
VALMER
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Protected Area Network Across
the Channel Ecosystem
THE ENGLISH CHANNEL
one ecosystem two projects
FINAL CONFERENCE -MARCH 17th-18th 2015 - TORQUAY

PANACHE

Protected Area Network Across the Channel Ecosystem

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Assessing the Ecological Coherence of the Channel MPA Network

Project Framework

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PANACHE – Protected Area Network across the Channel Ecosystem

Work packages

WP1
Assess the existing MPA network and its ecological coherence

WP2
Coherent approach in the monitoring of MPAs

WP3
Consistent management plan framework in the Channel region

WP4
Awareness of MPAs through engagement in joint citizen science programs

WP5
GIS database portal

PANACHE Study Area

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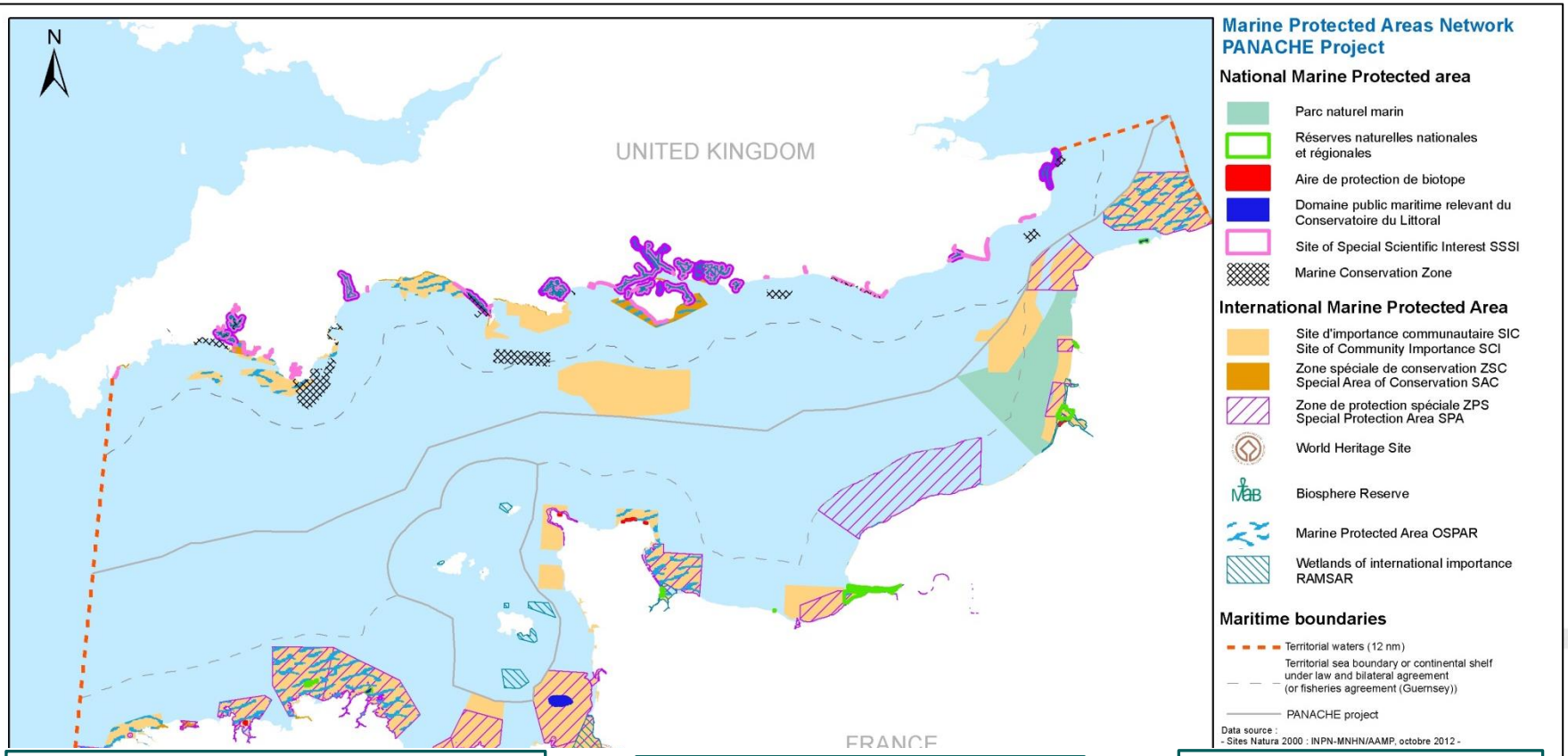

France

- Parcs Naturels Marins **(2)**
- Réserves Naturelles **(9)**
- Arrêtés préfectoraux de protection du biotope **(4)**
- Parties maritimes du domaine relevant du Conservatoire de l'espace littoral et des rivages lacustres **(3)**

Common designations

(77)	Natura 2000 sites (SACs & SPAs)	**(25)**
(18)	OSPAR sites	**(13)**
(3)	RAMSAR sites	**(10)**

England

Sites of Special Scientific Interest **(39)**
Marine conservation Zones **(12)**

Channel Islands

RAMSAR sites **(7)**

222 MPAs assessed

WHY ECOLOGICAL COHERENCE?

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- MPAs typically established individually, over varying timescales and with different objectives

International commitments:

- **CBD:** Aïchi targets, beyond the 10%: …*ecologically representative and well connected systems of protected areas…*
- **Natura 2000**: …*A coherent European ecological network of special areas of conservation shall be set up under the title Natura 2000…* (Habitats Directive)
- **OSPAR**: … *(the network of OSPAR MPAs) by 2012 it should be ecologically coherent, and include sites representative of all biogeographic regions in the OSPAR maritime area...*

What is Ecological Coherence?

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- A marine protected area (MPA) network is a group of MPAs that when connected helps protect the habitats and species within them to a greater degree than a single MPA
- Features are protected in multiple locations

- Ecological coherence assessments are one way of determining if MPA networks are ecologically sound
- First step in MPA networks being effective

- An ecologically coherent MPA network (OSPAR, 2007):
  i. Interacts and supports the wider environment
  ii. Functions as a whole so that individual MPAs benefit from one another
  iii. Is resilient to changing conditions

What is a coherent MPA network and how do we assess it?

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Criteria	A network of MPAs that...	Assessment
Representativity	...contains representative samples of the features at risk...	Presence/absence
Replication	...has features replicated across the network...	Number
Adequacy	...has large enough habitats...	Area of habitat
Viability	...is large enough to be viable...	MPA size, area of habitat
Connectivity	...is well connected...	Areas of ecological importance: source, sinks, stepping-stones, distance ...

PANACHE ECOLOGICAL COHERENCE ASSESSMENT

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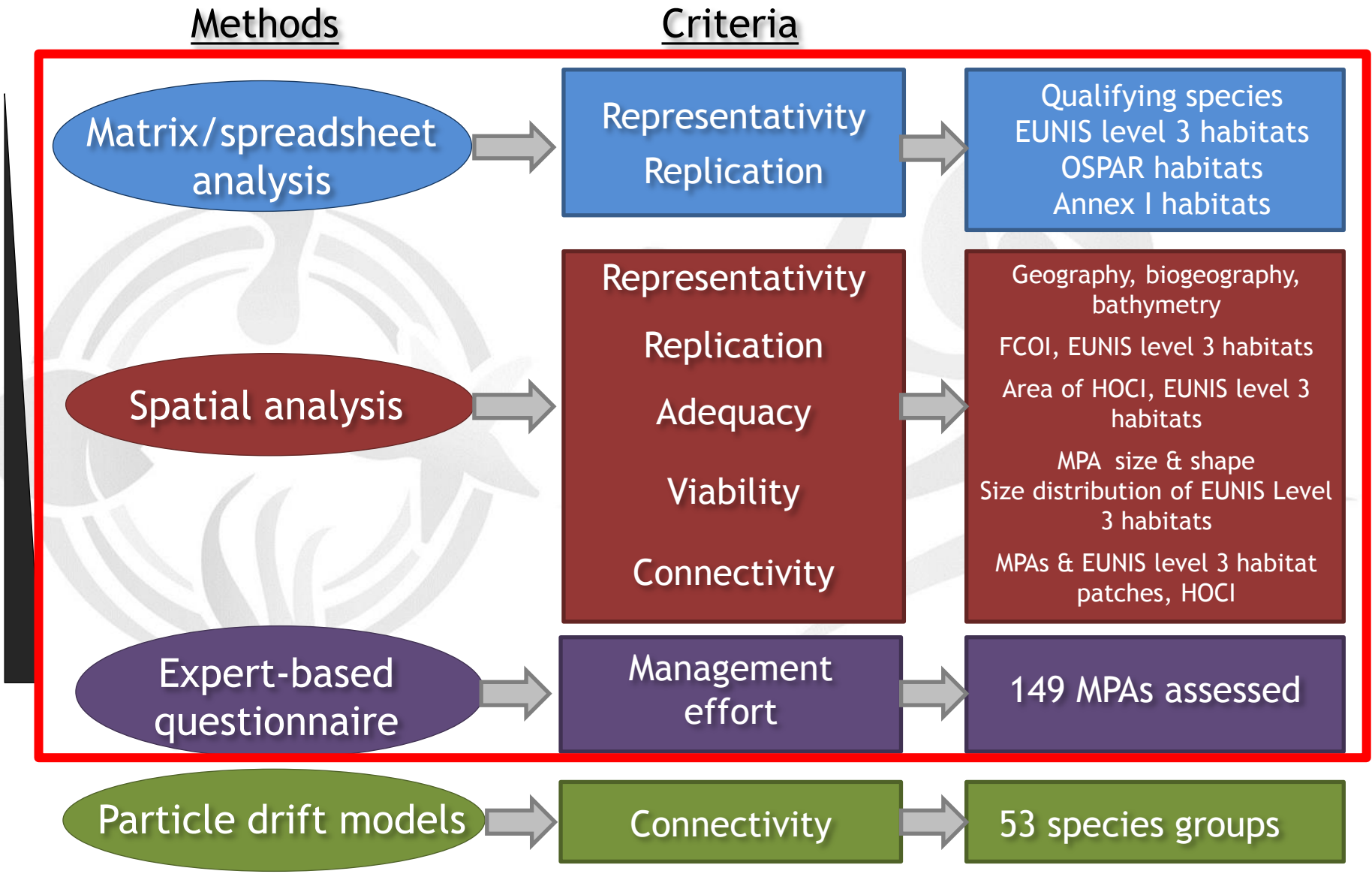

DATASETS

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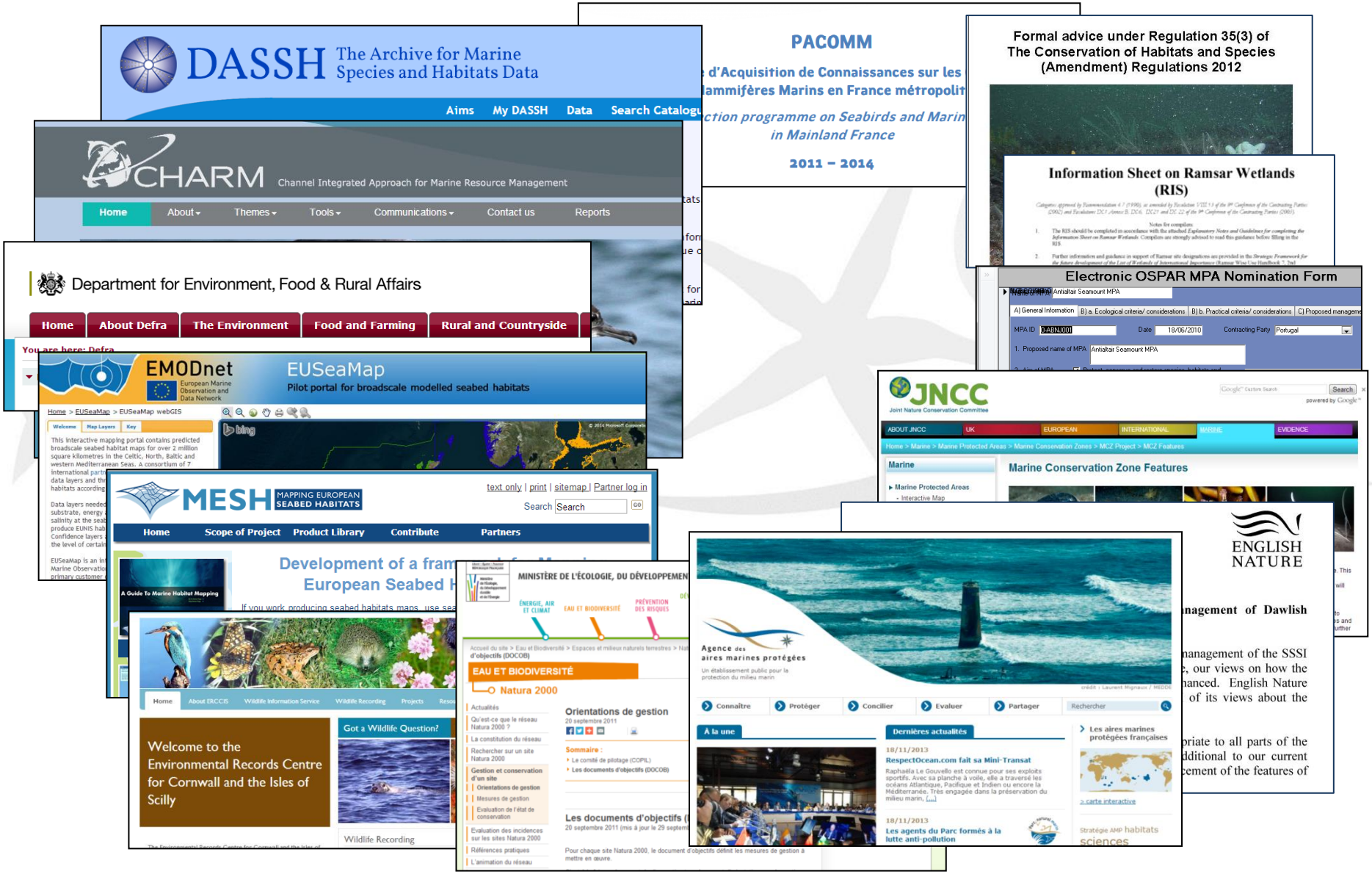
Habitats and species selected based on availability of data



THRESHOLDS

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Representativity[1]

- 10% of marine areas & biogeographic provinces

Replication[2]

- 2 replicates for EUNIS Level 3 habitats
- 3 replicates for OSPAR T&D habitats and species

Adequacy[3]

- Habitat-specific threshold values from Dandrini (2010)
- <20% of [illegible] tat question[illegible]

Thresholds can be applied at different levels:
- whole study area
- biogeographic province
- east and west Channel

Viability[4]

- Minimum MPA size of 0.1 km² & 10 km²
- Optimum MPA size of 10-100 km²

Connectivity – maximum distance[5]

- 40 km for EUNIS habitats
- 40, 45 & 50 km for Maerl beds, *Sabellaria* reefs & *Zostera* beds

[1]CBD (2010); [2]Jackson et al (2008); Roberts et al (2010); [3]HELCOM (2010); [4]Halpern & Warner (2003), Shanks et al (2003); [5]Roberts et al (2010), Hill et al (2010)

Broadscale Analyses

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Geographical Representativity

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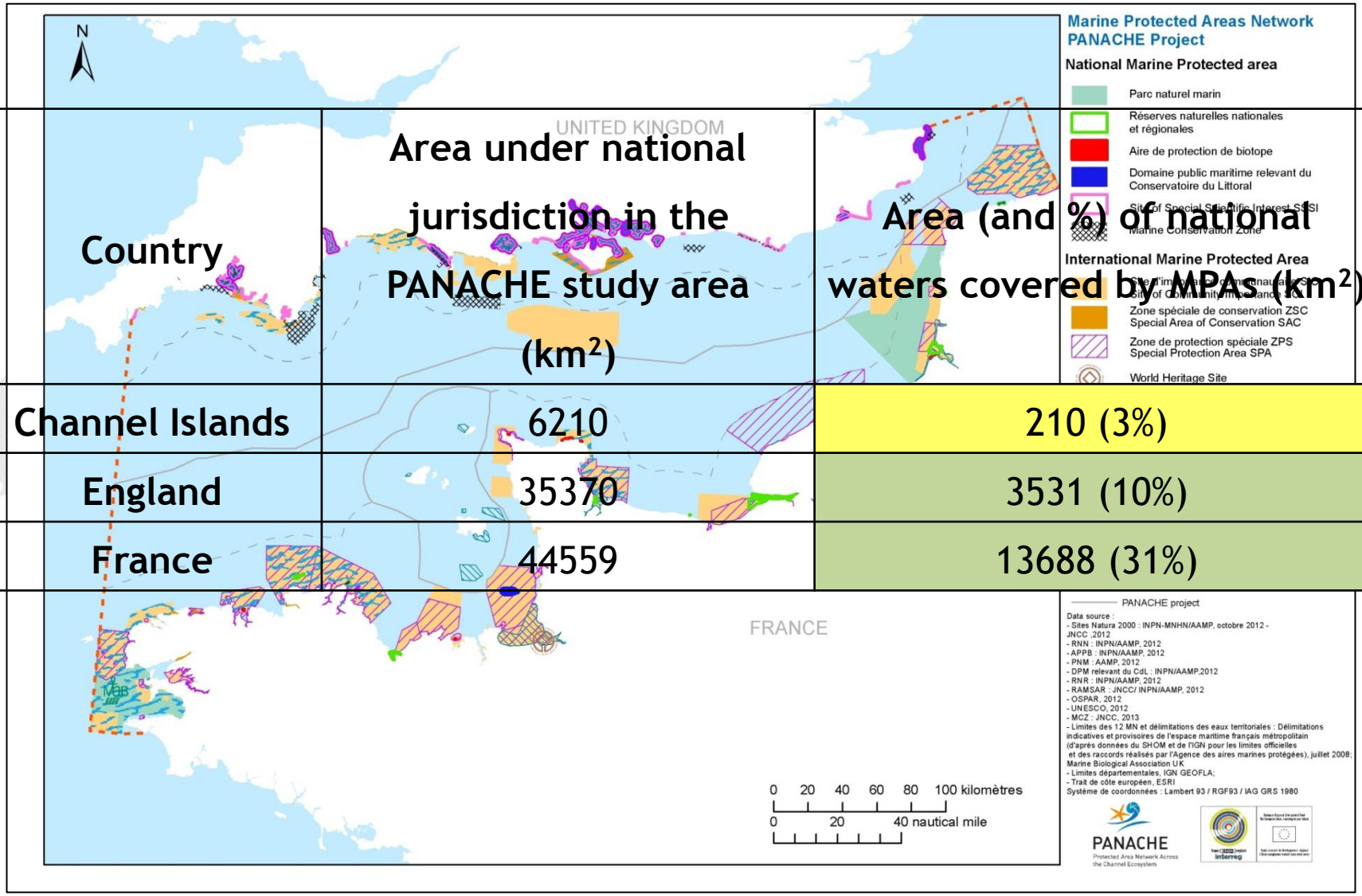
- 20% of study area is enclosed within MPAs

Country	Area under national jurisdiction in the PANACHE study area (km^2)	Area (and %) of national waters covered by MPAs (km^2)
Channel Islands	6210	210 (3%)
England	35370	3531 (10%)
France	44559	13688 (31%)



Biogeographical Representativity (Dinter's Classification)

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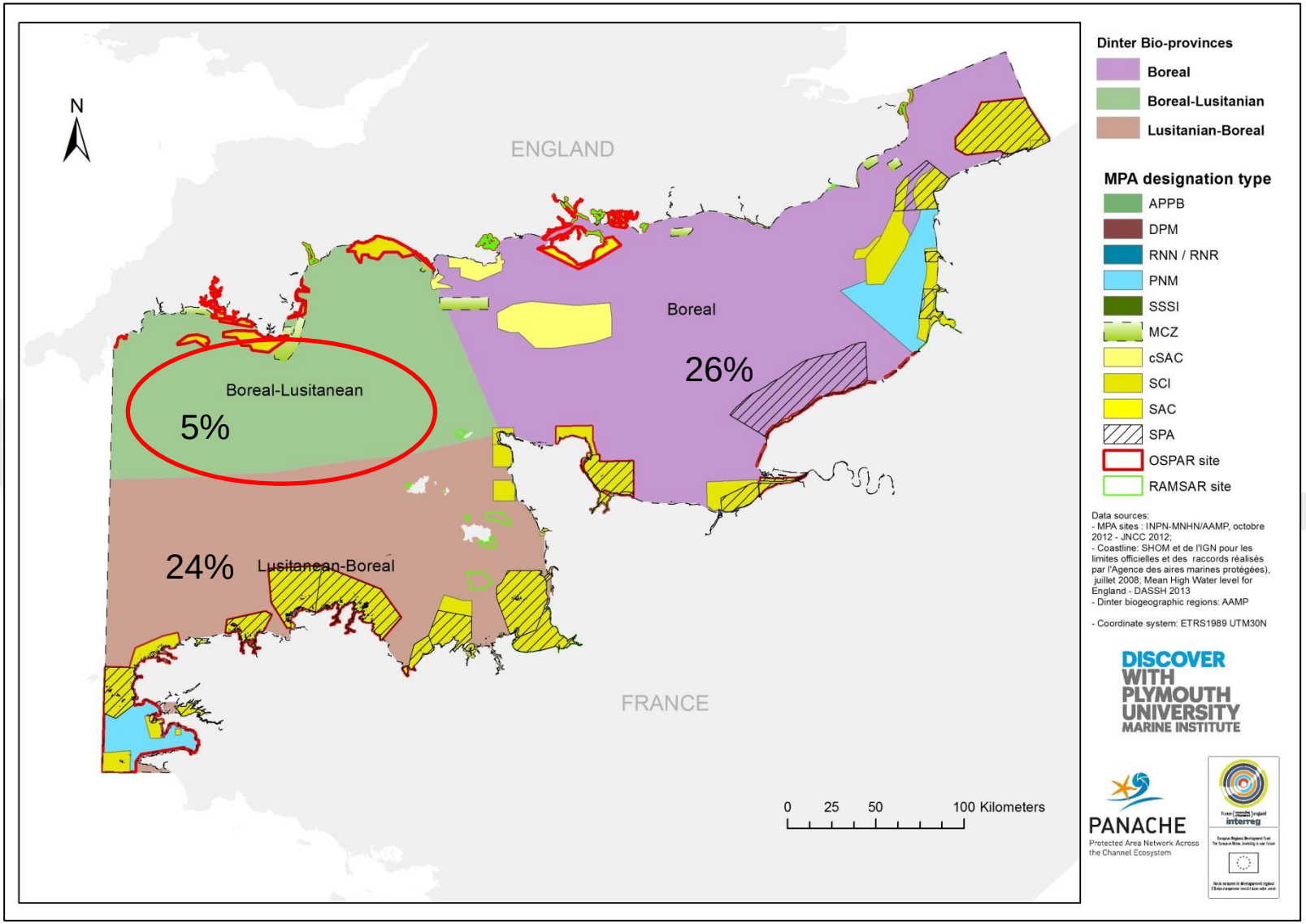

Bathymetric Representativity

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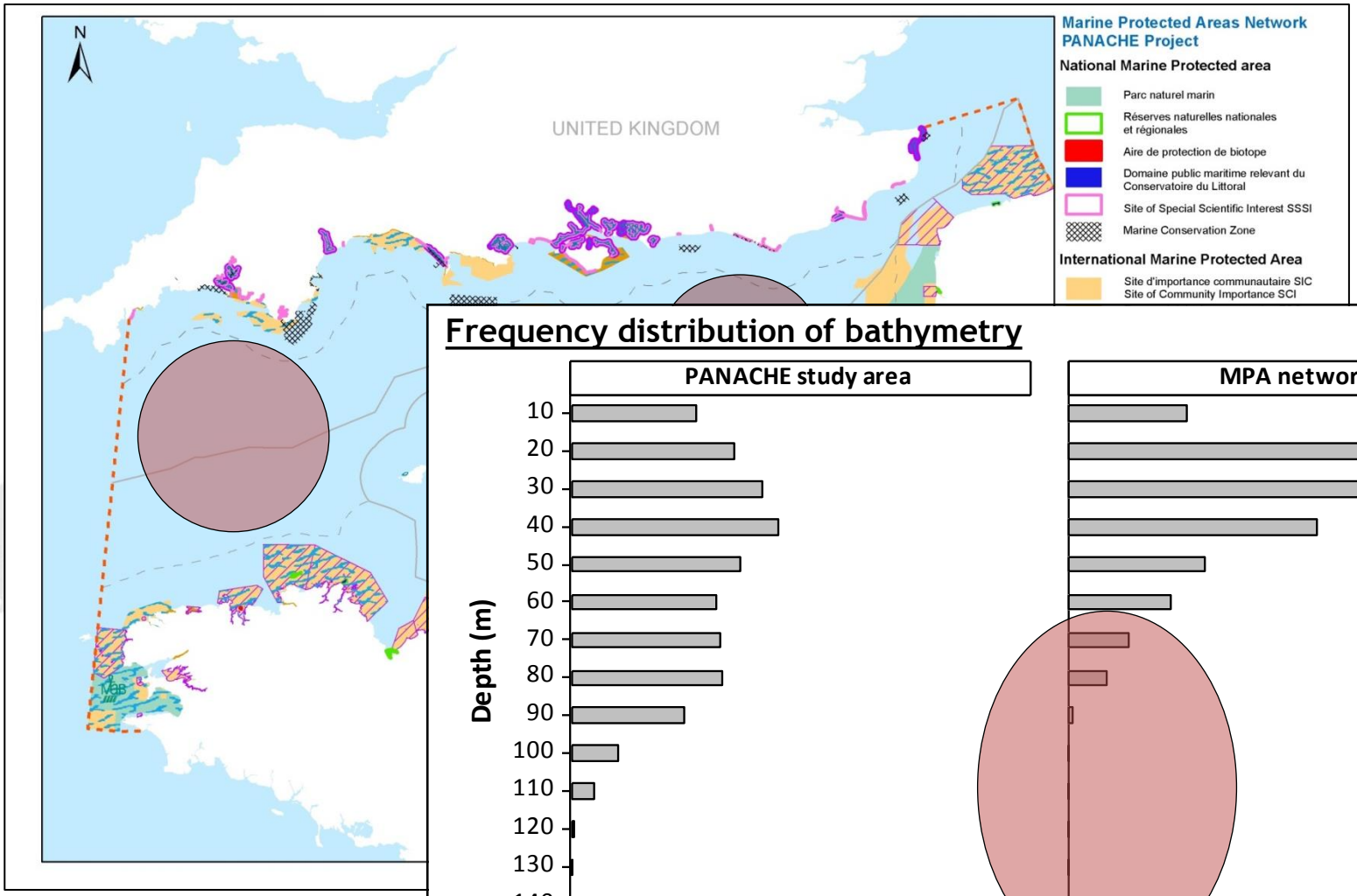
218 inshore MPAs, just 4 offshore MPAs



Only 14% of network occurs in water deeper than 60 m

Replication of Habitats

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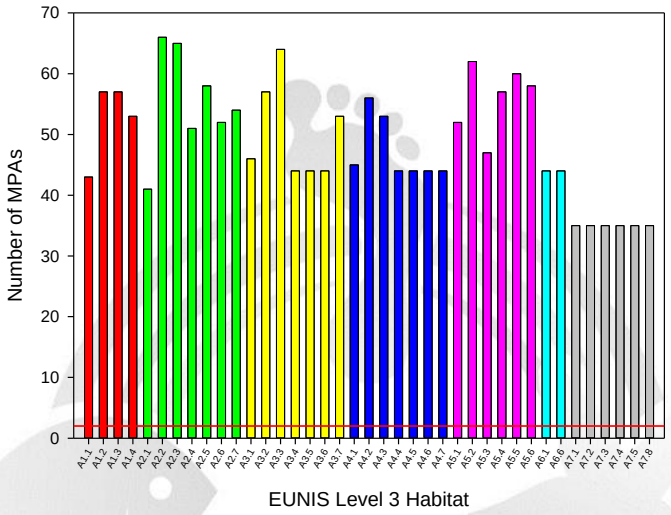
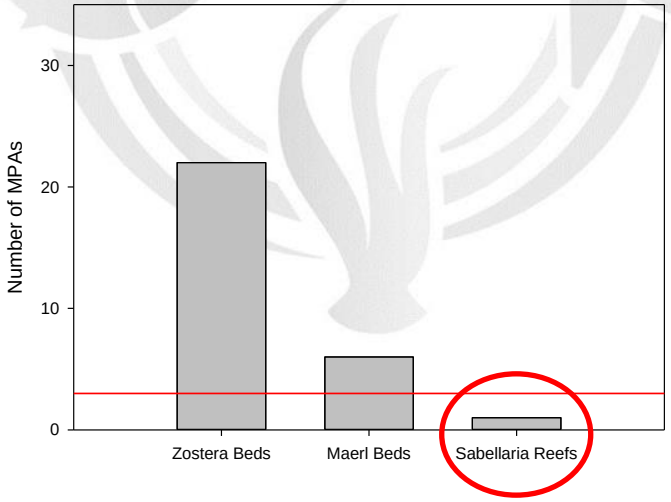
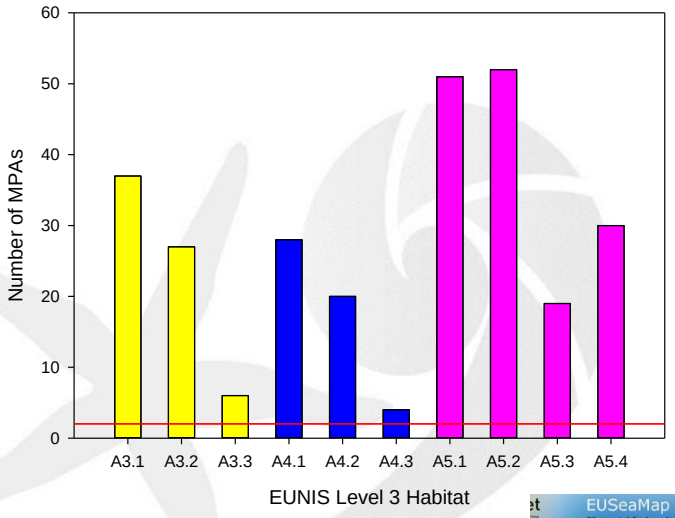
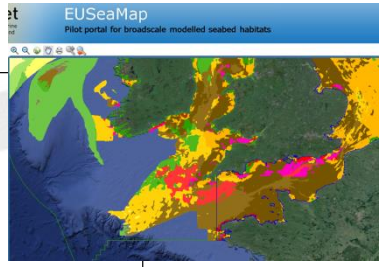
Matrix Analysis

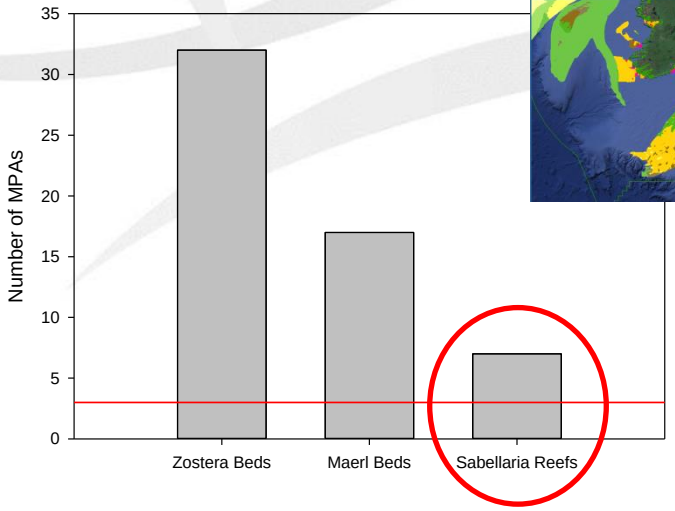




Spatial Analysis







Replication of Species

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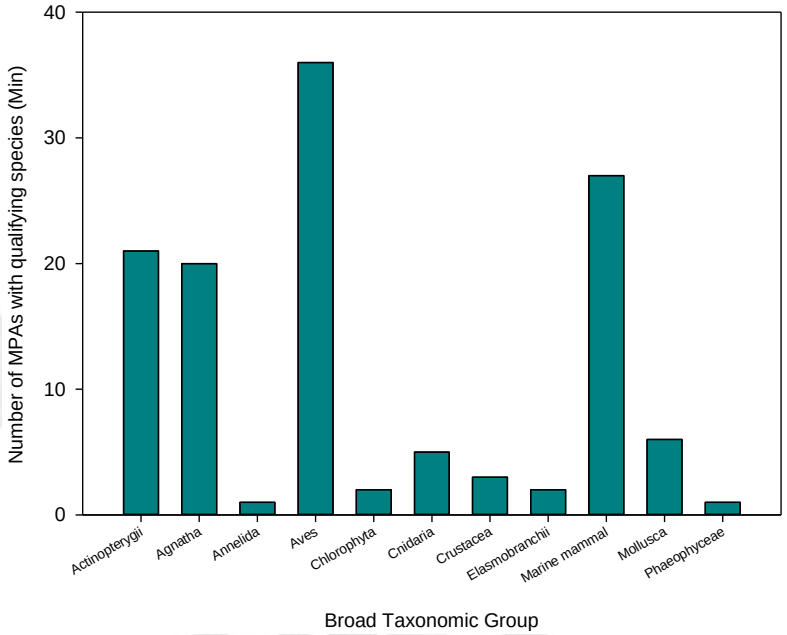
Matrix Analysis

- 121 qualifying species assessed



- 68% of species listed in 3 or more MPAs, 32% listed <2 MPAs

Spatial Analysis

- 7 species of conservation importance assessed

Species	Number of occurrences in MPAs in England		Total occurrence in MPAs
	West Channel	East Channel	
Arctica islandica	3	1	4
Eunicella verrucosa	6	1	7
Hippocampus guttulatus	2	2	4
Hippocampus hippocampus	3	3	6
Homarus gammarus	7	7	14
Mytilus edulis	2	3	5
Ostrea edulis	5	12	17

- All 7 species occur in 4 or more MPAs

- Pink sea fan (*Eunicella verrucosa*) recorded in 7 MPAs using spatial analysis, but only listed in conservation objectives of 3 MPAs

Adequacy: Habitat Coverage

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60% of EUNIS Level 3 habitats have >30% of area within network

Habitat	Area inside PANACHE study area (km^2)	Area (and %) of habitat inside MPA network (km^2)	Recommended habitat coverage (%) to maintain 80% of species	Recommended habitat coverage (%) to maintain 90% of the species
High energy infralittoral rock	1993	1000 (50%)	31	57
Moderate energy infralittoral rock	1055	446 (42%)	32	59
Low energy infralittoral rock	10	6 (55%)	32	59
High energy circalittoral rock	1659	546 (33%)	25	52
Moderate energy circalittoral rock	9996	1389 (14%)	28	55
Low energy circalittoral rock	601	1.5 (0.3%)	32	58
Sublittoral coarse sediment	44971	5866 (13%)	33	59
Sublittoral sand	9652	3583 (37%)	30	57
Sublittoral mud	1099	361 (33%)	30	57
Sublittoral mixed sediments	13079	3152 (24%)	32	58

VIABILITY: SIZE OF MPAS

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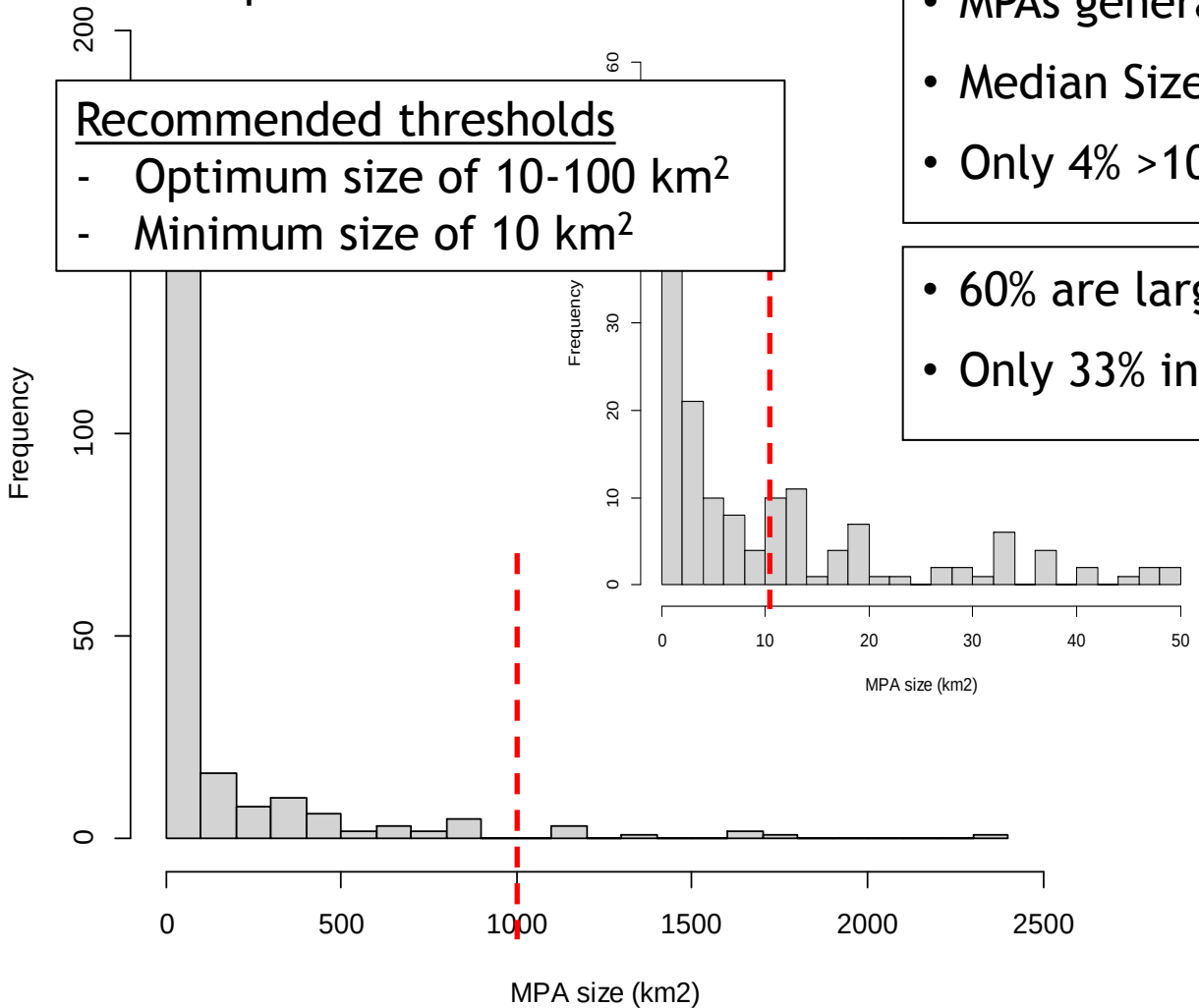
- A viable MPA - large enough to encompass most naturally occurring ecological processes & home ranges of species – self-perpetuating (dispersal/recruitment)
- Hill et al (2010) suggest MPAs >1000 km^2 are necessary for species with long-distance dispersal



- MPAs generally small
- Median Size = 15.14 km^2
- Only 4% >1000 km^2

- 60% are larger than 10 km^2
- Only 33% in optimal range 10-100 km^2

* Hill et al (2010). *Meeting the MPA Network Principle of Viability: Feature specific recommendations for species and habitats of conservation importance*. Natural England Commissioned Reports, Number 043.

Viability: Size of Habitat Patches

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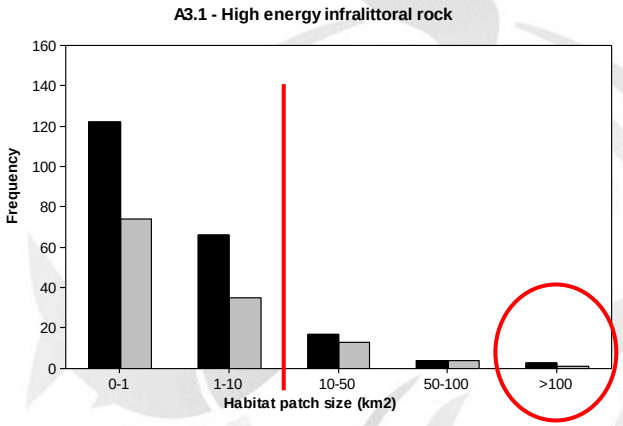
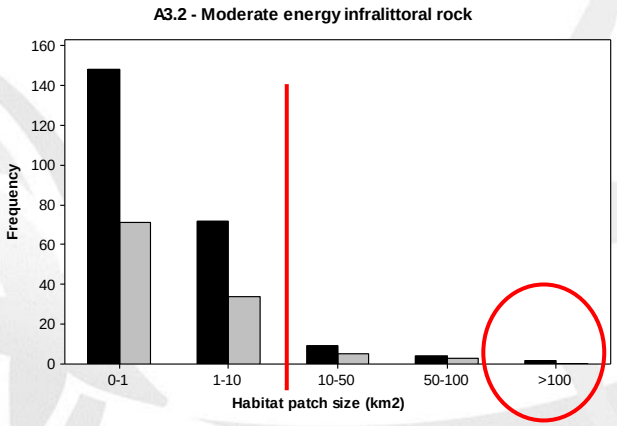
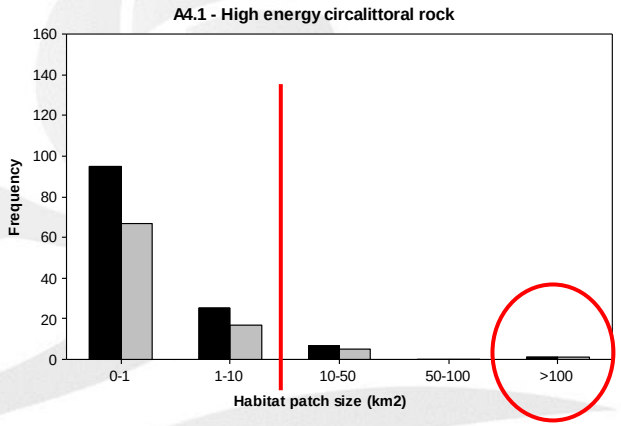
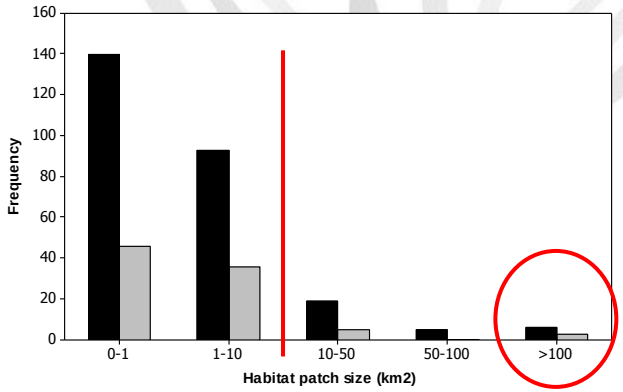
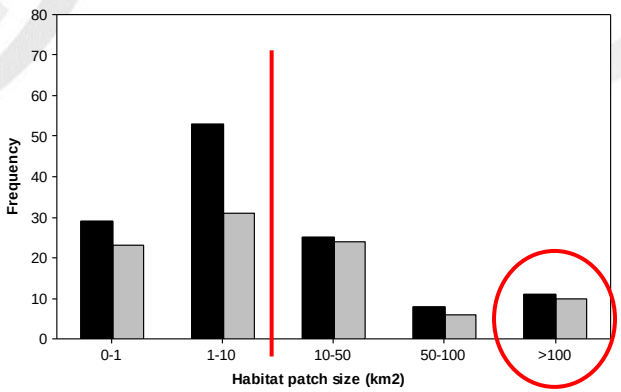
- 79% of habitat patches in the network are <10 km^2 in size – only likely to support low mobility species
- Only 4% of habitat patches within the MPA network are >100 km^2, but this represents 59% of habitat patches of this size in study area

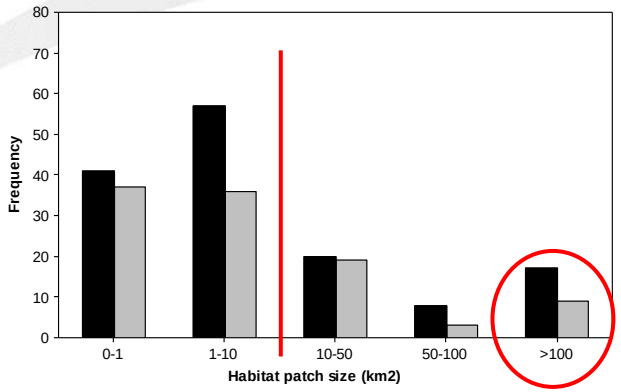












= Within study area = Within MPA network

Fine Scale Analyses

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Areas of Ecological Importance: Spawning Areas (Sepia officinalis)

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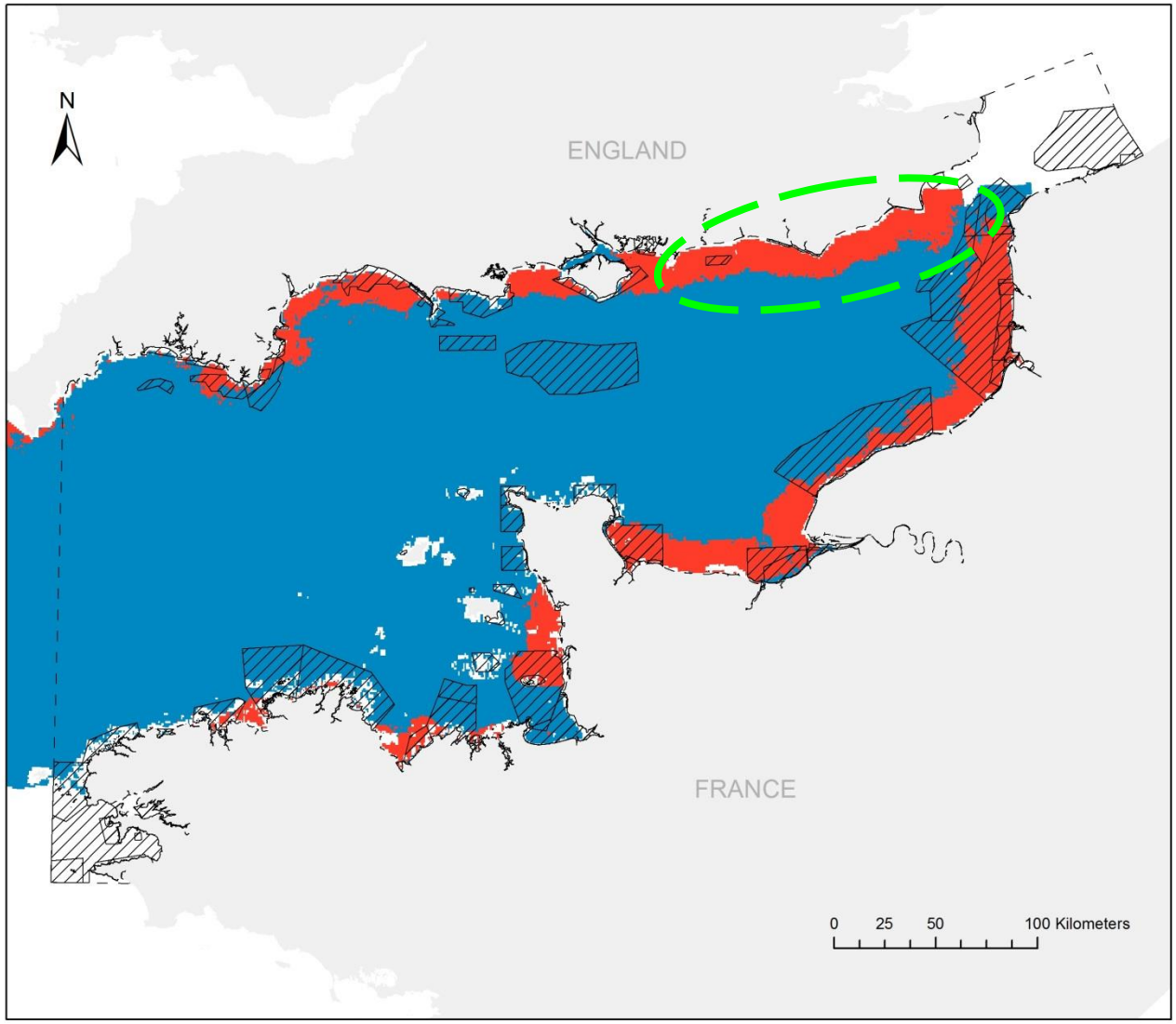

Sepia officinalis predicted spawning habitat suitability

- Unsuitable habitat
- Suitable habitat

PANACHE study area

Channel MPA network

Data sources:
- MPA sites : INPN-MNHN/AAMP, octobre 2012; JNCC 2012
- Coastline: SHOM et de l'IGN pour les limites officielles et des raccords réalisés par l'Agence des aires marines protégées), juillet 2008; Mean High Water level for England - DASSH 2013
- Sepia officinalis predicted habitat data: Dr. Isobel Bloor
- PhD Thesis - The ecology, ditribution and spawning behaviour of the commercially important common cuttlefish (Sepia officinalis) in the inshore waters of the English channel. Plymouth University.

- Coordinate system: ETRS1989 UTM30N

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Areas of Ecological Importance: Seabird Breeding Populations

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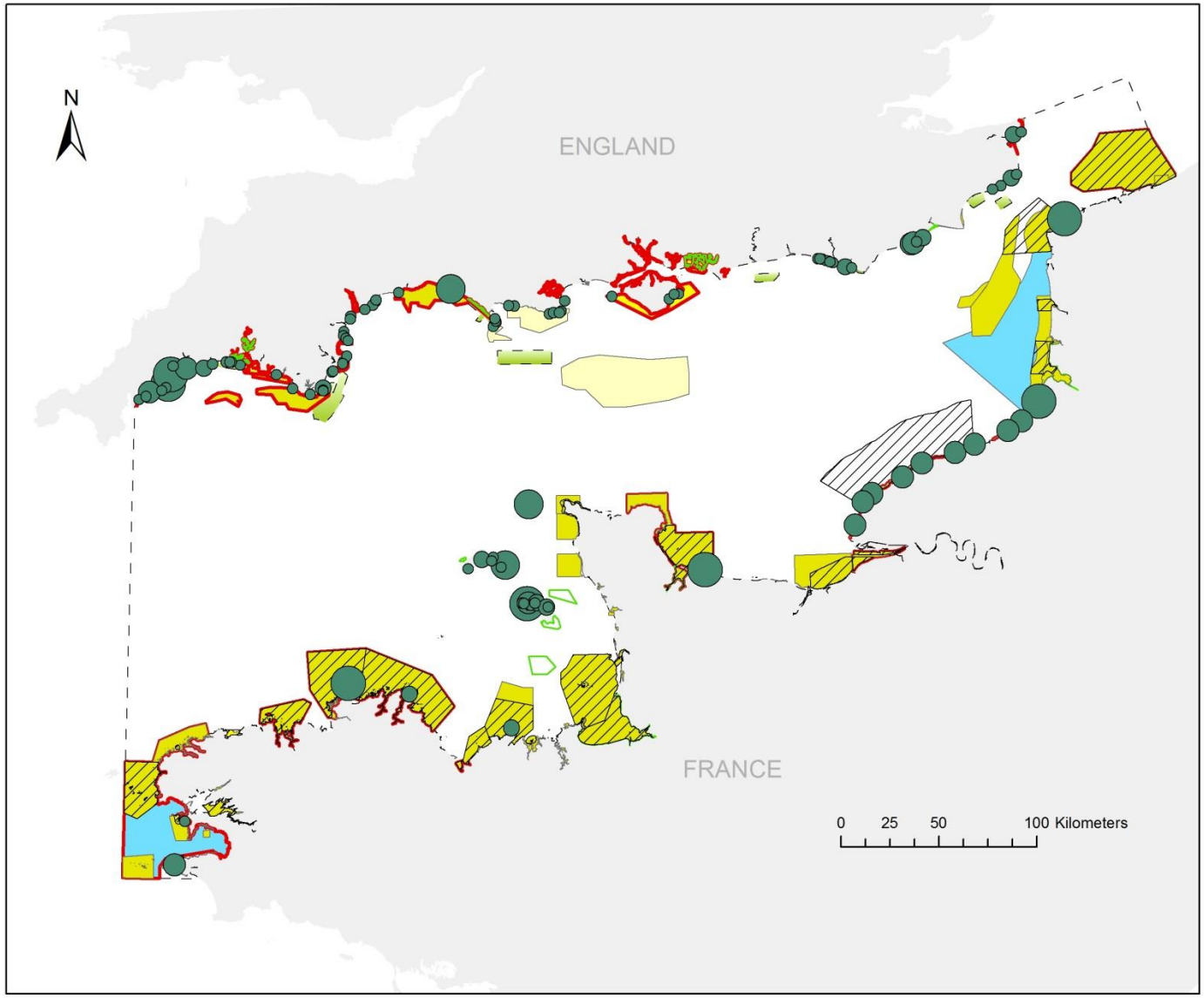

Fulmarus glacialis

Number of breeding pairs

1 - 10
11 - 20
21 - 30
31 - 50
51 - 150

MPA designation type

- APPB
- DPM
- RNN / RNR
- PNM
- SSSI
- MCZ
- cSAC
- SCI
- SAC
- SPA
- OSPAR site
- RAMSAR site
- PANACHE study area

Data sources:
- MPA sites : INPN-MNHN/AAMP, octobre 2012 - JNCC 2012;
- Coastline: SHOM et de l'IGN pour les limites officielles et des raccords réalisés par l'Agence des aires marines protégées), juillet 2008; Mean High Water level for England - DASSH 2013
- Fulmarus glacialis data: AAMP, Seabirds2000 (JNCC)

- Coordinate system: ETRS1989 UTM30N

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AERIAL SURVEYS (PACOMM)

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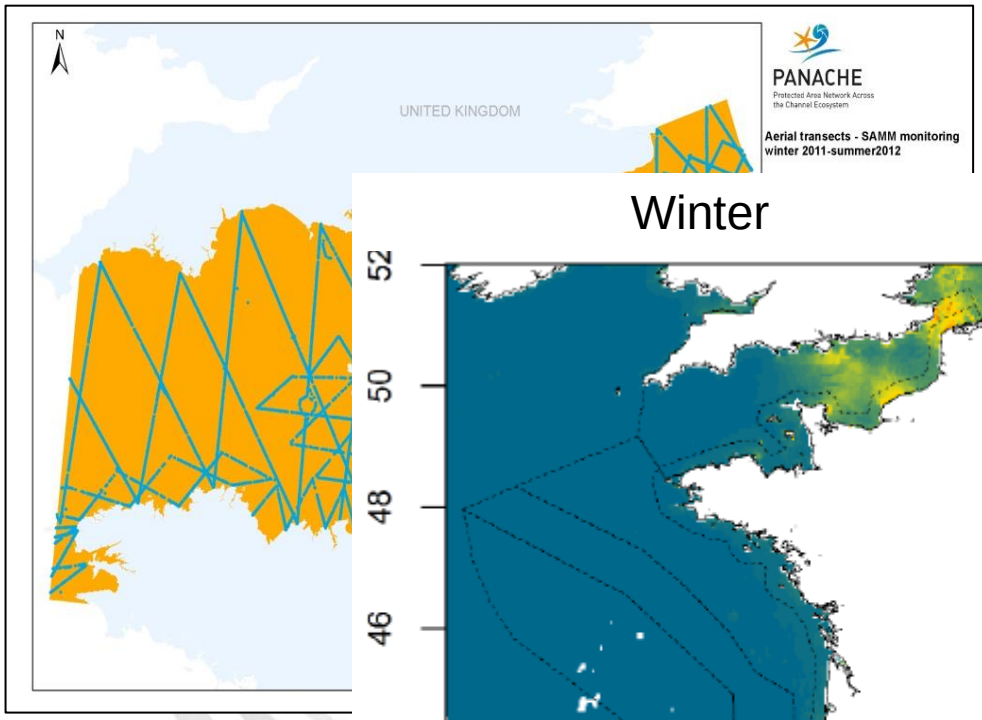
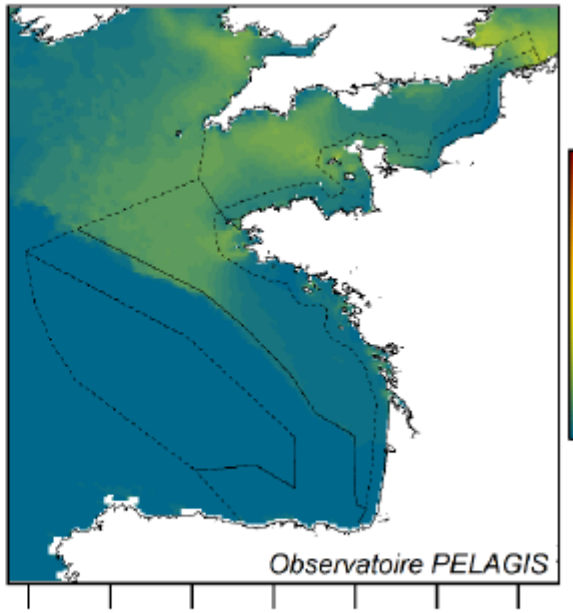
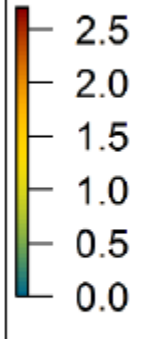
Winter 2011-2012
Summer 2012
Seabirds



Winter

Summer





Habitat modeling of harbour porpoise

Aerial Surveys: Marine Mammals

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Winter	% of observation indices within MPAs	Total observation indices within MPAs	Total observation indices in PANACHE study region
Rorqual	0%	0	8740
Pilot whales	13%	3508	27281
Harbour porpoise	32%	368308	1156736
Seals	34%	25443	75785
Small oceanic dolphins	9%	29988	339597
Common bottlenose dolphin	5%	2096	42507

Summer	% of observation indices within MPAs	Total observation indices within MPAs	Total observation indices in PANACHE study region
Rorqual	21%	2747	13254
Pilot whales	15%	5114	34218
Harbour porpoise	13%	184367	1447025
Seals	18%	19183	106731
Small oceanic dolphins	18%	6531	36012
Common bottlenose dolphin	20%	10739	53789

Aerial Surveys: Harbour Porpoise

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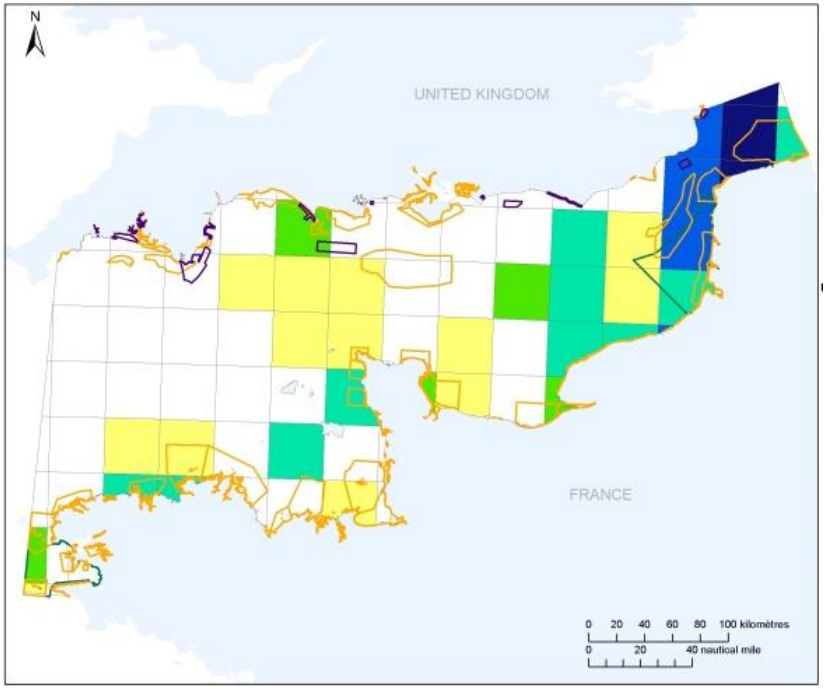
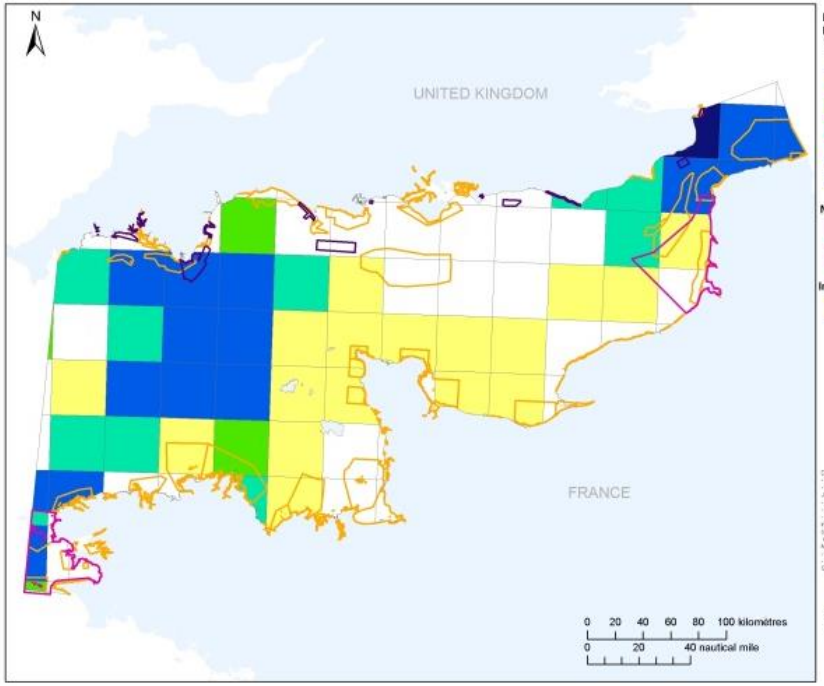
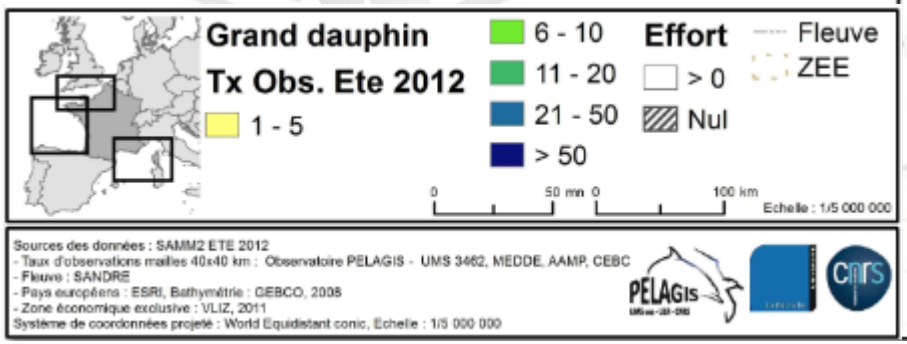
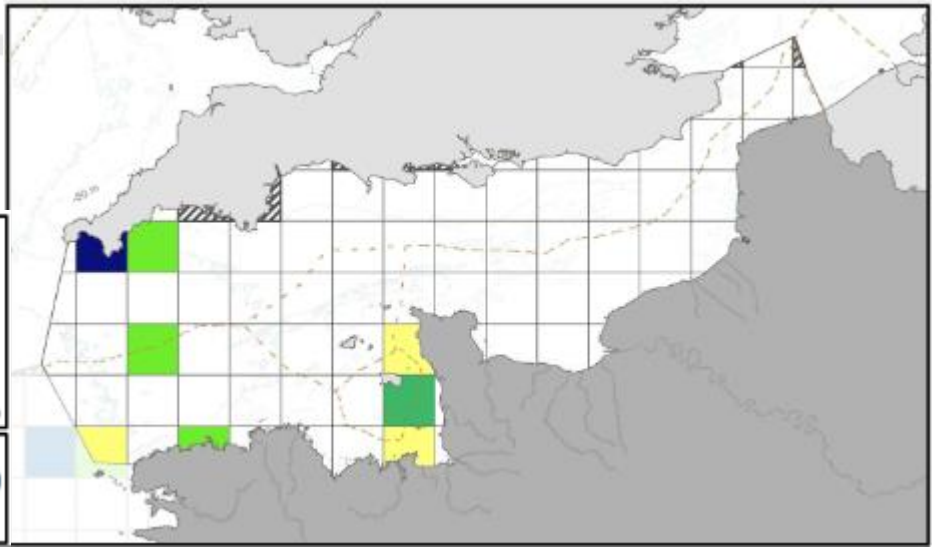




Common bottlenose dolphin





Aerial Surveys: Seabirds

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Species	% of observation indices within MPAs		Total observation indices within MPAs		Total observation indices within PANACHE study region	
	Winter	Summer	Winter	Summer	Winter	Summer
Common Murre or Razorbill (Auks)	20%	8%	4867151	146483	24092998	1949361
Black-headed gull or Mediterranean Gull	26%	32%	1424472	471396	5448677	1456961
Great Skua	18%	24%	59544	30523	336540	126542
Northern Fulmar	11%	30%	204579	95682	1891327	321465
European Herring Gull or Yellow-legged Gull	31%	31%	733478	1573987	2379759	5026447
Great or Lesser Black-backed Gull	32%	23%	1031067	565222	3175239	2464538
Little Gull	37%	0%	185151	0	499627	14205
Storm Petrels	3%	13%	861	59341	29941	455409
Small Shearwaters	0%	11%	1	67013	11650	594243
Black-legged Kittiwake	13%	19%	1126481	66384	8350269	349044
Terns	35%	41%	16921	936253	48805	2261094
Northern Gannet	25%	15%	2981103	1594801	11731470	10996319

Aerial Surveys: Auks and Northern Gannet

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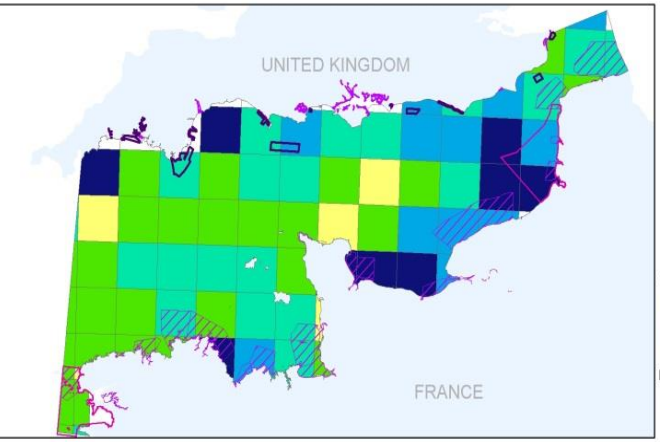


Encounter rates - winter 2011

Common Murres, Razorbills (auks)/ Guillemot de Troil, petit pinguin (alcidés)

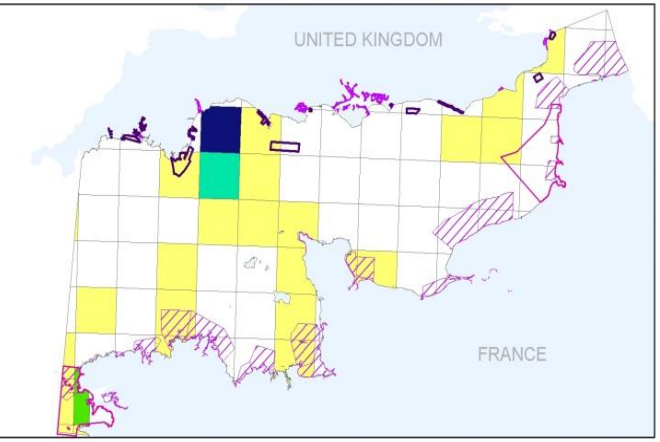
- 0 - 6
- 6 - 78
- 78 - 175
- 175 - 335
- 336 - 600
- 601 - 986

National Marine Protected area

- Marine Conservation Zone
- Parc naturel marin

International Marine Protected Area

- Zone de protection spéciale ZPS Special Protection Area SPA



Encounter rates - summer 2012

Data source
- PACOMM SAMM 1-SAMM2, UMS Pelagis, AAMP 2012
- Sites Natura 2000 : INPN-MNHN/AAMP, octobre 2012 - JNCC ,2012
- PNM : AAMP, 2012
- MCZ : ,JNCC, 2013
- Limites des 12 MN et délimitations des eaux territoriales : Délimitations indicatives et provisoires de l'espace maritime français métropolitain (d'après données du SHOM et de l'IGN pour les limites officielles et des raccords réalisés par l'Agence des aires marines protégées), juillet 2008, Marine Biological Association UK
- Limites départementales, IGN GEOFLA,
- Trait de côte européen, ESRI
Système de coordonnées : Lambert 93 / RGF93 / IAG GRS 1980

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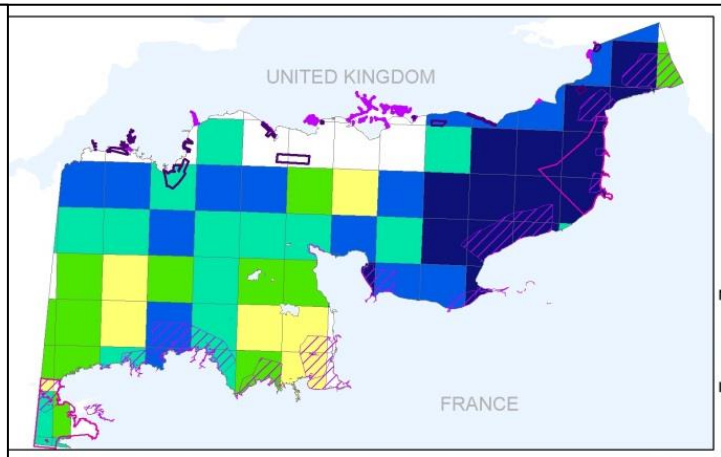
Agence des aires marines protégées



Encounter rates - winter 2011

Gannets/Fou de Bassan

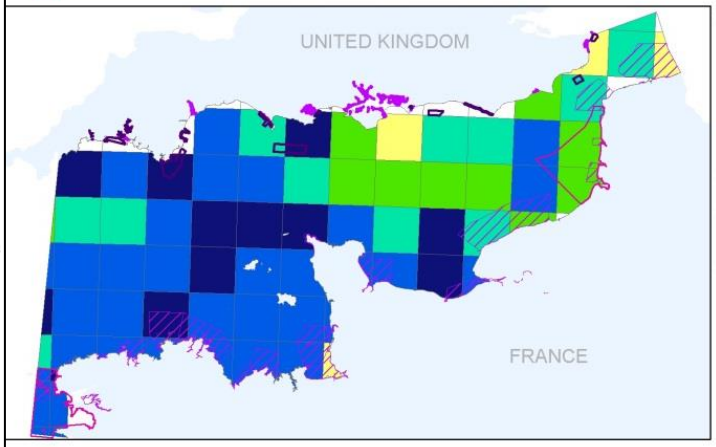
- 0 - 1
- 2 - 20
- 21 - 50
- 51 - 100
- 101 - 200
- 201 - 785

National Marine Protected area

- Marine Conservation Zone
- Parc naturel marin

International Marine Protected Area

- Zone de protection spéciale ZPS Special Protection Area SPA



Encounter rates - summer 2012

Data source
- PACOMM SAMM 1-SAMM2, UMS Pelagis, AAMP 2012
- Sites Natura 2000 : INPN-MNHN/AAMP, octobre 2012 - JNCC ,2012
- PNM : AAMP, 2012
- MCZ : ,JNCC, 2013
- Limites des 12 MN et délimitations des eaux territoriales : Délimitations indicatives et provisoires de l'espace maritime français métropolitain (d'après données du SHOM et de l'IGN pour les limites officielles et des raccords réalisés par l'Agence des aires marines protégées), juillet 2008, Marine Biological Association UK
- Limites départementales, IGN GEOFLA,
- Trait de côte européen, ESRI
Système de coordonnées : Lambert 93 / RGF93 / IAG GRS 1980

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Connectivity

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DISTANCE-BASED CONNECTIVITY

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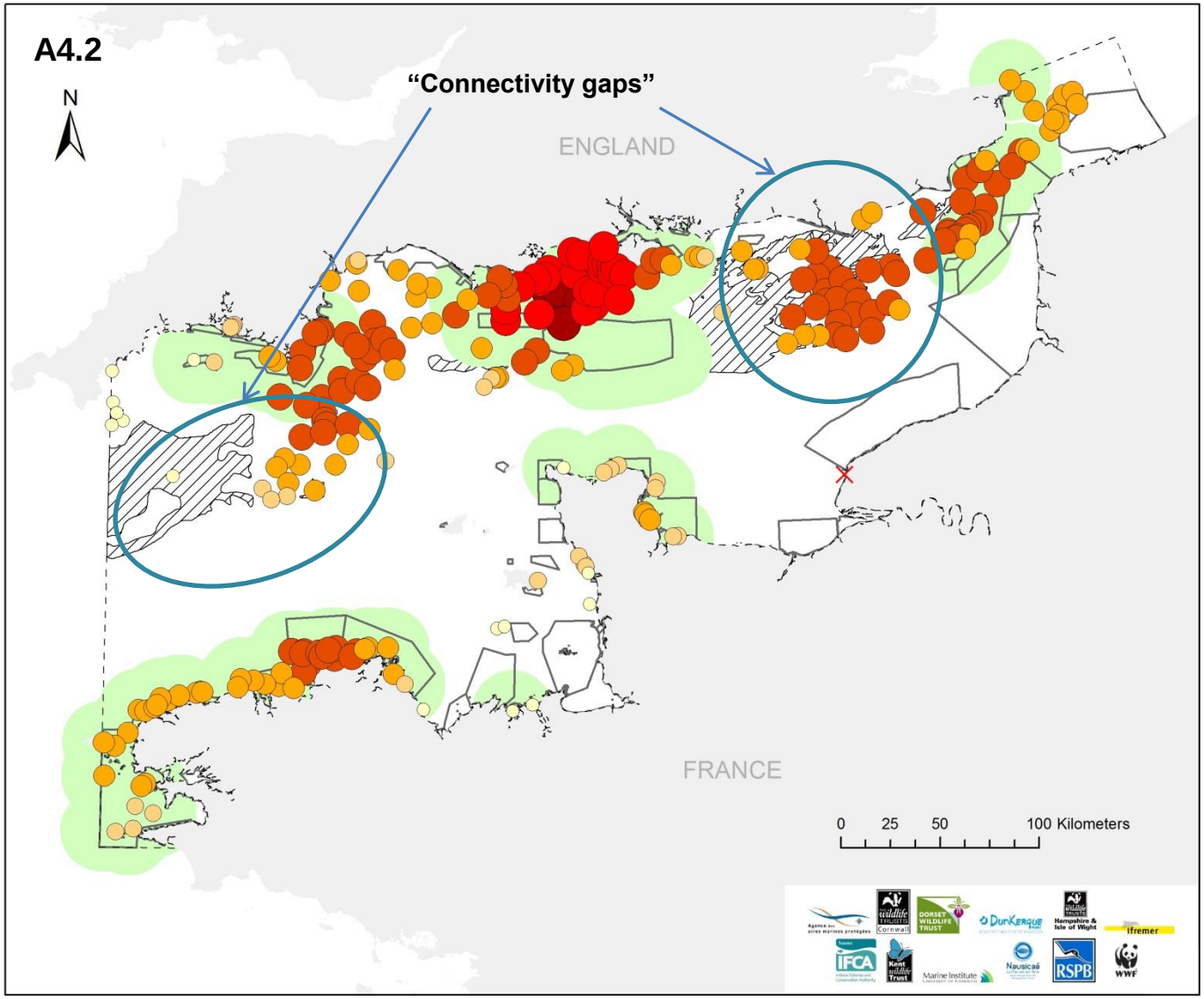

MPA CLUSTERING

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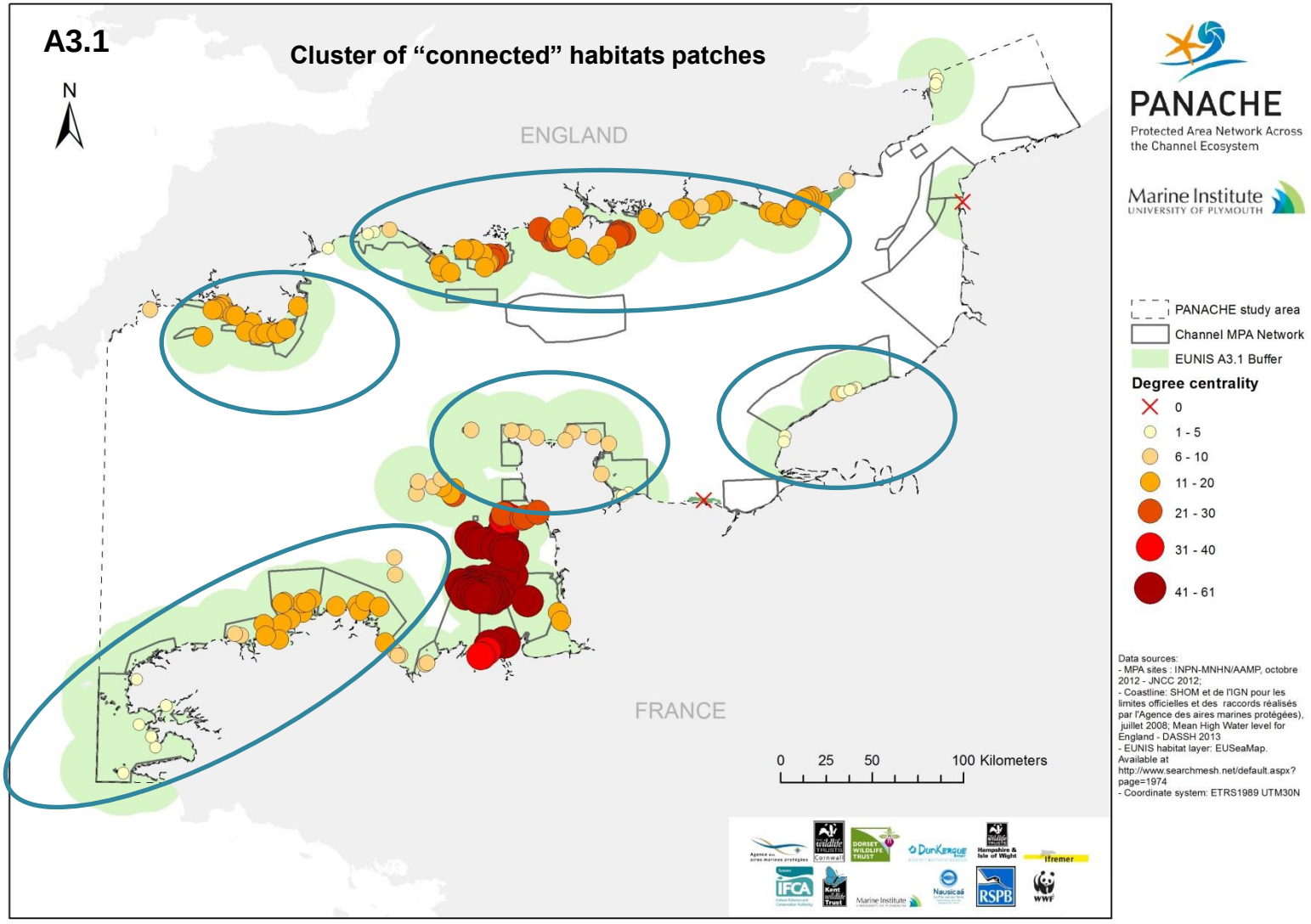

Gaps and Bias

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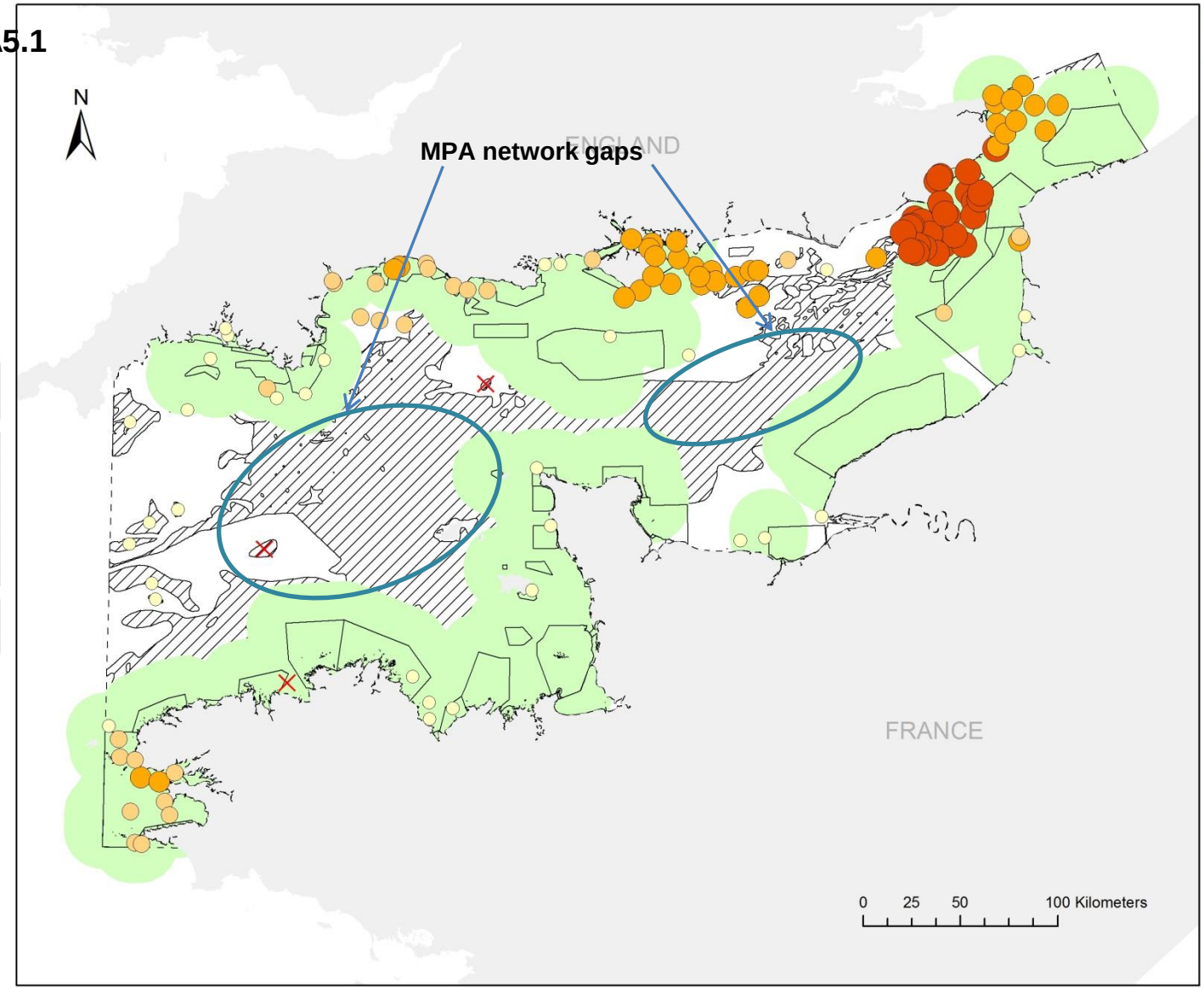
A5.1



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WHAT ABOUT REAL HABITATS?

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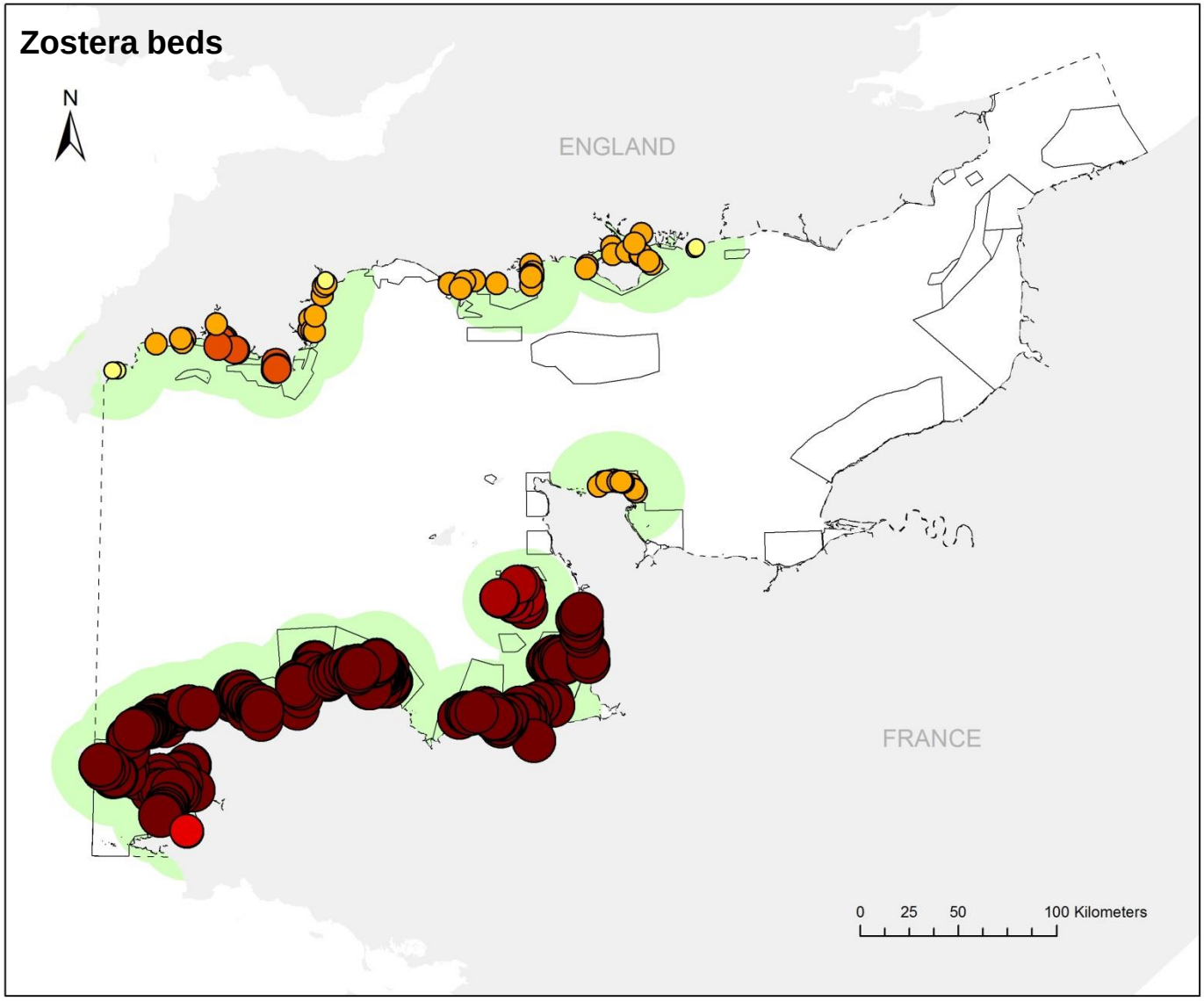

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interreg

Management Effort

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Management Effort

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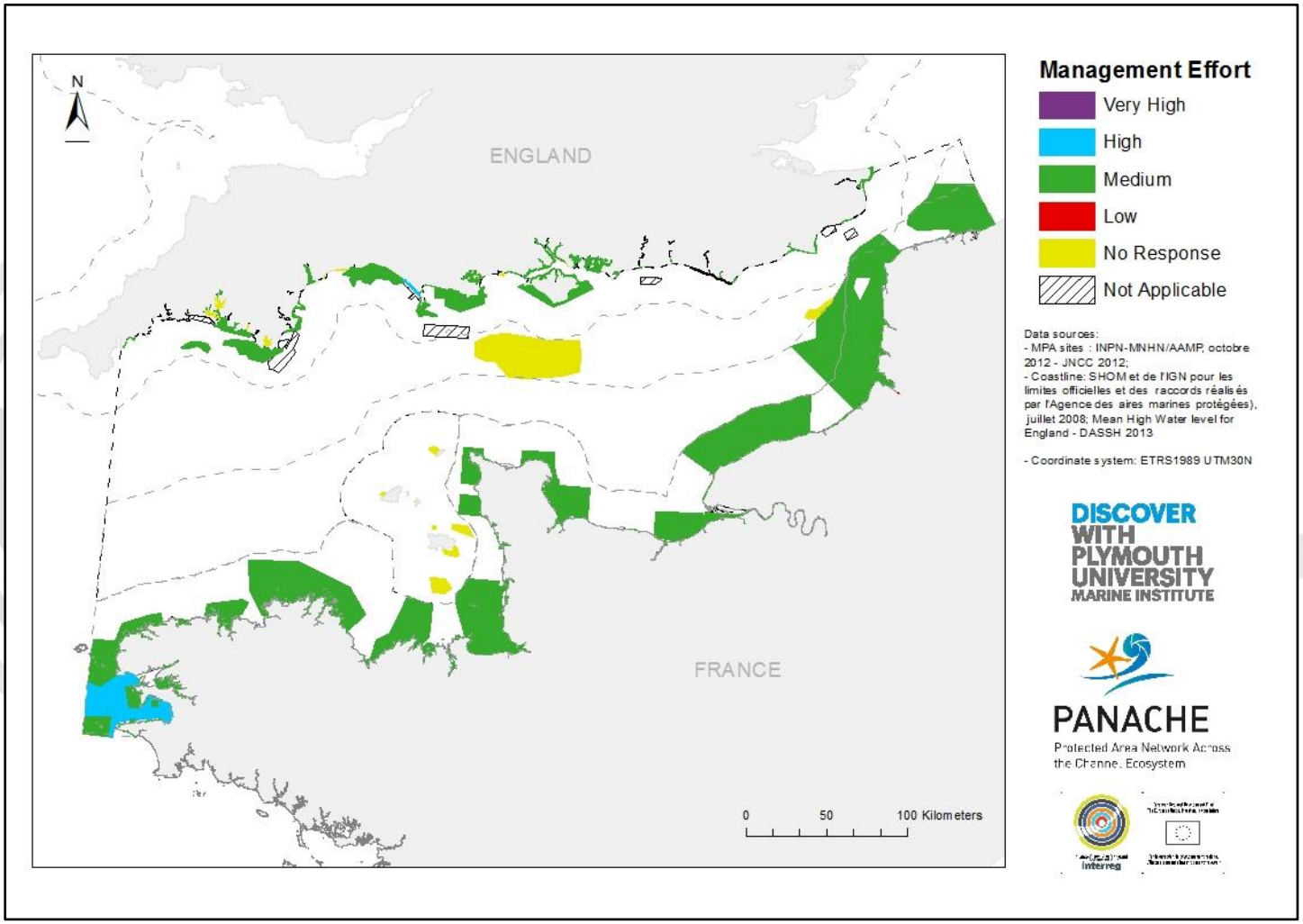
- Responses received from 149 MPAs
- 11% high management effort, 87% medium effort, 2% low effort



- Rodriguez-Rodriguez et al. (in press). Status of management effort in marine protected areas in the English Channel. Marine Pollution Bulletin.

Conclusions & Recommendations

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SUMMARY OF MAIN CONCLUSIONS

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Assessment Type & Criteria	Feature	Results
Spatial – representativity	Geographical	• 20% of PANACHE study area within MPA network • 10% of English waters within MPA network • 30% of French waters within MPA network • 3% of Channel Island waters within MPA network • 218 MPAs within 12 nm of shore (inshore) • 4 MPAs beyond 12 nm of shore (offshore) • 16% of western Channel within MPA network • 26% of eastern Channel within MPA network
	Biogeographical	• 24% of Lusitanian-Boreal province within MPA network • 26% of Boreal province within MPA network • 5% of Boreal-Lusitanian province within network • 19% of cool-temperate province within network • 24% of warm-temperate province within network
	Bathymetric	• Only 14% of network occurs in water deeper than 60 m (despite 42% of study area having water deeper than 60 m)
	Marine Mammals and Seabirds	• Gaps in the network were noticeable for offshore or partially offshore species (cetaceans and seabirds with pelagic behaviour)
	Cuttlefish spawning grounds	• Spawning grounds for the cuttlefish well-represented within MPA network along the western Channel and along French coast • Spawning grounds for the cuttlefish poorly-represented within MPAs along the English coastline in the eastern Channel
	Breeding areas for seabirds	• Breeding populations of key bird species adequately represented in French MPAs (with bird specific objectives) • Breeding populations along English coastline occur predominantly outside MPAs or within the boundaries of SACs (no bird specific objectives)
Spatial - replication	EUNIS Level 3 habitats Habitats and species of conservation importance	• Habitats and species occur in 4 to 52 MPAs
Spatial - viability	MPA size Compactness Edge-to-area ratio	• Only 33% of MPAs in the optimal size range of 10-100 km^2 • 40% of MPAs are smaller than 10 km^2 • Only 8 MPAs exceed 1000 km^2 • Network unlikely to support highly mobile or migratory species • Majority of MPAs not circular and have small edge-to-area ratios – less export of individuals
	Size of EUNIS Level 3 habitats	• 79% of habitat patches within the network are 0-10 km^2 in size – only likely to support low mobility species • Just 21% of habitat patches in study area are greater than 10 km^2 – but good proportions of these within network • 67% of 10-100 km^2 patches are within the network and 59% of patches >100km^2 are within the network

SUMMARY OF MAIN CONCLUSIONS

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Assessment Type & Criteria	Feature	Results
Spatial - adequacy	Area of EUNIS Level 3 habitats Area of habitats of conservation importance	• Four habitats have <30% of their area within the MPA network • Six habitats have >30% of their area within the MPA network • 65% of *Zostera* beds occur within the MPA network • 48% of Maerl beds occur within the MPA network
Spatial - connectivity	Connectivity among MPAs Habitat connections Within versus among MPAs Habitats buffers	• MPAs containing the same habitat typically connected to just 2 or 3 other MPAs • Connectivity of habitat patches was found to be greater among MPAs than within MPAs, highlighting potential for replenishment of habitats and species from within the MPA network • Good connectivity among habitats within MPAs along the French and English coasts, respectively • Cross Channel connectivity virtually non-existent
Matrix Approach - representativity	Qualifying species, EUNIS Level 3 habitats OSPAR habitats Annex I habitats	• Good representativity of qualifying species, EUNIS Level 3 habitats, OSPAR habitats and Annex I habitats
Matrix Approach - replication	EUNIS Level 3 habitats OSPAR habitats Annex I habitats	• EUNIS Level 3 and Annex 1 habitats listed in 5 or more MPAs within the Channel network • Maerl beds, intertidal mudflats, littoral chalk communities and *Zostera* beds listed in 3 or more MPAs • *Sabellaria* reefs, and sea-pen and burrowing megafauna communities listed in 2 or fewer MPAs
	Qualifying species	• 68% of species listed in 3 or more MPAs • 27% of species listed in 1 MPA • 5% of species listed in 2 MPAs
Self-assessment – management status		• Medium to high level of management status reported for 98% of MPAs assessed • 75% of the MPAs reported effective enforcement and management of

Data Limitations

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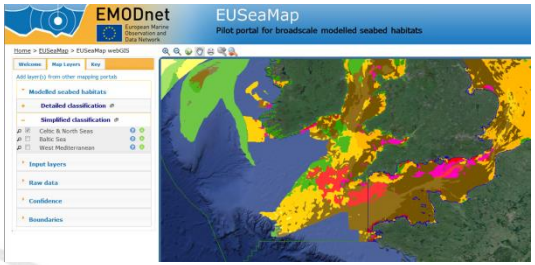
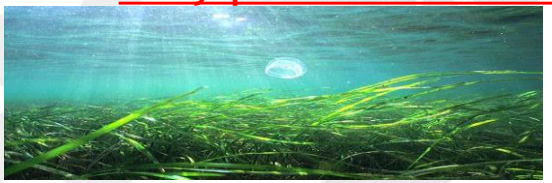
Limited availability of comprehensive data for features

Broad-scale habitat analysis



Biotope-specific analysis

Only possible for 3 biotopes



Species-specific analysis

Only possible for 7 species

Data resolution & type of data

Polygon vs. point data – Cannot assess 'Adequacy' with point data as proportion of protected habitat cannot be calculated

Presence-absence data - Difficult to establish Minimum Viable Populations

Analysis Limitations

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Matrix Analysis

- No standardised reporting of features across:
  - a) different MPA designations
  - b) among the 2 countries
- Different classification systems used
- Different levels of the EUNIS classification system used
- Different directives and conventions used

Overlapping MPAs

- A number of MPA designations overlap
- Features assumed to occur in overlapping area - number of MPAs in which a feature occurs may have been underestimated

Analysis Limitations

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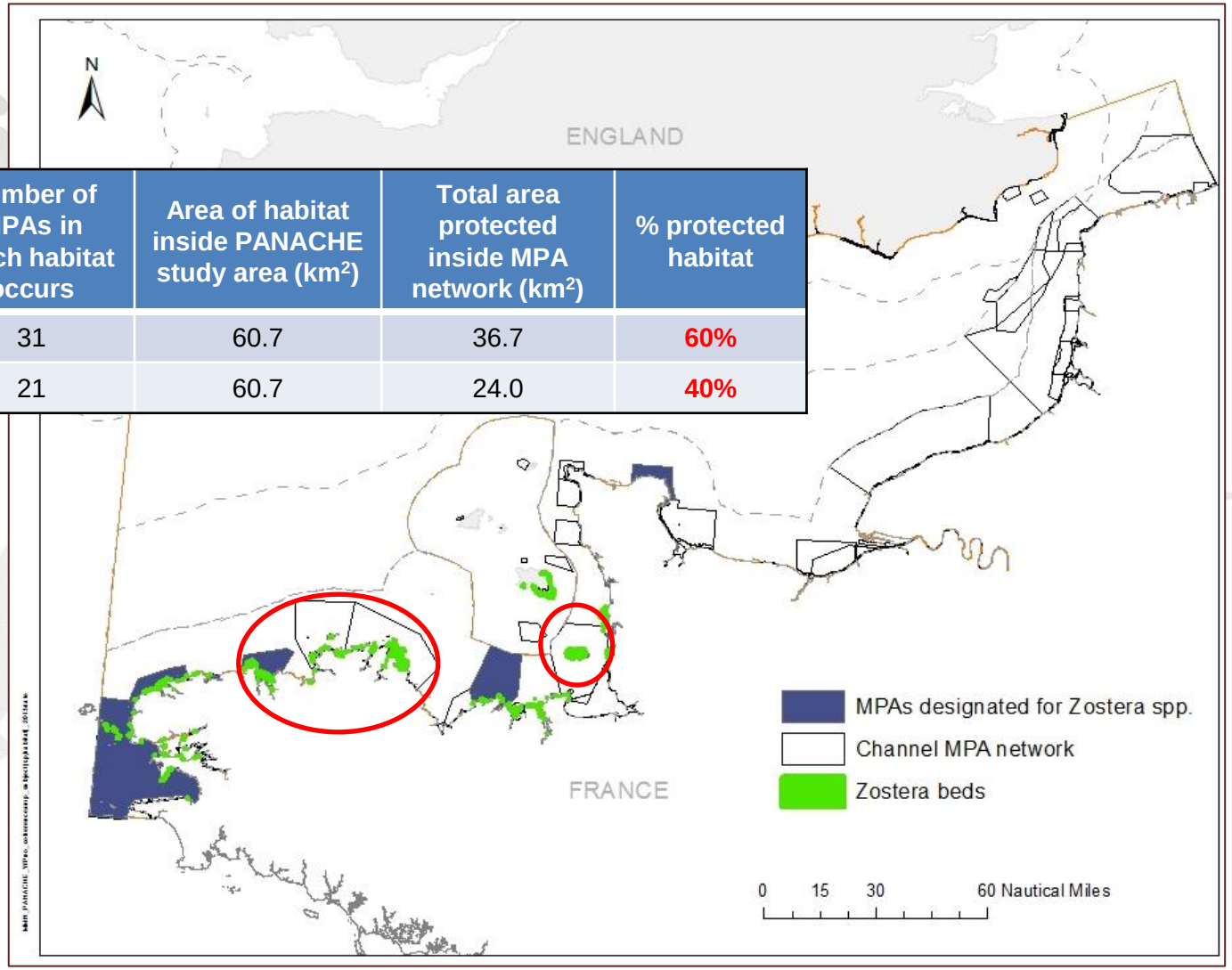
- Different MPA designations conserve different features, e.g. SPAs
- Conservation objectives of MPAs not considered in spatial analysis

	Number of MPAs in which habitat occurs	Area of habitat inside PANACHE study area (km²)	Total area protected inside MPA network (km²)	% protected habitat
- Designated features	31	60.7	36.7	**60%**
+ Designated features	21	60.7	24.0	**40%**



Overall Conclusions

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- Significant coverage of the MPA network
  - mainly coastal
  - driven by European regulations
- Ecological gaps in the network
  - offshore areas (associated species) -> future MPA designation
  - Natura 2000
- Overall, we cannot say with confidence that the Channel MPA network is ecologically coherent
- Assessment has highlighted:
  - limitations in the quality & availability of data
  - areas where improvements can be made when assessing ecological coherence
- Recommendations need to be applied to strengthen assessments of ecological coherence before this approach can successfully be scaled up to cover larger areas

RECOMMENDATIONS

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- Agree on a formal, widely accepted definition of ecological coherence
- Agree on indicators & formal thresholds for each criteria
- Improve data coverage, availability, quality & consistency
  - universal reporting systems
  - standardised databases for different MPAs & different countries
  - foster consistent data sharing & gathering
- Use agreed correlation tables to determine EUNIS habitats from those listed in MPA conservation objectives
- Use both the matrix approach & spatial analyses during assessments of ecological coherence to allow:
  - Conservation objectives of the MPAs to be considered when conducting spatial analyses
  - Area of habitat to be considered when assessing replication

Future Developments for Management: MPA Responsibility

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AMP	Alcidés	Autres mouettes	Grand labbe	Fulmar boréal	Goélands gris	Goélands noirs	Grands puffins	Mouette pygmée	Océanites	Petits puffins	Mouette tridactyle	Sternes	Fou Bassan
Estuaires picards : baie de Somme	0.5%	0.2%	0.2%	0.1%	0.5%	0.5%		1.0%	0.0%	0.0%	0.2%	1.5%	0.4%
Estuaire et marais de la basse Seine	0.1%	0.2%	0.2%	0.0%	0.2%	0.2%		0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Littoral seino-marin	4.4%	5.7%	6.3%	2.9%	4.8%	5.8%		12.2%	0.0%	0.0%	2.2%	2.9%	8.5%
Chausey	0.6%	1.5%	0.2%	0.0%	1.4%	1.2%		0.9%	0.0%	0.0%	0.2%	3.1%	0.1%
Basses vallées du Cotentin et baie	0.1%	0.1%	0.3%	0.1%	0.1%	0.1%		0.1%	0.0%	0.0%	0.1%	0.0%	0.1%
Baie de Seine occidentale	1.2%	1.3%	2.6%	1.3%	1.0%	1.0%		1.1%	0.0%	0.0%	0.9%	0.0%	0.9%
Baie du Mont Saint-Michel	0.2%	1.1%	0.0%	0.0%	0.6%	0.8%		1.8%	0.0%	0.0%	0.1%	0.0%	0.0%
Estuaire de l'Orne	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Falaise du Bessin occidental	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Littoral augeron	0.6%	0.8%	0.7%	0.0%	0.6%	0.5%		0.5%	1.0%	0.0%	0.4%	3.1%	0.4%
Landes et dunes de la Hague	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hâvre de la Sienne	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Estuaire de la Canche	0.1%	0.1%	0.0%	0.0%	0.1%	0.3%		0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
Platier d'Oye	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cap Gris-Nez	0.7%	0.9%	0.8%	0.9%	2.5%	4.7%		1.7%	0.0%	0.0%	1.9%	0.0%	3.6%
Bancs des Flandres	1.3%	4.1%	0.0%	0.5%	3.2%	2.9%		5.6%	0.0%	0.0%	2.3%	0.0%	2.4%
Côte de granit - Sept-Iles	0.8%	1.5%	0.6%	0.6%	1.6%	0.3%		0.0%	0.0%	0.0%	0.2%	3.9%	0.9%
Baie de Saint-Brieuc est	0.2%	0.2%	0.0%	0.0%	0.2%	0.1%		0.1%	0.0%	0.0%	0.0%	1.0%	0.0%
Iles de la Colombière, de la Nellière	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Ilôt du Trévors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cap Sizun	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trégor-goëlo	1.1%	2.7%	0.1%	0.1%	1.2%	0.6%		2.0%	0.0%	0.0%	0.2%	0.9%	0.5%
Ouessant-molène	0.2%	0.3%	0.2%	0.3%	1.2%	0.5%		0.1%	0.0%	0.0%	0.1%	1.3%	0.1%
Baie de Morlaix	0.1%	0.5%	0.0%	0.1%	1.0%	0.4%		0.0%	0.0%	0.0%	0.2%	0.0%	0.2%
Cap d'Erquy - cap Fréhel	0.7%	0.7%	0.0%	0.0%	0.6%	0.3%		0.3%	0.0%	0.0%	0.1%	3.0%	0.1%
Baie de Goulven	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Camaret	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Iroise	0.6%	0.7%	0.7%	2.3%	4.8%	1.9%		0.4%	1.1%	0.0%	0.5%	4.1%	0.5%
Estuaires picards et mer d'Opale	6.5%	3.3%	3.9%	1.6%	6.1%	10.8%		10.3%	0.0%	0.0%	3.4%	11.3%	6.8%

Moving beyond the Assessment

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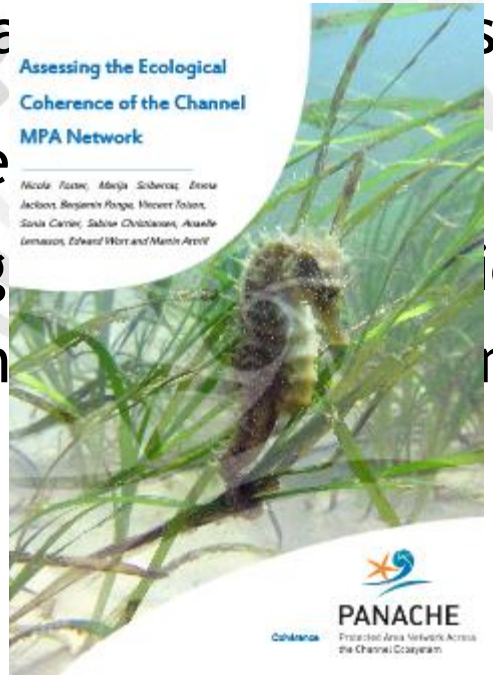
- MPA networks assessments, going beyond science
  - MPA network effectiveness
- Cooperation
  - Cross-border approach (including Channel Islands)
  - Science and MPAs management and stakeholders
- What a s for cooper 00?)
- Future
  - Reg ies
  - Dyn nt (MPA and



The VALMER and PANACHE projects were selected under the European cross-border cooperation programme INTERREG IV A France (Channel) - England, co-funded by the ERDF.