



# atlas

UNDERSTANDING DEEP ATLANTIC ECOSYSTEMS



## WP6 Maritime Spatial Planning

Atlas AGM, Majorca, April 10<sup>th</sup>, 2018

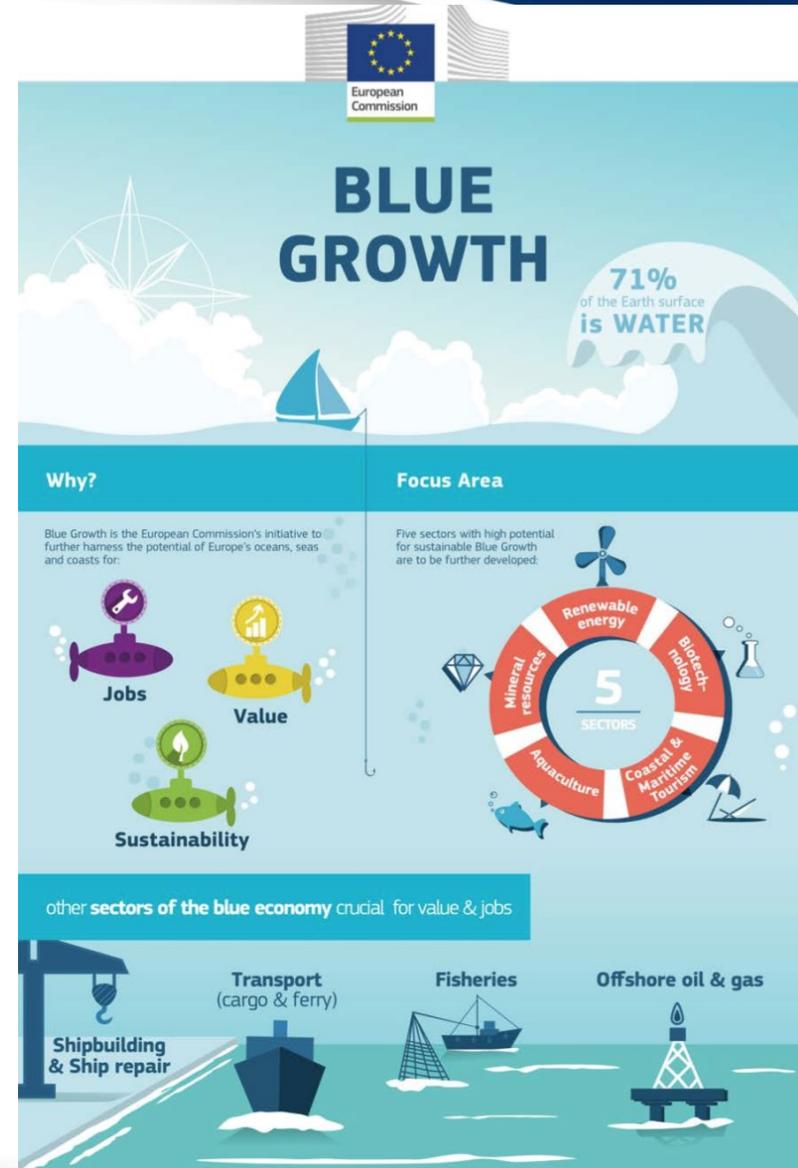
Dr. Anthony Grehan, NUI, Galway, Ireland



## Blue Growth

Essential components to provide legal certainty and security for the blue economy include:

- [marine knowledge](#) with improved access to information about the sea;
- [maritime spatial planning](#) to ensure an efficient and sustainable management of activities at sea;
- [sea basin strategies](#) to facilitate transboundary measures and to foster cooperation between countries, e.g. in the Atlantic Ocean



# Ecosystem based management

- EBM is the balancing of human activities and environmental stewardship in a multiple-use context (Smith et al. 2017).
- MSP is a key tool for the implementation of ecosystem based management both at regional/local and basin scale.

Local/  
Regional   
WP6

 Basin  
Scale  
WP7

## Sectoral Management



## Timing

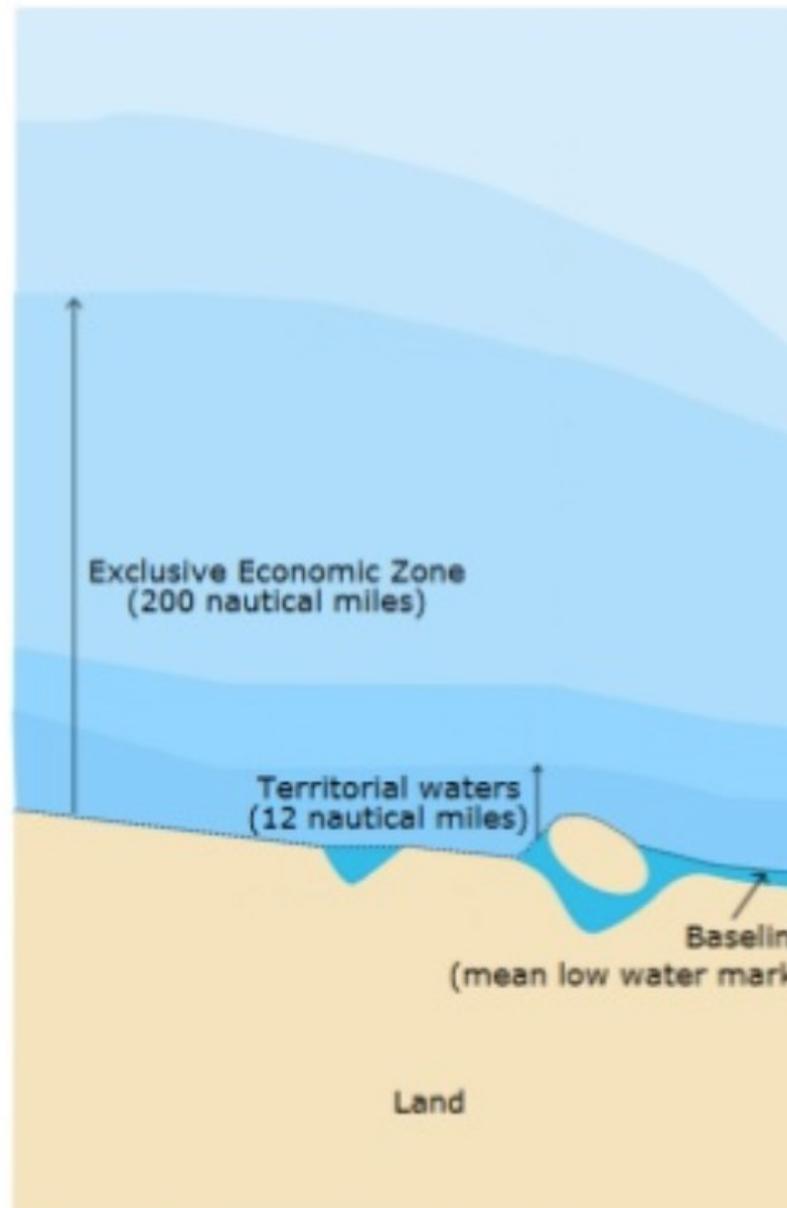
September 2014: Entry into force

2016: Transposition and  
Competent Authorities

2021: Establishment of plans in  
all marine waters of MS

## Geographical coverage

MSP: Marine waters cover coastal  
waters, territorial sea and EEZ.





## Global Responsibilities

HIGHLIGHT TARGETS  
OF THE CBD STRATEGIC PLAN  
TO ACHIEVE BY 2020:

Eliminate subsidies harmful to biodiversity.

Halve, or bring close to zero, the rate of loss of all natural habitats.

Sustainably manage and harvest all fish and invertebrate stocks and aquatic plants.

Reduce pollution to levels that are not detrimental to ecosystems and biodiversity.

Control or eradicate prioritized invasive alien species.

Minimize anthropogenic pressures on coral reefs.

Conserve at least 17% of terrestrial and 10% of coastal and marine areas in protected zones.

Prevent the extinction of known threatened species.

Restore at least 15% of degraded ecosystems.

# GOAL 14

CONSERVE AND SUSTAINABLY USE THE  
OCEANS, SEAS AND MARINE RESOURCES FOR  
SUSTAINABLE DEVELOPMENT

**SUSTAINABLE DEVELOPMENT GOALS**

More at [sustainabledevelopment.un.org/sdgsproposal](https://sustainabledevelopment.un.org/sdgsproposal)



## IOC/DG Mare MSP Joint Roadmap 2017

The Roadmap will contribute to the definition of a global vision and role for MSP as part of the implementation of Agenda 2030 for Sustainable Development, **especially regarding SDG 14** at the national and international levels.

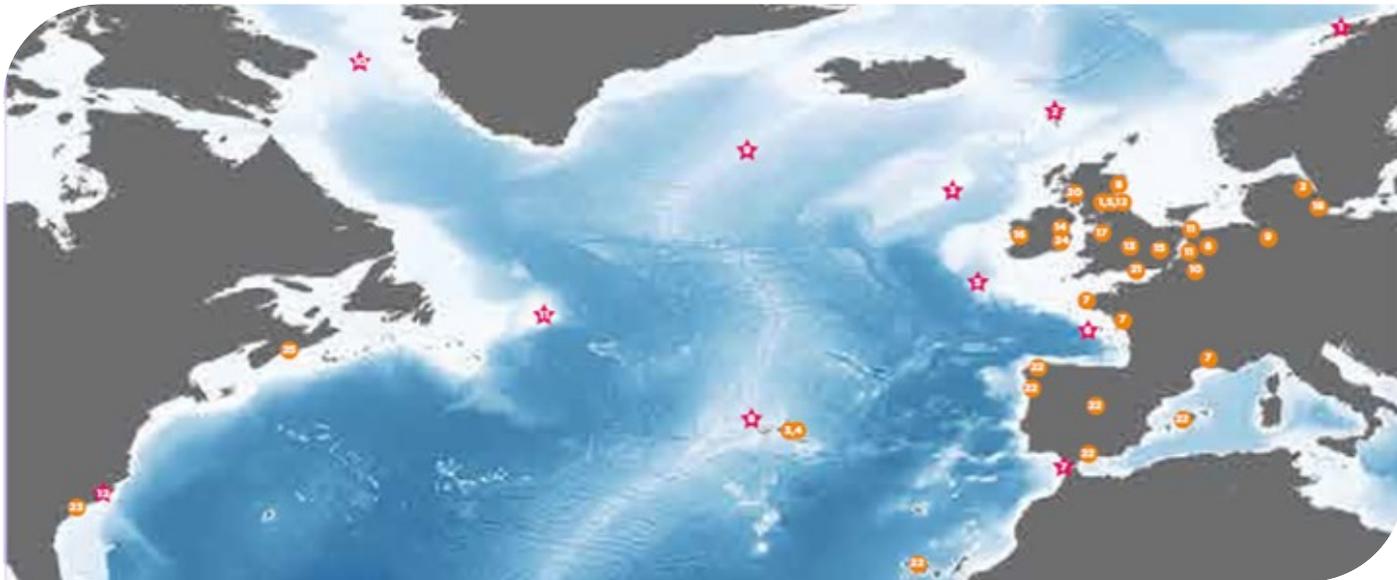
- **Priority area 1: Transboundary maritime/marine spatial planning**
- **Priority area 2: Blue economy**
- **Priority area 3: Ecosystem-based maritime/marine spatial planning**

# WP6: Maritime Spatial Planning



- Reduce sectoral conflicts,
- Improve investment environment,
- Increase coordination between countries
- Balance development activities and environmental protection





★ Case studies

● Project Partners



## In each Case Study SMA test a new 'Blue Growth' scenario

For a given spatially managed area – determine the likely impact of adding a new Blue Growth activity or expanding an existing activity in terms of impact on existing activities and potential to add to cumulative environmental impacts.

How can we protect vulnerable marine ecosystems (VMEs) from human pressures while minimising conflicts with industry?

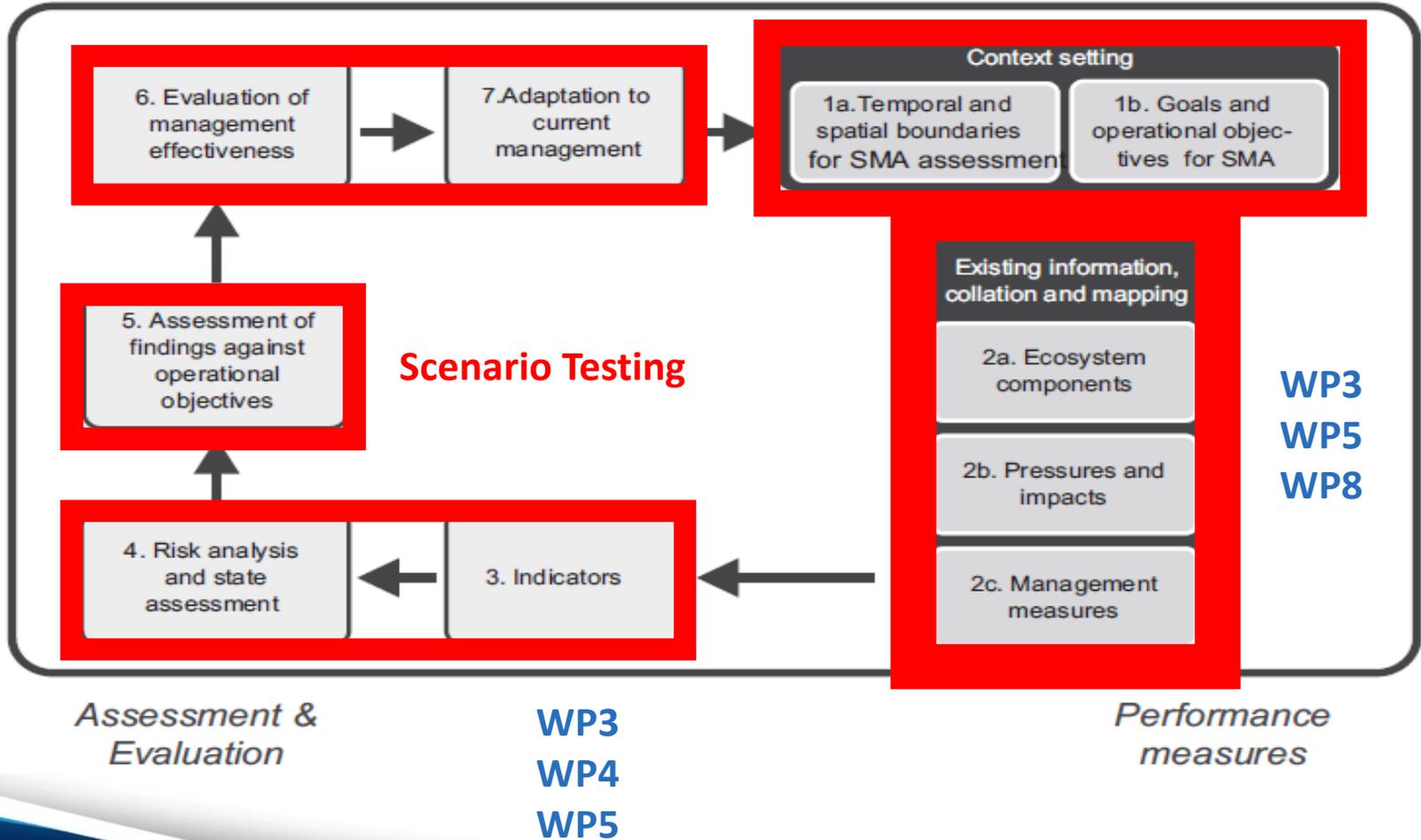


WP1 WP2  
 ↓  
 WP3 WP4

# Climate Change

*Adjustment*

*Scoping*





## WP6 Tasks

| No. | Task Description                                                                                                                      |
|-----|---------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Set MSP goals and operational objectives.                                                                                             |
| 2   | Collate maps of VMEs, fish habitat and ecosystem goods and services.                                                                  |
| 3   | Carry out Strategic Environmental Assessments                                                                                         |
| 4   | Test new Blue Growth scenarios and propose appropriate adaptive management measures against a background of potential climate change. |



## WP6

# Key results/achievements

Three papers:

1. Cormier, R., Kelble, C. R., Anderson, M. R., Allen, J. I., **Grehan, A.**, and Gregersen, Ó., 2016, Moving from ecosystem-based policy objectives to operational implementation of ecosystem-based management measures: ICES Journal of Marine Science: Journal du Conseil.

- Recognising that implementation of EBM must occur in step with existing policy cycle timeframes may improve our ability to operationalize EBM.

2. Wright, G., **D. Johnson**, K. Gjerde, A. Finkelstein, M.A. Ferreira, D. Dunn, **A. Grehan** (submitted). Marine Spatial Planning in Areas Beyond National Jurisdiction', for inclusion in a special issue of *Marine Policy reporting on the Second International Conference on Marine/Maritime Spatial Planning (MSP)* held in Paris from 15-17 March 2017.

*Recommends how the UN international agreement on ABNJ might include MSP and contribute to the implementation of ecosystem based management in ABNJ.*

3. Murray F, **Needham K**, Gormley K, Rouse S, Coolen J, Billet D, Dannheim J, Birchenough S, Hyder K, Heard R, Ferris J, Holstein J, **Henry LA**, McMee O, **Calewaert JB** and **Roberts JM** (2017). (Ecological) Data challenges and opportunities from decommissioning in the North Sea to support blue growth. *Marine Policy*. (In final preparation).

*Based on the Blue Growth Data Challenge Workshop jointly organised with the INSITE Data Initiative, Edinburgh (7 February 2017) – see M7 report.*



## WP6

# Key results/achievements

Two milestones:

### **M2: Scope of sectoral activities and ocean services**

- Potential Blue Growth opportunities in each Case Study were identified during the ATLAS kick-off meeting.

### **M7: Atlas stakeholder engagement workshop**

EDIN co-organised two stakeholder events which have contributed to MS7, The Blue Growth Data Challenge Workshop jointly organised with the INSITE Data Initiative and the Blue Growth Data Workshops Part 1 and 2 held at European Maritime Day.

The following conclusions emerged from the workshop:

- EMODnet provides a means to handle and archive industry data
- Safeguards for archived data now in place but low industry awareness
- Reputational gain from making data open access may outweigh the risks from misinterpretation
- Trust and transparency issues are currently a greater barrier to data sharing than technological capabilities.
- Workshops and working groups can build trust with stakeholders.



## WP6

# Key results/achievements

One deliverable report:

**Deliverable 6.1: Sectoral activities, institutional landscape, existing management plans and MSP goals**

The deliverable reports the first planning iteration in which Case Study leaders have applied MESMA Step 1:

- to delineate the extent of spatial managed areas
- describe existing sectoral activities,
- map the spatial management institutional landscape
- describe (any) existing management plans.

In addition, each Case Study has identified a new blue growth opportunity that must be accommodated as a scenario in each SMA



# WP6

| Case Study SMA                                                         | Partner   | Focus Ecosystems<br>(CWC: cold-water coral)                                  | Blue Economy/Growth<br>Scenario                        |
|------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------|--------------------------------------------------------|
| LoVe Observatory<br>(Norway)                                           | NIOZ/UiT  | CWC reefs, sponges                                                           | Oil/gas exploitation                                   |
| Faroe Shetland Channel<br>(UK)                                         | UEDIN     | Sponge grounds                                                               | Oil/gas exploitation                                   |
| Rockall Bank (UK &<br>Ireland)                                         | MSS       | CWC reefs, coral gardens,<br>carbonate mounds, sponge<br>grounds, cold seeps | Fisheries; oil/gas exploitation                        |
| Mingulay Reef Complex<br>(UK)                                          | UEDIN     | CWC reefs                                                                    | Ecotourism                                             |
| Porcupine Seabight and<br>Bank (Ireland)                               | NUIG      | CWC reefs, coral gardens,<br>carbonate mounds, sponge<br>grounds             | Oil/gas exploitation                                   |
| Bay of Biscay (France)                                                 | IFREMER   | CWC on slope and in canyon<br>settings                                       | Fisheries; Natura 2000 SAC<br>management               |
| Gulf of Cádiz/Strait of<br>Gibraltar/Alborán Sea<br>(Spain & Portugal) | IEO       | CWC reefs, coral gardens,<br>sponge grounds                                  | International marine research<br>reference area        |
| Azores (Portugal)                                                      | IMAR- UAz | Hydrothermal vents,<br>seamounts, coral gardens,<br>sponge grounds           | Deep-sea mining                                        |
| Reykjanes Ridge<br>(Iceland)                                           | MRI*      | Hydrothermal vents, CWC<br>reefs, coral gardens, sponge<br>grounds           | Fisheries; carbon<br>sequestration                     |
| South Davis<br>Strait/Western<br>Greenland/Labrador Sea<br>(Canada)    | DFO*      | WC reefs, coral gardens,<br>sponge grounds                                   | Expansion of Arctic fisheries;<br>oil/gas exploitation |
| Flemish Cap (Canada)                                                   | IEO       | Coral gardens, sponge<br>grounds                                             | Expansion of fisheries; oil/gas<br>exploitation        |
| South Eastern USA                                                      | UNCW*     | CWC reefs on slope and in<br>canyon settings                                 | Oil/gas exploitation                                   |

## Key results/achievements

### Deliverable 6.1: Sectoral activities, institutional landscape, existing management plans and MSP goals

#### Blue Growth scenarios

- Oil and gas exploitation/exploration
- Deep-Sea mining
- Maintain or expand fisheries
  - Including Arctic Fisheries
- Natura 2000 SAC management
- Marine Research Reference Area
- Ecotourism
- Carbon Sequestration

*Table 1. A list of the blue economy/blue growth scenarios that will be applied in each case study spatially managed area (SMA) together with the key ecosystems located there. \*Associate Partner*

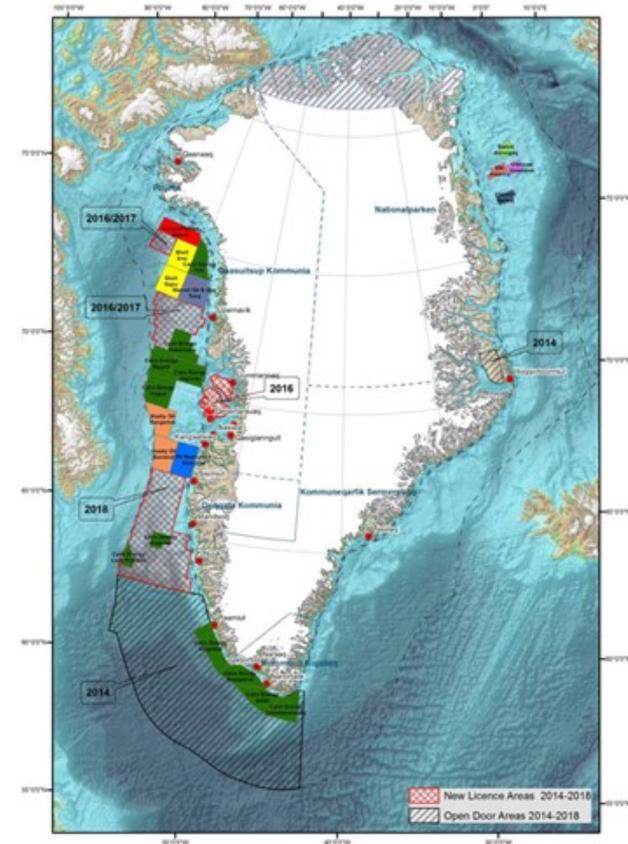
## Key results/achievements

Transboundary management issues

Between sovereign States

e.g. Canada and Greenland

Oil and gas concessions offered by the Greenland government.





## Case Study 10: Davis Strait and Baffin Bay - Ellen Kenchington (DFO Canada)

### Goals and operational objectives for the SMAs

The blue growth goals are:

- 1) to maintain or increase productivity of the fisheries in Baffin Bay following the shrinking Arctic ice cap while preventing significant adverse impacts to sensitive ecosystems;
- 2) accommodate future oil and gas extraction in the Davis Strait while maintaining commercial fisheries and preventing significant adverse impacts to sensitive ecosystems.

- 

### *Operational Objectives*

- Protect areas where corals and sponges are known or predicted to occur from bottom fishing activity as part of a network of marine protected areas
- Ensure northward moving fisheries are managed at or close to MSY taking into account wider ecosystem impacts.
- Assess potential impacts of oil and gas developments.



## WP6 Tasks

### Set MSP goals and operational objectives

#### Work in Progress

- Application of MESMA Step 1 complete – Deliverable 6.1

#### Remaining work

- Determine the importance of individual case study contributions to GES and Ecosystem Evaluation Framework (EEF) conservation portfolios at the basin scale (WP3) and MPA network coherence based on analysis of genetic connectivity and larval dispersion (WP4)
- Update Deliverable 6.1 maps as new data becomes available



# WP6 Tasks

## Collate maps of VMEs, fish habitat and ecosystem goods and services

Work in progress

MSS have developed a work flow to collate VME/fishing activity maps using PostGIS and QGIS to supporting storage, analysis and visualisation of Rockall Case Study data that can be rolled out to the rest of the project

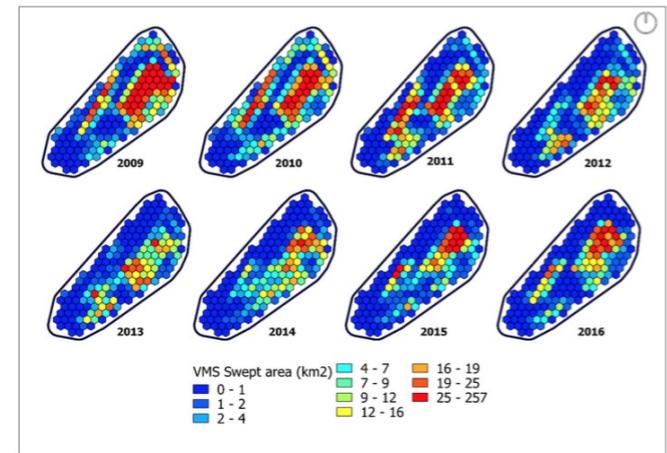
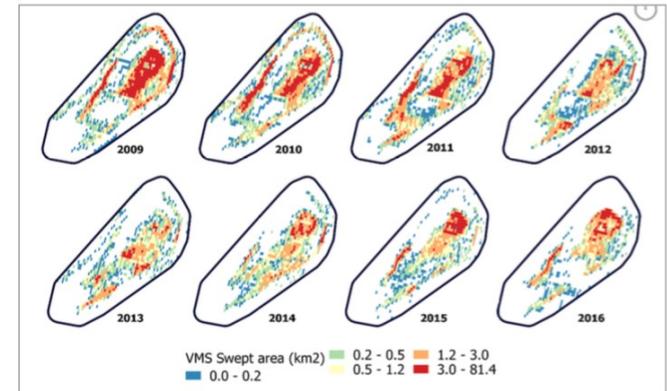
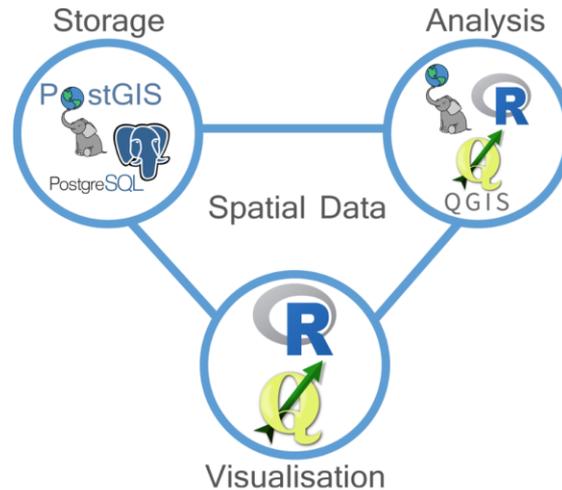


Figure 38: The upper panel depicts VMS for all gears (years 2009 - 2016) [courtesy of ICES] for the Rockall Bank study area. The bottom panel is the same data aggregated over a hexagonal grid.



# WP6 Tasks

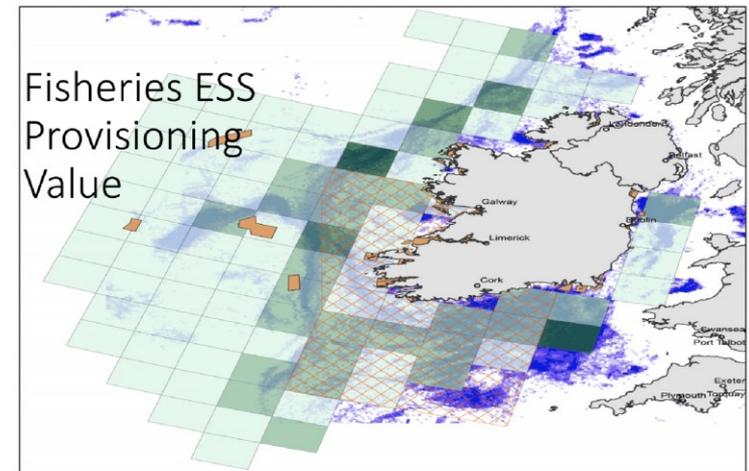
## Collate maps of VMEs, fish habitat and ecosystem goods and services

### Next steps

Collate existing information on ecosystem components and pressures and impacts as per MESMA Step 2 in each Case Study

Complete the following Milestones and Deliverables:

- **MS12 Vessel Monitoring Data datasets acquired and processing (Mo24)**
- **MS14 Completion of registry of existing and future sectoral activities** estimating environmental footprint and impact of operations for each Case Study area (Mo 27)
- **MS20 Stakeholder engagement workshop 2 (Mo 33)**
  - Workshop with oil and gas industry
  - Develop generic footprint for offshore exploration and exploitation activities
    - Discuss mitigation strategies (Task 6.4)



D6.2 Ecosystem Goods and Services Case Study Atlas due in (Mo 30)



# WP6 Tasks

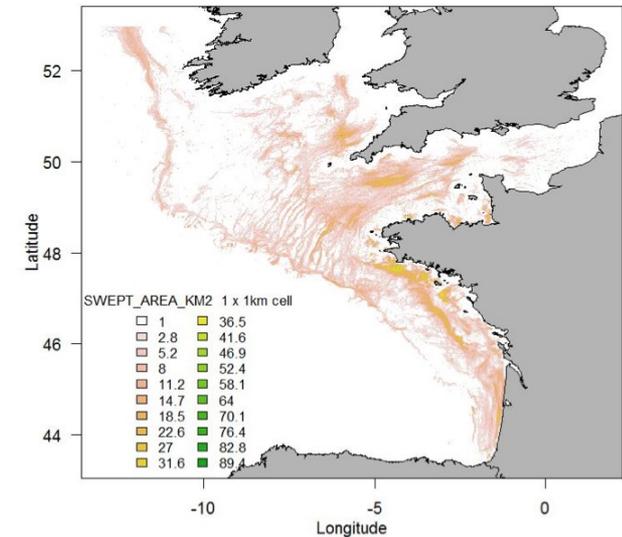
## Carry out Strategic Environmental Assessments

### Work in progress

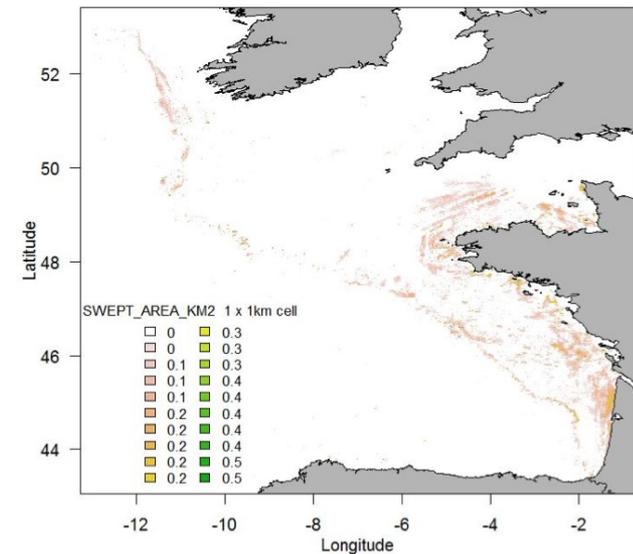
Ifremer have begun to quantify fishing effort and potential abrasive impacts in the Bay of Biscay.

- A quantitative assessment of fishing effort has been derived from VMS data for the period 2005-2015.
- This data was used to produce effort maps for all the vessels (French as well as others European countries) operating within the French EEZ.
- The main objective of this work is to evaluate the interaction of fisheries with CWC areas.

*Figure 20. Distribution of fishing effort in the Bay of Biscay for 2014 as derived from the VMS dataset. Swept area (km<sup>2</sup>) has been cumulated for the whole year for towed gears (A) and static gears (B).*



A) Towed gears



B) Static gears



## WP6 Tasks

### Carry out Strategic Environmental Assessments

#### Work in progress

- Blue growth scenarios for all Case Studies selected – Deliverable 6.1

#### Next Steps

- Complete assessment of potential Strategic Environmental Assessment methodologies for adoption within ATLAS Case Studies.
- Continue preparing groundwork for **D6.3 : Risk assessment atlas (Mo 39)** and **D6.4 : Cumulative impact analysis (Mo 42)**



## WP6 Tasks

**Test new Blue Growth scenarios and propose appropriate adaptive management measures against a background of potential climate change**

### Work in progress

- First Atlas stakeholder engagement workshop completed
  - Blue Growth Data Workshops – M7

### Next Steps

- Complete assessment of potential decision support tools such as Marxan, Bayesian belief networks and MSP scenario tools such Symphony for use in ATLAS to support planning and scenario testing
- Hold ATLAS oil and gas industry workshop to discussion potential mitigation strategies
- Continue preparing groundwork for :
  - **D6.5. Atlantic Blue Growth and potential impacts of climate change;**
  - **D6.6. Environmental assessment framework for regional MSP;**
  - **D6.7. Improving business practice and costs through ATLAS data-sharing and**
  - **D6.8. Potential mitigation measures for adaptive MSP**

All due at the end of the project (Mo48).

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# WP6 Planning and Integration Workshops

**WP6 planning workshop was held in Brussels (13-14 October 2017)**

- This was attended by leaders from WP2, 3, 4, 7, 8 with input from WP5 as well as most case study leaders.



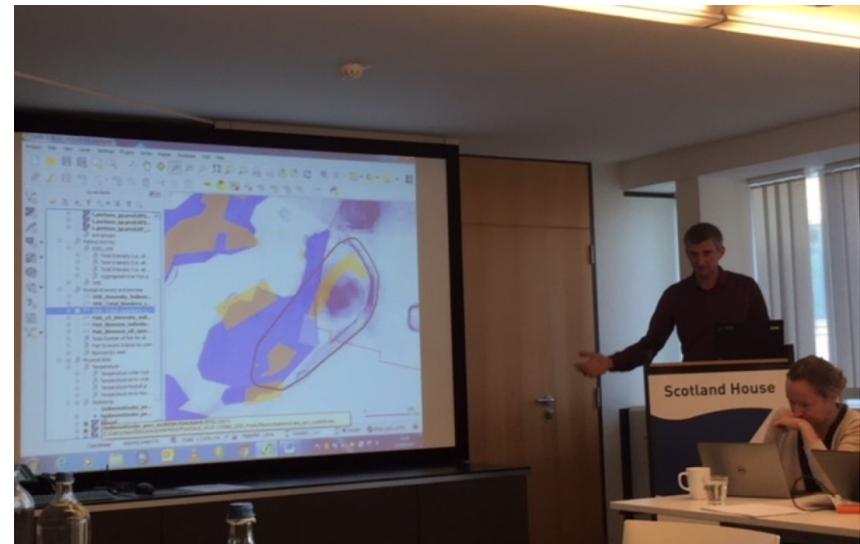


# atlas WP6 Planning and Integration Workshops

**WP6 planning workshop was held in Brussels (13-14 October 2017)**

The workshop addressed inter-work package collaboration and case study inputs required for all remaining WP6 tasks with an emphasis on establishing a workflow for data submission, archiving and visualization (WP8) as well as GIS support (BGS)

The aim of the latter is to establish an ATLAS data portal and GIS that may become a focal point for data ingestion/data sharing with industry





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## WP6 Planning and Integration Workshops

### WP3 Planning Workshop held in Lisbon, January 2018

- Habitat suitability modelling of key species both at basin scale and in case studies
  - VMEs and fish species (hake and monkfish)
- WP6 to co-organise an international workshop on Habitat Suitability Modelling in Montreal in May 2018.
- Climate change drivers
  - Use Viking20 model outputs during weak and strong AMOC events at basin scale to produce input variables for case studies



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# WP6 Planning and Integration Workshops

## WP1/2/4 Planning Workshop held in Edinburgh, January 2018

- Identification and spatial delineation of genetic sources and sinks may be possible for the NE Atlantic





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## WP6 Personnel Changes



Francis Neat – Head of  
Strategic Research,  
Marine Stewardship  
Council



Matt Gubbins – MSS  
Co-Chair  
ICES WGMPCZM



David Stirling – MSS



Oisín Callery – NUIG



## WP6 Agenda

1. Updates on the ABNJ Deep Seas Project and the marine Component of Proteus  
- Juliette Martin (UNEP)
2. Monitoring and evaluation of a Spatially Managed Area in the Case Study No 11, following the MESMA framework: Step 1 - Context Setting  
- Ana García Alegre (IEO-Vigo)
3. Storage, Analysis and Visualisation of Spatial Data: A Workflow to Support Marine Spatial Planning in Rockall  
- David Stirling (MSS)
4. ATLAS case study data compilation work flow  
- Lea-Anne Henry (UEDIN), Anthony Grehan (NIOG), Stéphane Pesant (UniHB),  
Sophie Green (BGS)

### **BREAKOUT SESSION**

Application of the MESMA protocol – focus on data workflow with WP8 and case study leaders and WP5



# Many thanks!

## Project Contact Details:

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