The Marine Environmental and Data Information Network (MEDIN) and the UK Social & Economic Data Review

Leoni Adams
Dan Lear
Becky Seeley
Charly Griffiths

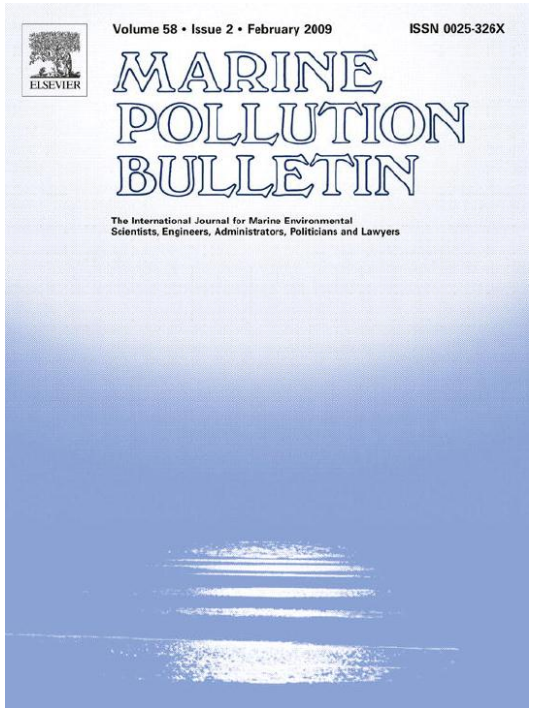
Contents

- UK Marine Data Management and Sharing
- Marine Environmental Data and Information Network (MEDIN)
- What about Social and Economic Data?
- MEDIN led Social and Economic data and tools review

UK Marine Data Management and Sharing

Historically

1997



"Marine environmental management requires investment to ensure more effective access to available data and information."

Marine Pollution Bulletin, Vol. 34, No. 2, pp. 74-77, 1997
http://dx.doi.org/10.1016/S0025-326X(96)00140-3

Historically

2005

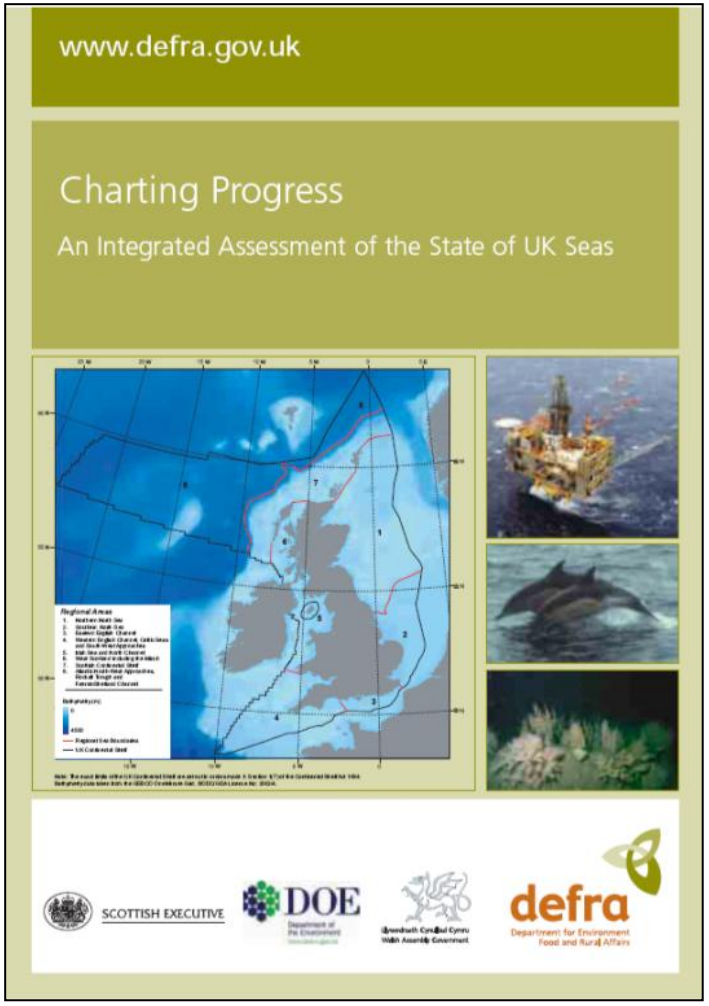
Recommended the creation of the Marine Data and Information Partnership to:

•Establish and enable a framework for managing marine data and information: ‘capture once and use many times’

•Establish Data Archiving Centres

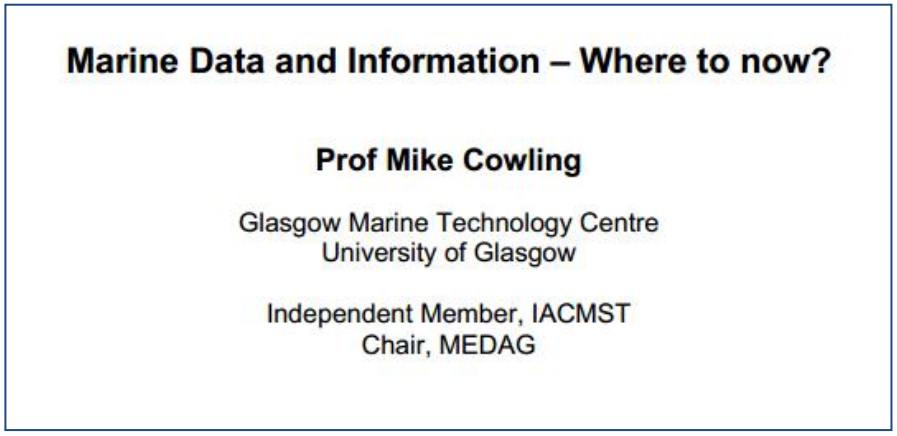
•Provide guidance on managing marine data and information including the development of standard protocols and procedures.”

http://chartingprogress.defra.gov.uk/feeder/chartingprogress.pdf



Historically

2005



http://data.offshorewind.co.uk/white_papers/Prof_Cowling_Marine_Where_to_now.pdf

Recommendations included:

Establishment of Marine Data and Information Partnership (MDIP)
Identification of thematic Data Archive Centres (DACs)
Creation of a central "portal" for marine data

MEDIN

marine environmental
data & information network

"Measure once use many times"

www.oceannet.org

THE MARINE BIOLOGICAL ASSOCIATION

What does MEDIN offer?

Standards and Guidelines

Data Discovery and Access

Data Management

Data Publishing

THE MARINE BIOLOGICAL ASSOCIATION

MEDIN Discovery Metadata

The MEDIN Discovery Metadata Standard is a UK GEMINI2 and INSPIRE compliant standard and uses the ISO 19139 schema set for encoding xml.

```
        <!-- ... -->
        <gmd:extent>
          <gmd:EX_Extent>
            <gmd:geographicElement>
              <gmd:EX_GeographicBoundingBox>
                <gmd:westBoundLongitude>
                  <gco:Decimal>-14.00</gco:Decimal>
                </gmd:westBoundLongitude>
                <gmd:eastBoundLongitude>
                  <gco:Decimal>3.80</gco:Decimal>
                </gmd:eastBoundLongitude>
                <gmd:southBoundLatitude>
                  <gco:Decimal>48.00</gco:Decimal>
                </gmd:southBoundLatitude>
                <gmd:northBoundLatitude>
                  <gco:Decimal>61.00</gco:Decimal>
                </gmd:northBoundLatitude>
              </gmd:EX_GeographicBoundingBox>
            </gmd:geographicElement>
          </gmd:EX_Extent>
        </gmd:extent>
        <!-- ... -->
      </gmd:MD_DataIdentification>
    </gmd:identificationInfo>
    <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (for services):

Note that the extent element is in the http://www.isotc211.org/2005/srv namespace.

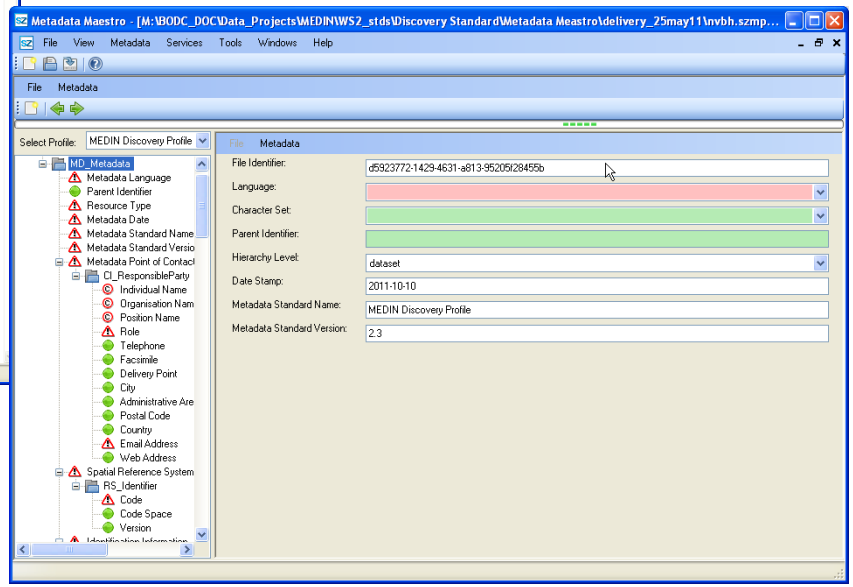
```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      <!-- ... -->
      <srv:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
            <gmd:EX_GeographicBoundingBox>
              <gmd:westBoundLongitude>
                <gco:Decimal>-14.00</gco:Decimal>
              </gmd:westBoundLongitude>
              <gmd:eastBoundLongitude>
                <gco:Decimal>3.80</gco:Decimal>
              </gmd:eastBoundLongitude>
              <gmd:southBoundLatitude>
                <gco:Decimal>48.00</gco:Decimal>
              </gmd:southBoundLatitude>
              <gmd:northBoundLatitude>
                <gco:Decimal>61.00</gco:Decimal>
              </gmd:northBoundLatitude>
            </gmd:EX_GeographicBoundingBox>
          </gmd:geographicElement>
```

22

MEDIN Discovery Metadata

MEDIN provides a suite of tools to assist with metadata creation including:

On-line metadata generation/editing tool



Desktop tool – Metadata Meastro.

Both of these tools include schema (ISO 19139) and schematron validation

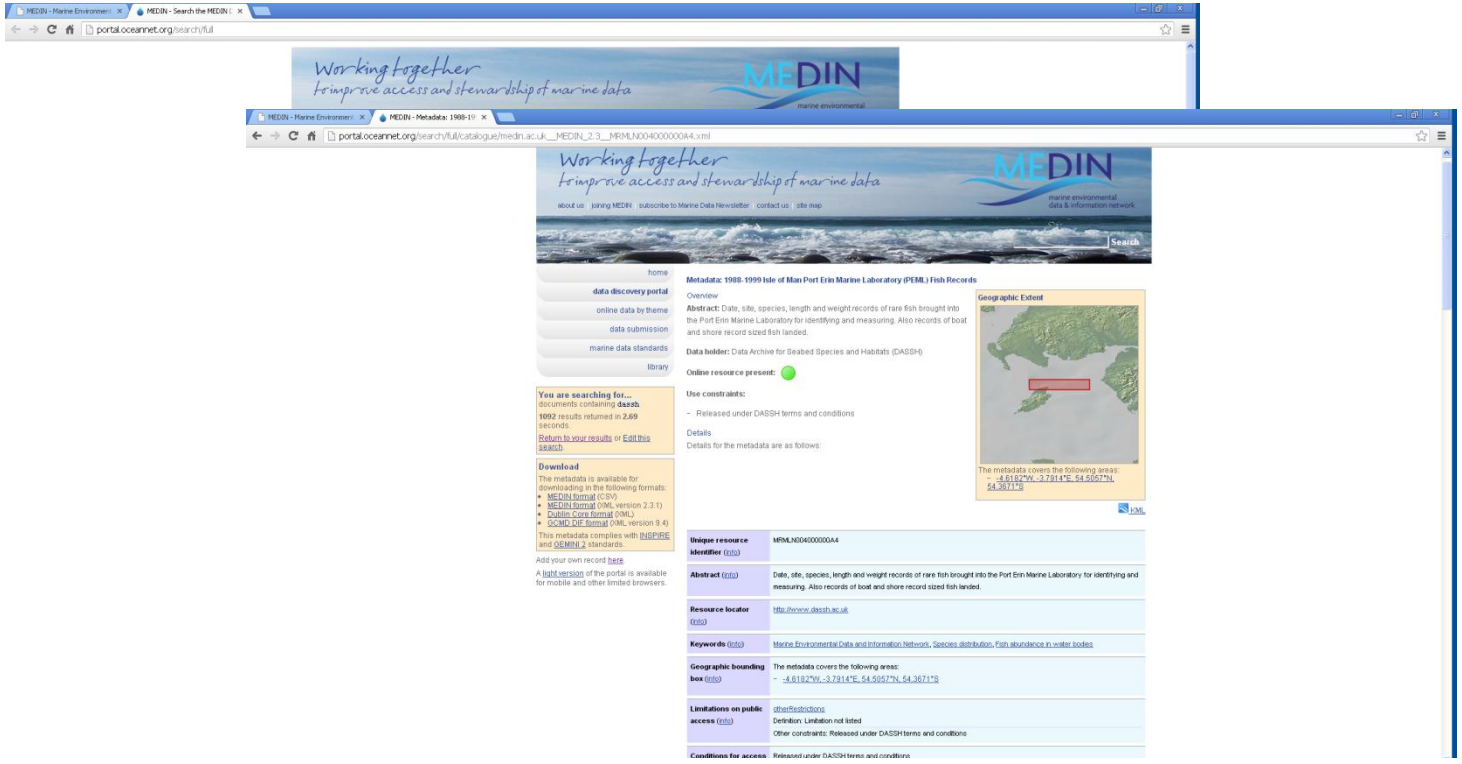
THE MARINE BIOLOGICAL ASSOCIATION

Results

P021	Entrykey	Entryterm
+	ASAM	Acoustic backscatter in the water column
+	NOYS	Acoustic noise in the water column
+	ACSR	Active seismic refraction
+	ADUN	Administrative units
+	CAPH	Air pressure
+	CDTA	Air temperature
+	ALKY	Alkalinity, acidity and pH of the water column
+	HAAC	Amino acids in sediment
+	AMON	Ammonium concentration parameters in the water column
+	ATDP	Atmospheric deposition rates
+	ATEM	Atmospheric emissions
+	CHUM	Atmospheric humidity
+	ATPC	Atmospheric particulates
+	ATVS	Atmospheric visibility and transparency
+	BATT	Bacteria environmental parameters
+	BNUC	Bacteria generic abundance in sediment
+	BNTX	Bacteria generic abundance in water bodies
+	BABI	Bacteria in biota
+	CBCC	Bacteria morphology and physiology
+	BNTC	Bacteria non taxonomy-related biomass expressed as carbon per unit volume of the water column
+	BPBP	Bacteria non taxonomy-related biomass expressed as protein per unit volume of the water column
+	BAUC	Bacteria taxonomic abundance in sediment
+	BATX	Bacteria taxonomic abundance in water bodies
+	BDWC	Bacteria taxonomy-related ash-free dry weight biomass in sediment
+	BATC	Bacteria taxonomy-related biomass expressed as carbon per unit volume of the water column
+	TBCZ	Bacterial consumption in the water column

MEDIN Discovery Metadata

Valid metadata are published to the MEDIN portal. From which data can be accessed for INSPIRE compliant view and download.



THE MARINE BIOLOGICAL ASSOCIATION

MEDIN

marine environmental data & information network

Working together to improve access to and stewardship of marine data

search MEDIN

about us | joining MEDIN | Marine Data Newsletter | contact us | site map | privacy & cookies | SHARE

data guidelines

Check back to this page regularly to ensure you're using the latest version of the MEDIN data guidelines.

Data Guidelines provide a list of information that should be collected with your data to ensure they can be re-used in the future. The guidelines are tailored to different methods and are arranged below by theme.

bathymetry

fisheries and aquaculture

- archiving digital images (15sep11)
- cetacean sighting and identification (15jul10)
- fish and benthos by static pot, net or trap (15jul10)
- fish and benthos by trawl or dredge (15jul10)
- shellfish stock assessment (15jul10)
- video tow surveys for species or biotopes (20jul10)

human contamination

marine archaeology

marine biodiversity

marine chemistry

marine geology

physical oceanography

Send user feedback

Hosted by the British Oceanographic Data Centre (BODC).

quick links

Data Discovery Portal

Generate metadata

MEDIN Metadata Discovery Standard

MEDIN Metadata helpline
Tel: 01752 633291
email: helpline

>> UK location Programme

>> Underwater sound forum

>> FAQs

Data Archive Centres

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

for seabed and sub-seabed geology, geophysics data

British Oceanographic Data Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

for water column oceanographic data

THE UNITED KINGDOM HYDROGRAPHIC OFFICE

for bathymetry data

Met Office

for marine meteorological (metocean) data

BUT .....

DASSH The Archive for Marine Species and Habitats Data

for flora, fauna and habitat data

marinescotland Cefas

for fisheries data

ads ARCHAEOLOGY DATA SERVICE

for marine historic environment data

THE MARINE BIOLOGICAL ASSOCIATION

...What about social and economic data?

Marine Social and Economic Data in the UK Recent History

Charting Progress 2: Chapter 5 – Productive Seas

- The Charting Progress Series reviews the state of the UK Seas.
- Provides key findings of progress towards the UK's vision of clean, healthy, safe, productive and biologically diverse oceans and seas.
- Chapter 5: Productive seas, undertook the first Charting Progress review on Productive Seas.

Marine Social and Economic Data in the UK Recent History

Some other UK Initiatives also highlighted the requirement for better social and economic data management.

VALUING NATURE NETWORK

Living With Environmental Change

UK National Ecosystem Assessment

THE MARINE BIOLOGICAL ASSOCIATION

Marine Social and Economic Data in the UK

But, there is still no Social and Economic Data Archiving Centre within the MEDIN framework.

So how is this gap in data and information management being addressed?

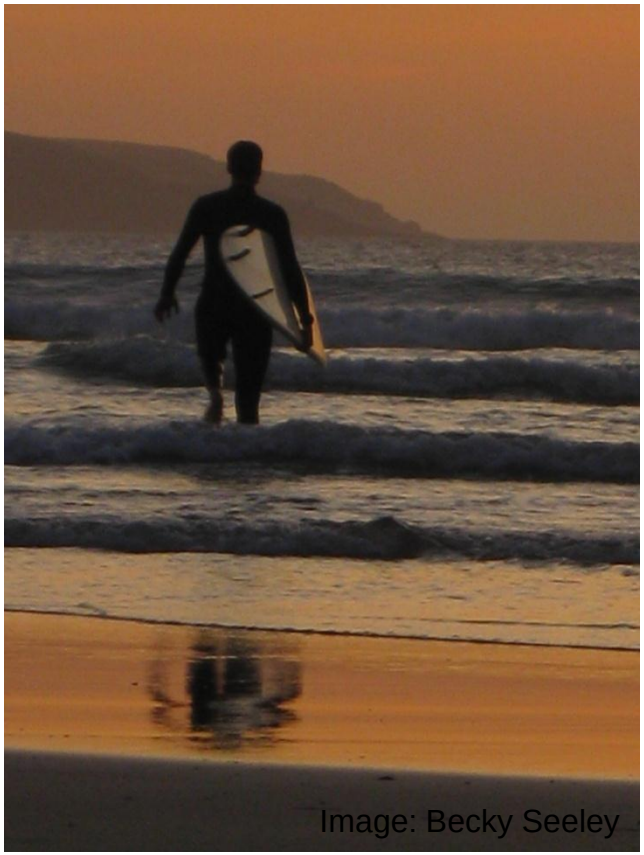
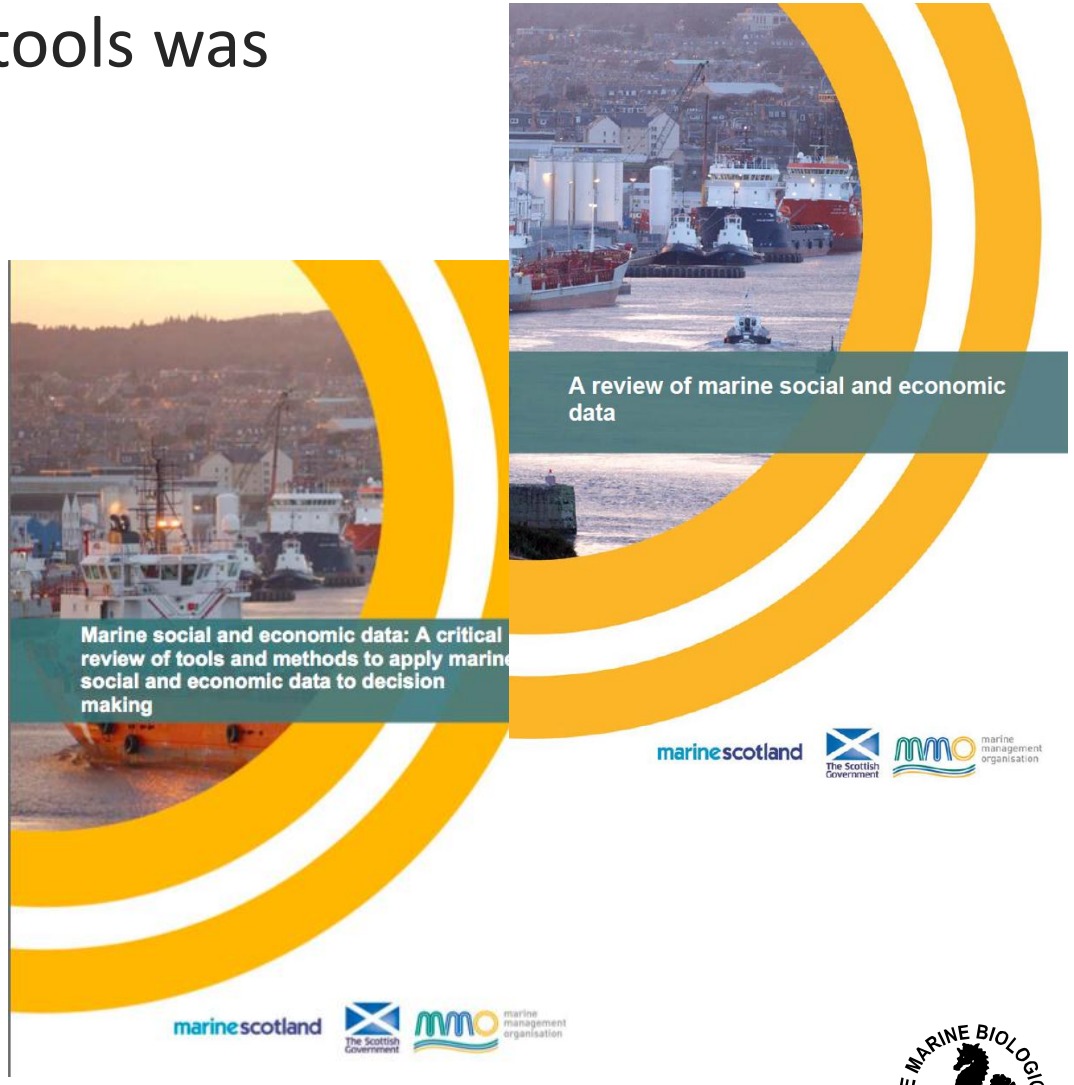


Image: Becky Seeley

Social and Economic Data and Tools Review

Managed by MEDIN, in 2012 a large review of social and economic datasets and tools was conducted:

- Existing datasets
- Key data providers
- Existing data strategies
- Review of tools that incorporate social and economic data.



http://www.marinemanagement.org.uk/evidence/documents/1012a.pdf
http://www.marinemanagement.org.uk/evidence/documents/1012b.pdf

InVEST limitations	InVEST benefits

CoastRanger MS limitations	CoastRanger MS benefits

Co$ting Nature limitations	Co$ting Nature benefits

MIMES limitations	MIMES benefits
• No measure of uncertainty: reliant on input data being accurate, therefore any inaccuracies accumulate throughout the models • Reliant on availability of relevant data • Moderate to high level of effort required • Not spatially explicit unless model is applied to each cell of a map, i.e. high level of effort for a map output	• Able to incorporate some potential secondary effects across a given system • Can be run at multiple geographic scales (i.e. local, regional, global) dependent on data • Has a modular, tiered approach to deal with data availability and the state of system knowledge

Applications	
Massachusetts Ocean Partnership and SeaPlan are investigating the use of MIMES in marine spatial planning and decision-making. The aim is to analyse the ecosystem trade-offs associated with different management scenarios. Once developed Marine MIMES will be widely applicable, from site-specific work to state and regional planning.	
Tool functions:	Development of options, Impact Assessment.
Data needs:	No user input needed for basic use, specific data level needed for advanced use of models.
Data outputs:	Models, valuation, reports, movies.
Links:	http://www.uvm.edu/giee/mimes/policy.htm

	outcomes from the different policy options.
Links:	http://www.discoverysoftware.co.uk/CoastRangerMS.htm

Social and Economic Data and Tools Review

Data Review

The data catalogue consists of

- 391 datasets representing
  - 149 social and economic datasets and
  - 243 locational datasets

covering a large range of different types of social and economic data.

Around a third of these datasets are available online.

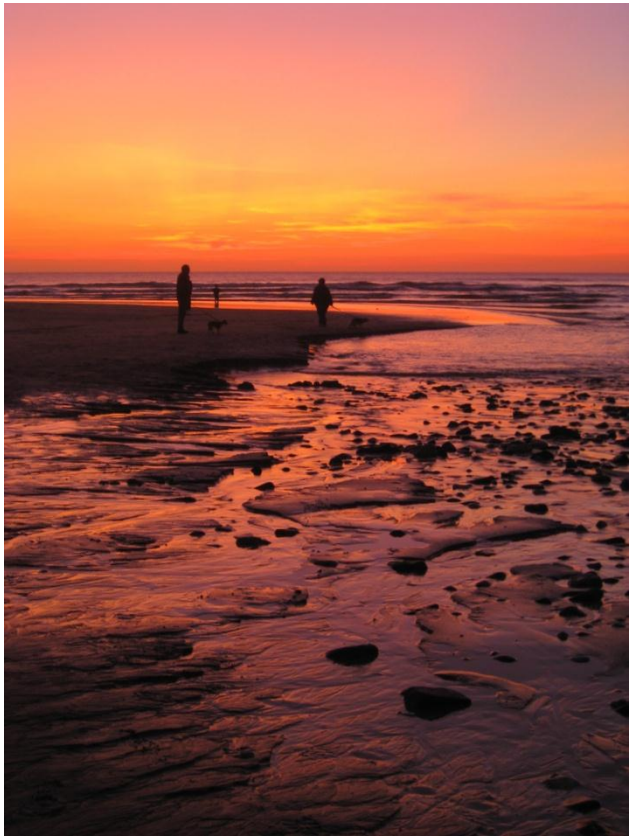


Image: Becky Seeley

Social and Economic Data and Tools Review

The data sets reviewed covered a large range of different types of social and economic data split into the following themes:

- Aquaculture
- Aviation
- Carbon Sequestration
- Coastal Defence
- Ecosystem Services
- Education
- Fisheries
- Gas Storage
- Historic Environment
- Leisure and Recreation
- Marine Protected Areas
- Maritime Transport
- Military Defence
- Mineral Extraction
- Oil and Gas
- Renewable Energy
- Research
- Social
- Telecom and Power cables
- Waste Disposal
- Water Abstraction

Image: Becky Seeley

Social and Economic Data and Tools Review

However some weaknesses were uncovered.

- Data are held by a large number of disparate data holders.
- Difficulty tracking updates to data owners and information
- Lack of availability of information for metadata. Leading to non-MEDIN/INSPIRE compliance.
- Poor spatial and temporal records, and lack of protocols.
- No existing keywords.

Social and Economic Data and Tools Review

Recommendations

- Develop and promote a detailed action plan for marine social and economic data
- Improve communication between scientists and marine managers
- Improve data management and access
- Develop and promote metadata guidelines and standards
- Develop a set of keywords for marine social and economic data
- Address gaps in marine social and economic metadata and data

Any questions?