Workshop report detailing agreed criteria for ecological coherence

PANACHE

Protected Area Network Across the Channel Ecosystem

Coherence

Workshop report detailing agreed criteria for ecological coherence

Coherence

Prepared on behalf of / Etabli par

Marine Institute
UNIVERSITY OF PLYMOUTH

Contact : Marija Sciberras

In the frame of / dans le cadre de

PANACHE
Protected Area Network Across the Channel Ecosystem

Work Package 1

Work quotation: PANACHE partners. 2013. Workshop report detailing agreed criteria for ecological coherence. Report prepared by the Marine Institute for the Protected Area Network Across the Channel Ecosystem (PANACHE) project. INTERREG programme France (Channel) – England (2007 – 2013) funded project, 48 pp.
Cover photo: Julie Hatcher, Dorset Wildlife Trust

This publication is supported by the European Union (ERDF European Regional Development Fund), within the INTERREG IVA France (Channel) – England European cross-border co-operation programme under the Objective 4.2. “Ensure a sustainable environmental development of the common space” - Specific Objective 10 “Ensure a balanced management of the environment and raise awareness about environmental issues”.
Its content is under the full responsibility of the author(s) and does not necessarily reflect the opinion of the European Union.

Acknowledgements

We would like to thank a number of people for their contribution to this report through very useful discussions held during an 'expert workshop' on the ecological criteria of ecological coherence of MPA networks organized by PANACHE at the Marine Institute, University of Plymouth on the 20th of March 2013: Vincent Toison (Agence des Marines Protegees), Paul St. Pierre (Royal Society for the Protection of Birds), Helen Booker (Royal Society for the Protection of Birds), Niki Clear (Cornwall Wildlife Trust), Sabine Christiansen (World Wildlife Fund-UK), Peter Chaniotis (Joint Nature Conservation Committee), Ilaria Marengo (Joint Nature Conservation Committee), Louise Lieberknecht (University College London), Tom Hooper (SeaLife Consultancy), Kerstin Kroeger (OSPAR), Emily Cocoran (OSPAR), Olivia Langmead (Marine Institute/Marine Biological Association), Simon Pittman (Marine Institute/National Oceanic and Atmospheric Administration), Sangeeta McNair (Natural England), Jen Ashworth (Natural England).

Contents

I. Project and Work Package 1 aims

1.1 PANACHE – Protected Area network Across the Channel Ecosystem

The overall aim of PANACHE is to develop a stronger and more coherent approach to the management, monitoring and involvement of stakeholders for Marine Protected Areas (MPAs) in the Channel. There are significant efforts taking place in England and France to utilize MPAs to meet European and International biodiversity protection obligations; this project will provide the mechanism to ensure that approaches being taken on either side of the Channel are more coherent and effective.

1.2 Work Package 1 (WP1) – Assessing the existing MPA network in the Channel for its ecological coherence

Both England and France have been working to meet their requirements under national legislation, European directives (e.g. Birds Directive, Habitats Directive and Marine Strategy Framework Directive) and international conventions (e.g. OSPAR, RAMSAR) to establish well-managed MPAs for the conservation of features of conservation importance within their territorial waters. It is therefore, important to ask the question whether the combination of sites across the Channel area meets ecological coherence criteria on a transnational level.

WP1 plans to carry out an evaluation of whether the MPAs proposed by England and France in the Channel area form an ecologically coherent MPA network. The overall aims of this work are:

- To determine whether the current and planned MPAs within the Channel area meet internationally recognized ecological coherence criteria
- To identify any gaps in the network that influence coherence
- To test existing and to develop additional ecological coherence criteria and methods/techniques for carrying out an assessment of ecological coherence in MPA networks.

The PANACHE project specifically includes the following MPA designations within the Channel MPA network: Special Area of Conservation / Zone spéciale de conservation (SAC), Sites of Community Importance / Site d'importance communautaire (SCI), Special Protection Area / Zone de protection spéciale (SPA), Ramsar sites with marine components / Zone humide d'importance internationale (Ramsar), OSPAR sites / Zone marine protégée de la convention (OSPAR), Site of Special Scientific Interest (SSSI), Marine Conservation Zone (MCZ) (the ones included in Tranche 1), Reserve Naturelle Nationale ou Régionale (RNN), Parc Naturel Marin (PNM), Arrêtés de Protection de Biotope (APPB) and Domaine Public Maritime du Conservatoire du Littoral (DPM).

II. Aim of the expert workshop

As part of WP1, an expert workshop (Action 1.1d) was organized in March 2013 by the Marine Institute with the focus to agree on the criteria under which ecological coherence will be measured for the Channel MPA network. WP1 project partners and external participants (scientists and representatives from governmental and non-governmental bodies including Natural England, Joint Nature Conservation Committee and OSPAR) were invited to this one day workshop.

This report highlights:

(i) some issues identified during the workshop for an assessment of whether the MPAs proposed by England and France in the Channel area form an ecologically coherent MPA network

(ii) recommendations on the scale and level of the analysis which depend on the extent and type of data that is available at present for habitats and species within the Channel area

(iii) recommendations on the practical criteria to be used in PANACHE project for evaluating the ecological coherence of the MPA network in the Channel

(iv) recommendations on the indicators that can be measured to assess each of the criteria recommended in (iii)

(v) methods that may be used to assess each of the criteria and indicators specified in (iii) and (iv).

For the definition of ecological coherence considered within this project, the policy drivers for establishing an ecologically-coherent MPA network in the Channel area and for a review of the literature on the scientific background of existing criteria for assessing a coherent network of MPAs, the reader is referred to Deliverable 1, Action 1.1a (Criteria for assessing ecological coherence of MPA networks: A review). For a review on the approaches, techniques and the data collection methods that may be used in an assessment of ecological coherence of MPA networks, the reader is referred to Deliverable 2, Action 1.1b (Methods for assessing ecological coherence of MPA networks: A review). The two literature reviews were used as background documents to inform discussion during the expert workshop in March 2013.

III. Issues identified during the workshop for an assessment of ecological coherence within the Channel MPA network

3.1. Designation process for MPAs in the Channel

Existing policy drivers refer to the creation of an ecologically coherent network; however MPAs throughout the UK and French waters have not been designated as part of a single policy to create a coherent network within each respective country. Rather MPAs have been established as individual designations in response to the aims of the relevant enabling legislation. Furthermore, MPAs within the Channel area have not been established with a trans boundary coherent MPA network in mind. With this in mind, it is interesting to perform a retrospective analysis of ecological coherence for the Channel MPAs; if anything the analysis will be useful to identify any gaps in the network that influence coherence, and to recommend improvements if appropriate.

3.2. Conservation objectives of MPAs in the Channel

Although the overall objective of MPAs within the Channel is to maintain, restore and/or enhance the biological/ecological interests of each site including the supporting biological, chemical and physical structures and processes, how this is achieved within the different designations is directly influenced by the legislative framework relevant to each type of designation. For example, whereas areas within Marine Conservation Zones and Parc Natural Marins are managed as an integral area where the whole ecosystem is the focus of conservation, Natura 2000 sites benefit only particular habitats or species for which the area has been designated. The bottom line is that as different designation types have been established through different processes and with different conservation objectives, then not all of the MPAs within the network might be managed in a way that safeguards all features within the Channel. For example, for an assessment of the representativity of the network for breeding areas of bird species, the network will need to be assessed against the number of SPA and RAMSAR sites which support a substantial proportion of the geographical population. Conservation objectives of individual MPAs within the network will have to be incorporated into the assessment.

IV. Recommendations emerging from the workshop

4.1. Evaluation of ecological coherence at a hierarchy of levels

Representation of individual habitat types and species ensures that areas of high biodiversity value and species of high conservation importance are maintained within protected areas where anthropogenic activity is regulated. The difficulty with running the analysis for specific biotopes and species is that more often than not knowledge of the distributions of all known habitats and species is generally lacking (due to issues related to time and money) and tends to be available for a handful of species and habitats, particularly for those of high conservation concern.

As there is a lack of biological data that covers the entire Channel area (particularly for invertebrate species), surrogates or "proxies" that can be modelled based on physical and geological data available have been suggested to be used when data is lacking. The underlying assumption is that geophysical features are important in determining the nature of biological communities. The analysis of criteria such as representivity, replication and connectivity could be based upon "proxies" such as bathymetry, productivity and on broad-scale modelled habitat maps such as EUSeaMap. When data (e.g. distribution and/or abundance data for specific habitats and species) is available, the analysis should be repeated at the biotope or species level.

It was recommended that the analysis should take a hierarchical approach which depends of the available data:

- Bathymetry may be used as a proxy for representivity / geology
- Broad-scale modelled habitats
- Specific species / biotope data

4.2. Criteria and indicators for evaluating the ecological coherence of the MPA network in the Channel

The practical criteria and indicators that have been suggested during the workshop to evaluate ecological coherence of the Channel MPA network are summarized in Table 1.

CRITERIA	INDICATOR THAT CAN BE ASSESSED
Viability	Size of individual MPAs in the network
Adequacy	Proportion of habitat within MPA network
	Shape of MPA (area: perimeter ration, compactness index)
Replication	Number of MPAs within the network for specific habitats and species
Representativity	Representation of "surrogate" broad-scale features, geological features and physical parameters (bathymetry, productivity) within the network
	Representation of seascapes and specific habitats and species within the network
	Representation of functionality through the proportion of spawning, nesting/roosting areas
Connectivity	Spacing among MPAs with similar habitat
	Inclusion of areas of ecological importance (nursery, spawning, resting sites) within the network
	Measured by the movement of organisms and the movement of water (modelling)
Resilience	Inclusion of areas of high benthic species and habitat diversity within individual MPA sites (higher heterogeneity = higher resilience)
	Inclusion of high productivity areas, spawning areas, migration routes, frontal areas within the network

Factual level of protection	Assessed through **management effectiveness**. The following questions will need to be addressed: (1) What are the conservation objectives in place? (2) What are the management measures are in place? (3) Are the management measures in place sufficient to eliminate the most damaging impacts on the features for which the MPA is designated for? (4) Are the management measures well enforced?
Quality of site	Threats and impacts at individual MPA sites. e.g. assessing distribution of fishing activity by different gears in the Channel
Site integrity	Are the areas being protected or individual species / habitats within the MPAs only? Are sites managed as *areas*?

***Table 1**. Indicators that can be measured to assess whether the criteria for ecological coherence within the MPA network have been met.*

4.2.1. Recommendations for evaluation of *representivity*

- Where biological data are inadequate, geomorphological data, or even more simple surrogates could be used to help define habitats. Surrogates may include depth, distance from the shore, hard seabed substrates versus soft seabeds, primary productivity and thermal fronts
- Areas of ecological importance that are critical for different life stages of species should be represented within the network.

4.2.2. Recommendations for evaluation of replication

- Replication is important at the marine landscape scale as well as at the specific habitat and species scale
- Feature (i.e. species, habitats or ecological processes) vulnerability is an important consideration for determining the number of replicates of a particular feature within the MPA network. The existing uses and threats to that feature should inform the adequate number of replicates within the MPA network. The more vulnerable the feature is to existing threats, the higher the number of replicates should be to reduce risk of disappearance.
- Work by Roberts et al. 2003, IUCN-WCPA 2008, Jackson et al. 2008, OSPAR 2008 and NE & JNCC 2010 should be consulted to establish thresholds for the number of adequate *replicates*.

4.2.3. Recommendations for evaluation of *viability*

- The analysis of viability should be kept separate from that for adequacy and the working definitions should be based on that defined in Hill et al. 2010:
- *Viability* – the MPA network should incorporate self-sustaining, geographically dispersed component sites of sufficient size to ensure species and habitats persistence through natural cycles of variation.
- *Adequacy* – the MPA network should be of adequate size to deliver its ecological objectives and ensure the ecological viability and integrity of populations, species and communities (the proportion of each feature included within the MPA network should be sufficient to enable its long-term protection and/or recovery).
- The size of the MPA should be greater than the area required for a minimum viable population (see Hill et al. 2010).

4.2.4. Recommendations for evaluation of *adequacy*

- Determining what proportion of area should be contained within a MPA network is complex, and requires good information regarding the known distribution of habitats and species within the study area. Ultimately, the amount of area protected will depend: (i) on the dispersal ability of the species, (ii) on the distribution range of the species and habitat of interest, (iii) on the degree of threat experienced by the species and habitat of interest, and (iv) on the conservation status of the respective habitats and species
- In the absence of the above-mentioned information, habitat-specific percentage values generated by Rondinini (2010) from species-area curves for EUNIS level 3 habitats and HCI habitats may be used.

4.2.5. Recommendations for evaluation of connectivity

- For a meaningful assessment of connectivity the biological as well as the physical characteristics of the environment should be taken into account. Connectivity is best analyzed by incorporating information on the biology of species with hydrodynamic modelling. This work is planned to be undertaken by one of the project partners – IFREMER.
- Proximity (i.e. spacing between MPAs) may be used as a measurable surrogate for assessing connectivity using spatial analysis in GIS platforms.
- Larvae/propagules will only be able to survive when they reach sites that have appropriate habitats. The potential distances travelled by propagules only provide a part of the connectivity picture, realized connectivity distances will be a product of distances dispersed by planktonic propagules and the distribution of their habitats. Therefore, proximity should be analysed between (i) patches of similar habitat and (ii) among areas that particular species utilize during key stages in their life cycle.
- Work by Roberts et al. 2010, Shanks et al. 2003 and Shanks et al. 2009 should be consulted to inform adequate spacing distances among MPAs.

4.2.6. Recommendations for evaluating the *factual level of protection*

- None of the MPAs within the Channel area are no-take or no-entry zones. They are essentially multiple-use areas, where some activities are prohibited whereas others are allowed. It is therefore essential to establish the factual level of protection provided by the MPA and to establish whether the activities that are permitted to take place within the MPA are compatible with the conservation objectives of the MPA sites.
- The activities prohibited and allowed within the MPA generally depend on the sensitivity of the qualifying features for which the site has been designated. It is therefore important to ask whether the current management is appropriate for the features within the MPA. Different features may have different degrees of sensitivity and vulnerability from particular activities, therefore looking only at the type of activities allowed and not allowed in the MPA, the results might be skewed.
- Management effectiveness: adequate management and effective enforcement are important if MPAs are to be successful. Ineffective or poor management is likely to limit MPA performance and their use towards achieving an 'ecologically coherent' network of MPAs.

Three fundamental questions to be taken into consideration when assessing management effectiveness of a MPA were identified. These include:

- Enforcement: Is there effective enforcement and policing system in place against illegal infringements?
- Management measures: What are the management measures in place? Are these effective at altering human behaviour such that pressures are reduced? Are the management measures in place protecting the features for which the MPA has been designated?
- Adaptive management: Is the network able to incorporate changes when new information (biological and socio-economical) becomes available?

V. Proposed methods for evaluating the ecological coherence of the MPA network in the Channel

The three main approaches for assessing and measuring ecological coherence of MPA networks discussed in the literature include (a) Expert knowledge based method, (b) Matrix/spreadsheet reporting, and (c) Spatial assessment / Spatial analysis. The general consensus from the workshop was that all three methods should be used as complementary approaches to the assessment of ecological coherence.

Table 2-7 specify the method/s of assessment that have been developed following discussions during the *expert workshop* for measuring criteria of ecological coherence within MPA networks. These methods will be developed further during the analysis stage in Action 2 of WP1.

ECOLOGICAL CRITERIA	METHOD	DATA REQUIRED	DATA SOURCES/PROVIDERS
Geographical representativity	Expert knowledge based method [Self-assessment checklist (OSPAR 2007)	None	Experts
	Spatial analysis [Proportion of MPAs occurring in (i) Western and Eastern Channel (ii) inshore and offshore area]	Data-layers: (i) Channel MPA network (ii) inshore, offshore limits (iii) W & E Channel	AAMP + MI
Representativity of broad-scale modelled habitats	Expert knowledge based method [Self-assessment checklist (OSPAR 2007)	None	Experts
	Matrix / spread-sheet reporting	Regulation 33/35 advice packages, Natura2000 Standard Data Forms, Ramsar Information Sheets, OSPAR online database, DOCOBs (Documents d'Objectifs/ French)	Websites: http://jncc.defra.gov.uk/ http://www.naturalengland.org.uk/ www.mczmapping.org Others: downloaded online or sent by MPA managers or DREAL staff

	Spatial analysis [Proportion of each EUNIS Level3 habitat protected in (i) Western and Eastern Channel (ii) different MPA designation types]	Data-layers: (i) Channel MPA network (ii) Broad-scale modelled habitat map (EUSeaMap)	EUSeaMap downloadable from MESH: http://www.searchmesh.net/default.aspx?page=1974
Biodiversity representativity	Spatial analysis [Does the MPA network cover biodiversity hotspots?]	Data-layers: (i) Channel MPA network (ii) bathymetry (iii) Chlorophyll-a (90th percentile) (iv) species richness, biotope richness (v) bird diversity	AAMP (PACOMM project) IFREMER (CHARM project) DEFRA (MB102 project)

Table 2. Description of the method/s of assessment used for examining representivity for ecological coherence assessment in the Channel MPA network.

ECOLOGICAL CRITERIA	METHOD	DATA REQUIRED	DATA SOURCES/PROVIDERS
Replication of broad-scale modelled habitats (EUNIS Level 3)	Spatial analysis [Determine the number of times each feature is replicated within (i) the MPA network (ii) different MPA designation types]	Data-layers: (i) Channel MPA network (ii) Broad-scale modelled habitat map (EUSeaMap)	AAMP + MI EUSeaMap downloadable from MESH: http://www.searchmesh.net/default.aspx?page=1974
Replication of habitats of conservation importance – OSPAR		Data-layers: (i) Channel MPA network (ii) Distribution map for seagrass beds (Zostera spp.), Sabellaria spp., maerl beds	AAMP + MI DEFRA (MB102 project) Cornwall Wildlife Trust Dorset Wildlife Trust Hampshire Wildlife Trust Kent Wildlife Trust
Replication of invertebrate species of commercial importance		Data-layers: (i) Channel MPA network (ii) Presence/absence maps for *Pecten maximus, Homarus gammarus, Palinurus elephas*	IFREMER (CHARM project)
Replication of invertebrate species of conservation importance		Data-layers: (i) Channel MPA network (ii) Presence/absence maps for *Ostrea edulis*, *Paracentrotus lividus*, *Eunicella verrucosa*, *Palinurus elephas*, *Paludinella littorina*	DEFRA (MB102 project) Cornwall Wildlife Trust Dorset Wildlife Trust Hampshire Wildlife Trust Kent Wildlife Trust DASSH

Replication of fish species		Data-layers: (i) Channel MPA network (ii) Abundance maps for *Raja clavata, Pleuronectes platessa, Solea solea, Aspitrigla cuculus, Buglossidium luteum,* Callionymidae, *Dicentrarchus labrax, Limanda limanda, Mictostomus kitt, Mullus surmuletus, S. canicula, S. cantharus*	IFREMER (CHARM project)
Replication	Expert knowledge based method [Self-assessment checklist (OSPAR 2007)	None	Experts
Replication of habitats and species of conservation importance	Matrix / spread-sheet reporting	Regulation 33/35 advice packages, Natura2000 Standard Data Forms, Ramsar Information Sheets, OSPAR online database, DOCOBs (Documents d'Objectifs/ French)	Websites: http://jncc.defra.gov.uk/ http://www.naturalengland.org.uk/ www.mczmapping.org Others: downloaded online or sent by MPA managers or DREAL staff

Table 3. Description of the method/s of assessment used for examining replication for ecological coherence assessment in the Channel MPA network.

ECOLOGICAL CRITERIA	METHOD	DATA REQUIRED	DATA SOURCES/PROVIDERS
Viability (size and shape of MPAs in network)	**Spatial analysis** [frequency distribution of the (i) size of MPAs (ii) compactness index of MPAs (iii) edge : area ratio of MPAs in the network]	Data-layers: (i) Channel MPA network	AAMP + MI
	Spatial analysis [Frequency distribution of (i) the size of the broad-scale habitats protected within the network (ii) the size of the broad-scale habitats found within the PANACHE study area]	Data-layers: (i) Channel MPA network (ii) Broad-scale modelled habitat map (EUSeaMap) (iii) Distribution map for seagrass beds (Zostera spp.), Sabellaria spp., maerl beds	AAMP + MI EUSeaMap downloadable from MESH: http://www.searchmesh.net/default.aspx?page=1974 DEFRA (MB102 project) Cornwall Wildlife Trust Dorset Wildlife Trust Hampshire Wildlife Trust Kent Wildlife Trust

Table 4. Description of the method/s of assessment used for examining viability for ecological coherence assessment in the Channel MPA network.

ECOLOGICAL CRITERIA	METHOD	DATA REQUIRED	DATA SOURCES/PROVIDERS
Adequacy	Expert knowledge based method [Self-assessment checklist (OSPAR 2007)	None	Experts
Adequacy (Broad-scale modelled habitats and OSPAR T&D habitats)	Spatial analysis [proportion of habitat protected within the network]	Data-layers: (i) Channel MPA network (ii) Broad-scale modelled habitat map (EUSeaMap) (iii) Distribution map for seagrass beds (Zostera spp.), Sabellaria spp., maerl beds	AAMP + MI EUSeaMap downloadable from MESH: http://www.searchmesh.net/default.aspx?page=1974 DEFRA (MB102 project) Cornwall Wildlife Trust Dorset Wildlife Trust Hampshire Wildlife Trust Kent Wildlife Trust

Adequacy (Areas of ecological importance)	Spatial analysis [proportion of areas of ecological importance protected within the network]	Species-specific maps for nursery and spawning areas Data available for UK: *Solea solea, Raja undulata* Data available for East Channel: P*leuronectes platessa, Solea solea, Dicentrarchus labrax, Microstomus kitt, Limanda limanda, Platichthys flesus, Trisopterus luscus* Data available for entire Channel: *Sepia officinalis,* kittiwakes, terns (little, sandwich, common), fulmar, auks (razorbill, guillemot), gannet	DEFRA (MB5301 project) IFREMER (CHARM project) Isobel Bloor (PhD) AAMP (PACOMM project) Natural England (SeaBird 2000 project)

Table 5. Description of the method/s of assessment used for examining viability for ecological coherence assessment in the Channel MPA network.

ECOLOGICAL CRITERIA	METHOD	DATA REQUIRED	DATA SOURCES/PROVIDERS
Connectivity	**Spatial analysis** [Proximity between areas of protected habitat for (i) broad-scale modelled habitats (EUNIS Level 3) (ii) habitats of conservation importance – OSPAR (iii) species with different dispersal ranges	Data-layers: (i) Channel MPA network (ii) Broad-scale modelled habitat map (EUSeaMap) (iii) Distribution map for seagrass beds (*Zostera* spp.), *Sabellaria* spp., maerl beds (iii) Abundance maps for *Raja clavata, Pleuronectes platessa, Solea solea, Dicentrarchus labrax, S. cantharus, Pecten maximus, Homarus gammarus* Information on: (i) Adult dispersal distance (ii) Larval dispersal distance (iii) Habitat preference of species	AAMP + MI EUSeaMap downloadable from MESH: http://www.searchmesh.net/default.aspx?page=1974 DEFRA (MB102 project) Cornwall Wildlife Trust Dorset Wildlife Trust Hampshire Wildlife Trust Kent Wildlife Trust IFREMER (CHARM project) BIOTIC FISHBASE

Table 6. Description of the method/s of assessment used for examining connectivity for ecological coherence assessment in the Channel MPA network.

ECOLOGICAL CRITERIA	METHOD	DATA REQUIRED	DATA SOURCES/PROVIDERS
Factual level of protection	Expert knowledge based method [MPA management effectiveness questionnaire]	None	MPA managers from Natural England, Joint Nature Conservation Committee, Marine Management Organization, Inshore and Fisheries Conservation Authority, Agence d'aires marin protegee

Table 7. Description of the method/s of assessment used for examining factual level of protection for ecological coherence assessment in the Channel MPA network.

References

Hill, J., Pearce, B., Georgiou, L.,Pinnion, J. and Gallyot, J. 2010. *Meeting the MPA Network Principle of Viability: Feature specific recommendations for species and habitats of conservation importance*. Natural England Commissioned Reports, Number 043.

IUCN World Commission on Protected Areas (IUCN-WCPA) (2008). *Establishing Marine Protected Area Networks—Making It Happen.* IUCN-WCPA, National Oceanic and Atmospheric Administration and The Nature Conservancy. Washington, D.C.

Jackson, E.L., Hiscock, K., Evans, J., Seeley, B. and Lear, D. 2008. Investigating the existing coverage and subsequent gaps in protection and providing guidance on representativity and replication for a coherent network of Marine Protected Areas in England's territorial waters. Plymouth: Marine Life Information Network (MarLIN), Marine Biological Association of the UK. Natural England Commissioned Reports, Number 018.

NE and JNCC. Natural England and the Joint Nature Conservation Committee. 2010. Marine conservation zone project: Ecological network guidance, 66pp

OSPAR, 2007. OSPAR Convention for the protection of the marine environment of the Northeast Atlantic, Meeting of the Intersessional Group on Marine Protected Areas, Secretariat, London, 5–7 Feb. 2007. Rapid Self-assessment Checklist for Ecological Coherence of the OSPAR Network of Marine Protected Areas. ICG-MPA 07/03/02-rev.

OSPAR. Convention for the Protection of the Marine Environment of the Northeast Atlantic. 2008. *Background document on three initial spatial tests used for assessing the ecological coherence of the OSPAR MPA network*. OSPAR Biodiversity Series, 360. Available from: http://www.ospar.org/documents/dbase/publications/p00360_3_initial_tests_ospar_mpa_network%20.pdf

Roberts, C.M., Branch, G., Bustamante, R.H., Castilla, J.C., Dugan , J., Halpern, B.S., Lafferty, K.D., Leslie, H., Lubchenco, J., McArdle, D., Ruckelshaus, M. and Warner, R.R. 2003. Application of ecological criteria in selecting marine reserves and developing reserve networks. *Ecological Applications*, 13(1): S215-S228.

Roberts, C.M., Hawkins, J.P., Fletcher, J., Hands, S., Raab, K. and Ward, S. 2010*. Guidance on the size and spacing of Marine Protected Areas in England*. Natural England Commissioned Report NECR037. Available from: publications.naturalengland.org.uk/file/73037

Rondinini, C. 2010. Meeting the MPA network design principles of representation and adequacy: developing species-area curves for habitats. JNCC Report *No. 439.*

Shanks, A.L., Grantham, B.A. and Carr, M.H. 2003. Propagule dispersal distance and the size and spacing of marine reserves*. Ecological Applications*, 13: S159-S169.

Shanks, A.L. 2009. Pelagic larval duration and dispersal distance revisited. *Biological Bulletin,* 216: 373–385.

Shanks, A.L., Grantham, B.A. and Carr, M.H. 2003. Propagule dispersal distance and the size and spacing of marine reserves*. Ecological Applications*, 13: S159-S169.

Shanks, A.L. 2009. Pelagic larval duration and dispersal distance revisited. *Biological Bulletin,* 216: 373–385.

PANACHE

Protected Area Network Across the Channel Ecosystem

PANACHE is a project in collaboration between France and Britain. It aims at a **better protection** of the Channel marine environment through the **networking** of existing marine protected areas.

The project's five objectives:

- **Assess** the existing marine protected areas network for its ecological coherence.
- **Mutualise** knowledge on monitoring techniques, share positive experiences.
- **Build** greater coherence and foster dialogue for a better management of marine protected areas.
- **Increase** general awareness of marine protected areas: build common ownership and stewardship, through engagement in joint citizen science programmes.
- **Develop** a public GIS database.

France and Great Britain are facing similar challenges to protect the marine biodiversity in their shared marine territory: PANACHE aims at providing **a common, coherent and efficient reaction**.

PANACHE est un projet franco-britannique, visant à une **meilleure protection** de l'environnement marin de la Manche par la **mise en réseau** des aires marines protégées existantes.

Les cinq objectifs du projet :

- **Étudier** la cohérence écologique du réseau des aires marines protégées.
- **Mutualiser** les acquis en matière de suivi de ces espaces, partager les expériences positives.
- **Consolider** la cohérence et encourager la concertation pour une meilleure gestion des aires marines protégées.
- **Accroître** la sensibilisation générale aux aires marines protégées : instaurer un sentiment d'appartenance et des attentes communes en développant des programmes de sciences participatives.
- **Instaurer** une base de données SIG publique.

France et Royaume-Uni sont confrontés à des défis analogues pour protéger la biodiversité marine de l'espace marin qu'ils partagent : PANACHE vise à apporter **une réponse commune, cohérente et efficace**.

- www.panache.eu.com –

Financed by / financé par

france (manche channel) england interreg

European Regional Development Fund
The European Union, investing in your future

Fonds européen de développement régional
L'Union européenne investit dans votre avenir

PANACHE Project partners / Partenaires du projet PANACHE

Agence des aires marines protégées

The Wildlife Trusts Cornwall

Dorset Wildlife Trust

Dunkerque Port – Grand Port Maritime de Dunkerque – www.dunkerque-port.fr – facebook.com/dunkerqueport

Hampshire & Isle of Wight Wildlife Trust – Protecting wildlife. Inspiring people.

Ifremer

Sussex IFCA – Inshore Fisheries and Conservation Authority

Kent Wildlife Trust

Marine Institute – University of Plymouth

Nausicaá – La Mer est sur Terre

rspb – giving nature a home

WWF