

- Replication for insurance;
- Resilience – stability but allowing flexibility and adaptability for change;
- Structural and functional coherence;
- Connectivity and integrity – an important feature of ecosystems;
- Permanence/longevity;
- A hierarchical structure/scale - networks should be designed to range from the wider scale down to the local level (but scale may depend on the level of wider governance in place already);
- Based on robust but pragmatic underpinning science – the best available now but informed by new information;
- Varying levels of protection (including highly protected to multiple-use) but at an appropriate level to deliver recovery and resilience;
- Strategic and opportunistic; and
- Based on an informed precautionary approach (not just reactionary), intrinsic values and ensuring equity.

4.2 Wider discussion on issues such as the importance of balancing flexibility of approach when identifying and implementing a network in order to allow for change, against the need to ensure the network does not become 'toothless' in its enforcement and resulting success were noted. The aim of long-term recovery of maritime ecosystems must always remain the overarching objective.

4.3 Again, the importance of integrating the requirements of different sectors was highlighted during discussions, along with the practicalities of building up the network (strategic vs. opportunistic (this is addressed in Section 5.3 of this report)). The issue of proportionality (i.e. what percentage of the sea should be included within the network) was not extensively discussed during the workshop but some delegates stressed that protection/coverage should be appropriate to the requirements of biodiversity and need the need for recovery.

5. Who should be involved in identifying, planning and monitoring the network and how?

5.1 All stakeholders (particularly fishermen and other local communities) should have an involvement in the MPA network process, forming a 'top down, bottom up' approach with clear and concise guidance provided. There is currently little or no opportunity in legislation or policy (even under the RMNC's Irish Sea Pilot or legislative sub-group considerations) to deliver this beyond the norm of 'consultation' after sites are proposed. All stakeholders should manage the maritime environment together, although it was acknowledged that there will always be issues over agreement (the lack of progress with Marine Nature Reserves (MNRs) is tantamount to this) and the recognition that strong national frameworks are often dogged with implementation problems at the local level.

5.2 Despite views that sites designated for nature conservation purposes should only be identified by the nature conservation agencies, it was clear that discussion, agreement and collective ownership of MPA goals and network objectives should firstly be identified at a national level, (but that this should not preclude local involvement), for

delivery at a local level, and that a leading committee could be established to take the process forward. Such a committee would include making decisions about how best to sell the network package – to demonstrate the aims, objectives and requirements of the network in order to inform local communities and other stakeholders and to help reduce public objections. Early involvement of stakeholders was seen as particularly important if they would then expected to play a role in delivery of enforcement and monitoring further along the line. However, stakeholder influence may need to be 'managed' to some degree in order to prevent the credibility of nature conservation being lost or 'hijacked'. Views on the importance of the design of the network being a 'common public good', that ecosystem health and goods and services affect everyone, therefore everyone (as far as possible) should benefit, and that the benefits of recovery need to be shared equally were expressed.

5.3 In conjunction with agreement at a national level, other stakeholders should be able to propose sites within the network with built in flexibility to develop opportunistic as well as strategic approaches in the development of the network. Building and adding to the network with 'easy wins', with sites already having support from fishermen and local communities could be included first. This would aid a 'gentle roll out, and soft landing'.

6. How can current MPA initiatives fit into the network?

6.1. Introduction

6.1.1 The need for an agreement on what constitutes an MPA and where and how many there are in the UK dominated a major part of this session. Many agreed that the IUCN definition of MPAs was too broad[2]; queried whether or not *de facto* exclusion areas such as fisheries closures, MoD firing ranges, PSMAs, MEHRAs, oil and gas rigs and offshore windfarms could be considered as MPAs and therefore included within the network; and questioned whether an ecologically coherent network could be achieved simply by fully implementing the Habitats Directive in the UK.

6.2. Existing MPAs

6.2.1 An agreed definition of what constitutes an MPA in the UK context and what the requirements of an MPA should be, coupled with identifying existing MPAs should be achieved before deciding how they might fit into a network and what the gaps in coverage are.

6.2.2 Statutory sites such as *Natura 2000* SACs and SPAs, MNRs, Sites of Special Scientific Interest (SSSIs) and non-statutory initiatives such as Estuary Management Partnerships and Voluntary Marine Nature Reserves etc, are often thought of as a patchwork of sites or an attempt at 'stamp collecting', but should be considered as part of the building blocks of an evolving but embryonic network. These sites all have

[2] " Any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment". Resolution 17.38 of the IUCN General Assembly, 1988, reaffirmed in Resolution 19.46 (1994).

some form of protection, whether they are permanent or seasonal, statutory or voluntary (often with greater local buy-in) or of national or international importance. Formalising what a network is and what it should do is a first step to identifying how these existing MPAs can fit into the network model.

6.2.3 The Habitats Directive has driven much of the UK's policy on marine conservation in recent years. This Directive makes specific reference to representivity, ecological coherence and connectivity (but not larval dispersion), and the need to protect, restore and include socio-economic considerations. There is a general assumption that the *Natura 2000* sites maintain the status quo rather than contribute to the recovery of ecosystem structure and function, that they don't represent the full marine biological interest and that even if 'fully' implemented (i.e. extension of spatial coverage to include 0-12nm and offshore SACs and extensions to the Annex lists), the principles of replication and insurance will not be addressed.

6.3. New MPAs

6.3.1 Although SACs were not ultimately designated for their role in ecosystem recovery, they are now being considered by default (e.g. the Lundy Island No Take Zone) and it is expected that the Habitats Directive should include no-take implications in the future. This nested approach to management based on ecological needs rather than just threat levels is the original management model proposed by the country agencies. The creation of non-extractive use HPMAs within (and indeed outside) existing MPAs to broaden the overall level of protection and provide insurance, the inclusion of the principle of replication and the need for full representation and coverage of marine biodiversity will all contribute to the delivery of a network and will deliver added value in biological, social and economical terms. The sum of the parts should be greater than that of the individual sites, and if the future of marine conservation is about protecting ecosystems and promoting recovery to support sustainable uses, a shift in mindset from habitats and species to large-scale ecosystem considerations is needed. Whether the appropriate tools to do this are currently available is open for discussion.

6.3.2 Although OSPAR has not determined levels of protection required for MPAs (i.e. highly protected or multiple-use), it has established a clear definition of the term MPA[3]. Due to their potential location (including, eventually, out to the mid-Atlantic ridge), OSPAR sites have much potential to contribute to a network but greater coherence between signatory countries in terms of site selection, particularly for sites across administrative boundaries, is required.

6.3.3 A range of high quality to badly impacted/damaged sites, some of which are recovering, exist in the maritime environment. Some sites, for example, estuaries have been cleaned up by improvements in discharges from land. As these areas recover, trawling activity, which reduces their ability to make a full or good recovery, often damages them. Greater provision for permanent closure from damaging activities is required both in this case and in existing MPAs. Recovery areas should be included in a network for their recovery potential and they may be some of the easier sites to

[3] "An area within the maritime area for which it is appropriate to institute, consistently with international law, protective, conservation, restorative or precautionary measures for the purpose of protecting and conserving species, habitats, ecosystems or ecological processes of the marine environment of the maritime area."

include as opposition from local communities and fishermen may be less likely. The inclusion of areas for maintenance of function such as soft sediment sites for productivity are also important but are often difficult to 'sell' to the wider public as they are perceived to be of low value.

6.4. Fisheries closures

6.4.1 Some discussion centred around the role of existing fisheries closures and that they were considered ultimately not to be part of an overall network for ecosystem recovery, since there were limited wider environmental benefits and closures were often seasonal. However, ignoring these areas may be perceived to aggravate relationships with the fishing industry, could reduce the varying levels of protection within the network and goes against the need to bring together fisheries management and nature conservation measures.

6.4.2 It was noted that displacement of activities (particularly fishing) would often be used as an argument against some protected areas and that this would be less of an issue if fishing effort is globally reduced and managed as part of an overall framework.

7. What information do we require – do we know enough already?

7.1. Introduction

7.1.1 Sufficient broadscale information is available to begin identifying a network and a comprehensive understanding of ecosystem functioning and processes is not required. Working with existing data will avoid 'paralysis by analysis' however, additional scientifically robust (but easily accessible and understandable) data should also feed into the process and is most likely to be required if detailed justification of the network is demanded. The burden of proof for this is likely to fall on the network designers.

7.2. Existing information

7.2.1 Proper application of the precautionary principle, and working with existing data including private sector surveys, fisheries information and MoD data as well as surrogate oceanographic and other biophysical data was advocated. The collation and interpretation of regional data and information has been trialed through the RMNC's Irish Sea Pilot project, but this may well be a greater challenge for offshore areas. There is some question, however, over not just about what information is collated but how it is collated and around what framework or objective. There is also an important relationship between science, management and network design and their relevant information needs, with appropriate science being used to fill the gaps between the latter two.

7.2.2 Requirements for using existing information include:

- Identifying existing building blocks of information;
- Agreeing the data issues and requirements;

- Identifying science and information gaps;
- The potential for buffer zones;
- Sharing objectives and opportunities;
- Attributes; and
- Identifying the linkages (ecosystem and otherwise).

7.3. New information requirements

7.3.1 Additional information requirements should be prioritised on the basis of agreed principles and objectives of the network and collected at the appropriate scales. Gaps in knowledge based on use of surrogate data could then focus additional survey effort accordingly. Mapping the main distribution of marine landscapes at a regional sea level, using existing geophysical information, provides a readily available, time and cost effective tool to help achieve this aim.

7.3.2 Data gathering at a local level, engaging and involving local communities and promoting and developing public awareness should be part of the overall information process. This includes the use of data from fishermen and local communities, building trust between stakeholders, but being aware of potential negative perceptions from fishermen with data being used against them.

7.3.3 A large information gap in the UK relates to ecological links, corridors and larval dispersal routes. There is much information on this from overseas, but caution must be applied when adapting models in the UK. Information requirements also relate to the use of appropriate indicator species in relation to the monitoring and achievement of objectives.

8. How do we measure our success?

8.1. Introduction

8.1.1 Success can be measured in a number of ways and at varying levels (species, habitat, network and wider ecosystem processes), but we can rarely link, with complete confidence, measured parameters within MPA initiatives, as cause and effect relationships are inherently difficult to establish in complex marine ecosystems. However, the identification and use of appropriate ecosystem 'rule of thumb' objectives, indicators and measurable targets (e.g. diversity of body size in fish stocks, fish landings, increase in compliance, tourism and quality of life) that are not labour intensive or data 'hungry' were seen as important.

8.2. What is success?

8.2.1 Examples of what was perceived by those present to be success in terms of the network included:

- If recovery of a site after being damaged has been achieved;
- If 'spillover' of species richness occurs;

- If we see positive change in the wider environment in line (but lower than and at an acceptable time lag) with positive change in sites;
- If we are seeing positive change across all sites within the network;
- If SACs are maintained in favourable condition;
- If the network is understood and respected, with few (or declining) infringements and a sense of shared ownership; and
- If there are developing partnerships and consensus built approaches– some of the more difficult decisions can be made as a result of shared vision.

8.3. Success criteria/ indicators

8.3.1 Process indicators such as compliance, commitment and enforcement by local communities (and possible new robust legislation) are required to underpin the success of ecological and socio-economic indicators, but whether success could be measured by an element of self-policing remains a challenge. Any ecosystem function measures would need to allow for system change but include longevity and resilience and a feedback loop to adaptive management.

8.3.2 The following indicators/measurements were suggested:

- Ecosystem quality indicators (noted that OSPAR EcoQOs are not particularly user-friendly);
- Focusing on ecosystem structure and functionality not individual species;
- ERSIN, an ecosystem productivity model;
- Socio-economic such as fish catch data, tourism, quality of life, public awareness and understanding, compliance and commitment;
- A large spatial BACI (Before-After-Control-Impact) study of protected areas versus the wider environment;
- Monitoring process similar to that set out in the England Biodiversity Strategy (equivalent to farmland bird index on land, perhaps using an indicator related to trophic structure); and
- Resilience – if a disaster is not quite such a disaster due to the resilience of the system then we will know it is a success.

9. Discussion

9.1 The workshop on networks of protected areas in the maritime environment, documented in this report, is a key milestone for the UK. It is the first opportunity there has been in the UK for stakeholders to consider the implementation of MPA networks. The views of stakeholders show the important role Government has in developing and delivering an ecosystem and ecological approach for the conservation of the maritime environment, including the development of an overall stewardship framework and the ultimate implementation of networks of MPAs. The frameworks to consider the stakeholder issues raised in the workshop already exist through the Government's Marine Stewardship process and, more specifically, the Review of

Marine Nature Conservation, and, in Europe, under the EU Marine Thematic Strategy and implementation work on OSPAR and the Habitats Directive.

9.2 An important next step is to take the key messages from UK stakeholders contained in this report forward to inform those debates. In particular, broad issues that stakeholders feel are important to address include the integration of fisheries management and nature conservation; moving forward from the designation of isolated, coastal sites to full representation and replication of marine biodiversity; raising the profile of networks across all relevant government departments, and providing effective policy and legislative frameworks to enable stakeholders to implement networks by the existing international agreed timetables. Subsuming such issues into an explicit Government-led implementation plan, generated via the Stewardship process or the RMNC, would be a particularly valuable next step. This could ensure coordination, value for money and transparency of actions by Government, its agencies and stakeholders, between now and 2012.

9.2 Specific actions towards implementation that are considered a priority to inform on the delivery of agreed international targets include:

- Confirming the definition and understanding of MPAs in a UK/European context;
- Agreeing a common understanding and position between stakeholders on a clear set of objectives for a network of MPAs;
- General agreement on the underpinning principles of network design;
- Discussion on the potential location of new sites to develop the network and sites to achieve recovery;
- The development of indicators of management effectiveness and success;
- Accepting the principle of 'Learning through doing'; and
- Opportunities for cross-organisation underpinning research such as a 'countryside map' of the seabed (akin to that already undertaken by the Irish Sea Pilot) and a trial project on the implementation of a network of HPMAs in conjunction with local communities in the South West.

9.3 In order to move from sites to networks by the targets agreed within Europe and under WSSD, greater use will need to be made of MPA initiatives and opportunities, particularly existing and possible new *Natura 2000* sites. In evolving the perspective towards networks, such sites should be seen as one of the key building blocks for developing a network and should evolve to incorporate HPMAs within their boundaries. In order to include full representation of marine biodiversity within the network, further sites of national importance (i.e. those other than *Natura 2000*) will also be required.

9.4 It will be especially valuable to pursue the development of a network of MPAs in coordination with relevant initiatives. It will be essential to build upon work that has been done elsewhere including, amongst other things, that on nationally important marine areas being undertaken as part of the Irish Sea Pilot, JNCC's work on *Natura 2000* sites offshore, WWF's project on a network of MPAs in the OSPAR region, the IUCN/NOAA (National Oceanographic and Atmospheric Administration) MPA

management effectiveness work and recent developments in molecular genetics of populations.

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Annex A. Some key global initiatives on Marine and Coastal Protected Areas

OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic

Commitments under OSPAR include 'the establishment of a network of marine protected areas to ensure the sustainable use, conservation and protection of marine biological diversity and its ecosystems' and the development of, by 2006, 'guidelines on the identification, selection and management of marine protected areas and guidance on how to achieve, by 2010, an ecologically coherent network of well managed marine protected areas.

Ministerial Declaration of the 5th International Conference on the Protection of the North Sea

The Bergen Declaration in March 2002 reaffirmed the OSPAR target to promote the establishment of a network of well managed marine protected areas, was committed to, where practicable, the restoration of areas which have been adversely affected and requested competent authorities to identify additional areas to be closed permanently or temporarily to fishing activities.

World Summit on Sustainable Development (WSSD)

The Johannesburg Declaration in September 2002 agreed to 'the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012'.

IUCN 5th World Parks Congress (WPC)

The WPC (Durban, September 2003) is a 10 yearly event that provides the major global forum for setting the agenda for protected areas. This Congress has a major focus on marine issues. In particular it will inform thinking on implementing WSSD commitments for the marine environment by heralding the development of a Global Strategy for Representative Networks of Marine Protected Areas. This will assist governments in implementing the Jakarta Mandate on marine and coastal biodiversity (adopted in 1995), especially through relevant debates at the 2004 Conference of Parties under the Convention on Biological Diversity.

Convention on Biological Diversity (CBD)

Recommendations have been made to the Conference of Parties of the CBD by SBSTTA (Subsidiary Body for Scientific, Technical and Technological advice) regarding the establishment of an overall marine and coastal management framework for the sustainable use of resources. The recommendations include the use of non-extractive use areas and other MCPAs, a range of underlying measures, research, monitoring and reporting arrangements and that the CBD agree to adopt the WSSD goal for the establishment of networks of marine protected areas by 2012.

Annex B. Workshop agenda and summary

Networks of Protected Areas in the Maritime Environment Thursday 19th June, Kensington Close Hotel, London

Aim and Agenda

The aim of the workshop is:

- to begin exploring the principles behind network design and what networks should achieve;
- to discuss the practical implications of implementation;
- to look at how current MPA initiatives fit into the process; and
- to identify which key players should be involved in identifying, planning and monitoring the network.

09.45-10.15: Registration and coffee

10.15 – 10.30: Welcome and Introduction by Sue Gubbay (English Nature Council)

10.30 – 11.15: Morning session: **Building Networks**

Keynote speaker - Professor Callum Roberts (University of York)
Networks of MPAs: their design and implementation

11.15 – 12.15: Delegates will then break into groups to discuss the following:

- What are networks and what should they achieve?
- What principles should underpin network design?
- Who should be involved in identifying, planning and monitoring the network and how?

12.15 – 13.00: Plenary Session 1

13.00 – 14.00: Buffet lunch

14.00 – 14.30: Afternoon session: **Making Networks Happen**

Keynote speaker - Chris Lumb (Joint Nature Conservation Committee)
Nationally important marine areas – the Irish Sea Pilot perspective

14.30 – 15.30: Delegates will then break into groups to discuss the following:

- How can current MPA initiatives fit into the network?
- What information do we require to develop networks – do we know enough already?
- How do we measure our success?

15.30 – 15.45: Tea/coffee

15.45 – 16.30: Plenary Session 2

16.30 – 16.45: Closing remarks

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Annex D. Keynote speaker presentations

NB: Graphics and colour photographs have been removed to reduce document size

Networks of marine protected areas: their design and implementation

Callum Roberts, University of York

Global and regional targets and commitments made by Britain

OSPAR (Oslo Paris Convention for the Protection of the Marine Environment of the North-East Atlantic

In 1998 committed to establishing an OSPAR network of marine protected areas throughout the region covered by the Convention

Commitments were renewed at the recent G8 Summit of world economic leaders in Evian, France.

World Summit on Sustainable Development, 2002

World Summit on Sustainable Development, 2002

32 (c)" Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 and time/area closures for the protection of nursery grounds and periods, proper coastal land use and watershed planning and the integration of marine and coastal areas management into key sectors"

From WSSD Implementation Plan

Convention on Biological Diversity

Jakarta Mandate

Established a broad framework for seeking means to manage threats to marine ecosystems

SBSTTA 7: (Subsidiary Body on Scientific, Technical and Technological Advice, New Zealand, May 2002)

Recommended an overall marine and coastal biodiversity management framework consisting of a primary network of representative highly protected areas (where extractive uses are excluded), ancillary network of sustainably managed MPAs and a framework of sustainable management practices over the wider marine and coastal environment.

Convention on Biological Diversity

SBSTTA 8: (Subsidiary Body on Scientific, Technical and Technological Advice, Montreal, March 2003)

Ad Hoc Technical Group recommended that the 2012 of the World Summit on Sustainable Development should also be adopted for the work of the Convention.

Noted that Marine and coastal protected areas provide the best available strategy to make integrated marine and coastal management regimes effective.

Objectives of protected area networks

- Maintaining ecosystem processes and services
- Sustaining fisheries
- Conservation

Existing MPA types in Britain

Marine Nature Reserves – 3!

Habitats Directive

Natura 2000 - Candidate marine **Special Areas of Conservation** and **Special Protection Areas** (birds)

Ramsar sites – wetlands of international importance

Other **de facto 'MPAs'**

Munitions dumps; oil installations; military exclusion zones; possibly wind farms

What is missing?

Most of the Exclusive Economic Zone!
Real protection
Networking principles

Other drawbacks of present approach:

- species focus in conservation (e.g. in birds directive) is highly complex,
- may lead to confusing and conflicting management recommendations,
- concentrates on species in trouble or those at the edges of ranges,
- is not representative of biodiversity as a whole and may miss critical sites,
- represents reactive rather than proactive management,
- fails to consider the value of sites that are not currently inhabited by the species.

From stamp collecting to networks:

- Reserves should be capable of sustaining species and ecosystem processes in a variable and changing world
- Reserves must be mutually supporting
- All habitats and species in all biogeographic regions should be included and replicated in multiple protected areas to safeguard against disasters and to build connectivity

We need to beef up protection

- MPAs must not simply be paper parks (remember Strangford Lough horse mussels!)
- MPAs must not simply be multiple use management areas
- Management should be simple, robust and directed towards the key impacting activities
- Management should focus on recovery of ecosystems, not on preservation of degraded states

Delivering real protection: Fully protected marine reserves

- Increase overall stocks of exploited species by 2-5 times within 5 years of protection
- Sustain or enhance fisheries by:
  - (a) supplying larvae to restock surrounding fishing grounds
  - (b) spillover adults and juveniles to surrounding fisheries
- Protect vulnerable species
- Promote recovery of benthic habitats from damage by mobile fishing gears
- Increase biodiversity, locally and at the scale of seascapes

To achieve the level of protection required we must fully integrate conservation and fisheries management

Fisheries are a conservation problem, and conservation is a fisheries concern

Now is a time of great opportunity

We have a strong mandate to create MPA networks

We have good science to inform protected area selection

We have a near empty canvas on which to implement real and lasting protection

There has never been a more timely moment to act!

Irish Sea Pilot

Nationally important marine areas

– an Irish Sea Pilot perspective

Chris Lumb, Senior Officer, Irish Sea Pilot

Joint Nature Conservation Committee

www.jncc.gov.uk/irishseapilot

Outline of presentation

- Background
- Objectives
- Key contributions to MPA work
  - Current marine protected areas
  - Spatial scales
  - Ecological Units
  - Identifying nationally important features/areas
  - Setting conservation objectives
  - Network purpose, design, protection, delivery
  - Legislative needs
- Conclusions

Background

- Defra-funded
- JNCC undertaking
  - Started May 2002
  - Draft recommendations Dec 2003
  - End Mar 2004
- Review of Marine Nature Conservation 1999
- Interim report March 2001
- Status quo not an option
- Pilot at regional seas scale

Objectives

1. Test a proposed new implementation framework for conservation
2. Test ways of integrating nature conservation into key sectors to contribute to sustainable development on regional basis
3. Review potential of existing regulatory system to deliver effective marine nature conservation
4. Recommend measures to fill gaps

Current MPAs: nature conservation

- SPA flyway network
- Offshore/extensions to bird sites
- Series of inshore SACs
- Multi-use sites
- Currently no offshore
- Only some features
- Not selected as best representative areas
- 'SSSI' to low water

Current MPAs: fisheries

- Seasonal closures to protect stocks
- Prohibition of dredges/beam trawls
- Conflict between gears
- Regulatory Orders
- Closed areas for trials

Current MPAs: others

- Military practice areas
- Oil and gas safety exclusion areas
- Protected wreck sites
- Offshore windfarm sites?
- MEHRAs?

An ecologically coherent network?

- Unlikely!
- Not designed as network
- What contribution do they need to make?
- Relationships between MPAs?
- Relationships to wider sea?
- Appropriate representation of features?
- Appropriate protection
- Appropriate and adequate areas?

Spatial scales

4 scales:

- Whole regional sea
- Ecological units
- Sites
- Species

Ecological units

Geophysical factors

- Bathymetry
- Sediments
- Slope
- Bedform

Ecological units

- 17 Ecological Unit types
- Include:
  - Fine sediment plains
  - Coarse sediment plains (lag deposits)
  - Sand/gravel banks
  - Shallow water mud
  - Deep water mud
  - Estuaries

Ecological units: water column

Hydrographic and physiographic factors:

- Stratification
- Frontal systems
- Transitional waters

Ecological units

- Biological characterisation

Ecological units

- Human use
- Sensitivity/condition?
- Conservation objectives
- Key scale to plan, protect and manage?

Nationally important features

Identify areas that best represent the range of seascapes, habitats and species present in the UK – the UK's marine biodiversity heritage.

Identify seascapes, habitats and species for which we have a national, regional or global special responsibility.

Identify seascapes, habitats and species that have declined or are threatened with decline in extent or quality, so are defined as being in poor status.

Nationally important habitats

- Provisional Irish Sea list
- 26 habitats
- Includes:
  - Coastal lagoons
  - Estuaries
  - Reefs
  - Saline lagoons
  - Sheltered muddy gravels
  - Maerl beds
  - Modiolus modiolus beds
  - Sabellaria alveolata reefs

Nationally important species

- Provisional Irish Sea list :
- 170 species
  - Benthic species
  - Pelagic species
  - Includes some commercial fish species eg cod, common skate, plaice

Nationally important areas

- Relationships with ecological units
- Broadscale sensitivity mapping
- Identify high biodiversity areas
- Nationally important area criteria

Set conservation objectives

- Set at each spatial scale
- Define state for healthy ecosystem
- In consultation with sectors
- Integrate with sectoral objectives

MPA networks

- MPA contract
- Purposes of establishing UK network
- Network design principles
- Management & protection principles
- Options for delivery
- Additional conservation measures
- Illustrative network in the Irish Sea

Gaps in marine nature conservation legislation

- No legislation to establish representative network
- Cannot fulfil international/European obligations
- No power to declare marine NNR or LNR
- No duty to declare MNR
- 'SSSI' only to low water
- Legislation for sites/damaging activities in 12-200 mile zone
- Habitats Directive only covers some UK habitats

Conclusions

- Work to develop an ecologically coherent UK MPA network is crucial
- This workshop is an important step and will inform the Pilot's and other work
- The Pilot is trialling improved frameworks within which the MPAs network will function

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Front cover photographs:
Top left: Using a home-made moth trap.
Peter Wakely/English Nature 17,396
Middle left: Co_2 experiment at Roudsea Wood and Mosses NNR, Lancashire.
Peter Wakely/English Nature 21,792
Bottom left: Radio tracking a hare on Pawlett Hams, Somerset.
Paul Glendell/English Nature 23,020
Main: Identifying moths caught in a moth trap at Ham Wall NNR, Somerset.
Paul Glendell/English Nature 24,888