



Marine Alliance for Science and Technology for Scotland

a marine partnership for Scotland

A Consistent, Spatially Aware Framework

Andrew Blight & David Paterson
Sediment Ecology Research Group
University of St Andrews

Decommissioning & Wreck Removal Workshop
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of
St Andrews



Marine Alliance for
Science and Technology for Scotland
a marine partnership, for Scotland



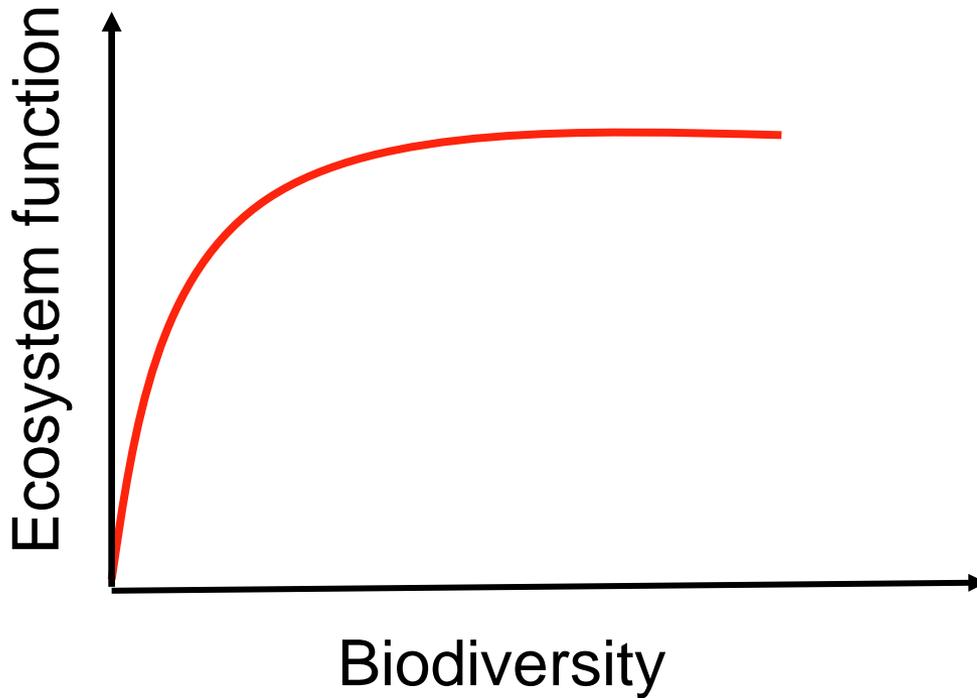
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Presentation outline

- The Ecosystem approach
- In a perfect world
- Case study
 - High/Low impact
- Recommendations/proposal

- Ecosystem approach
 - *“the comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of marine ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity”* – OSPAR Convention

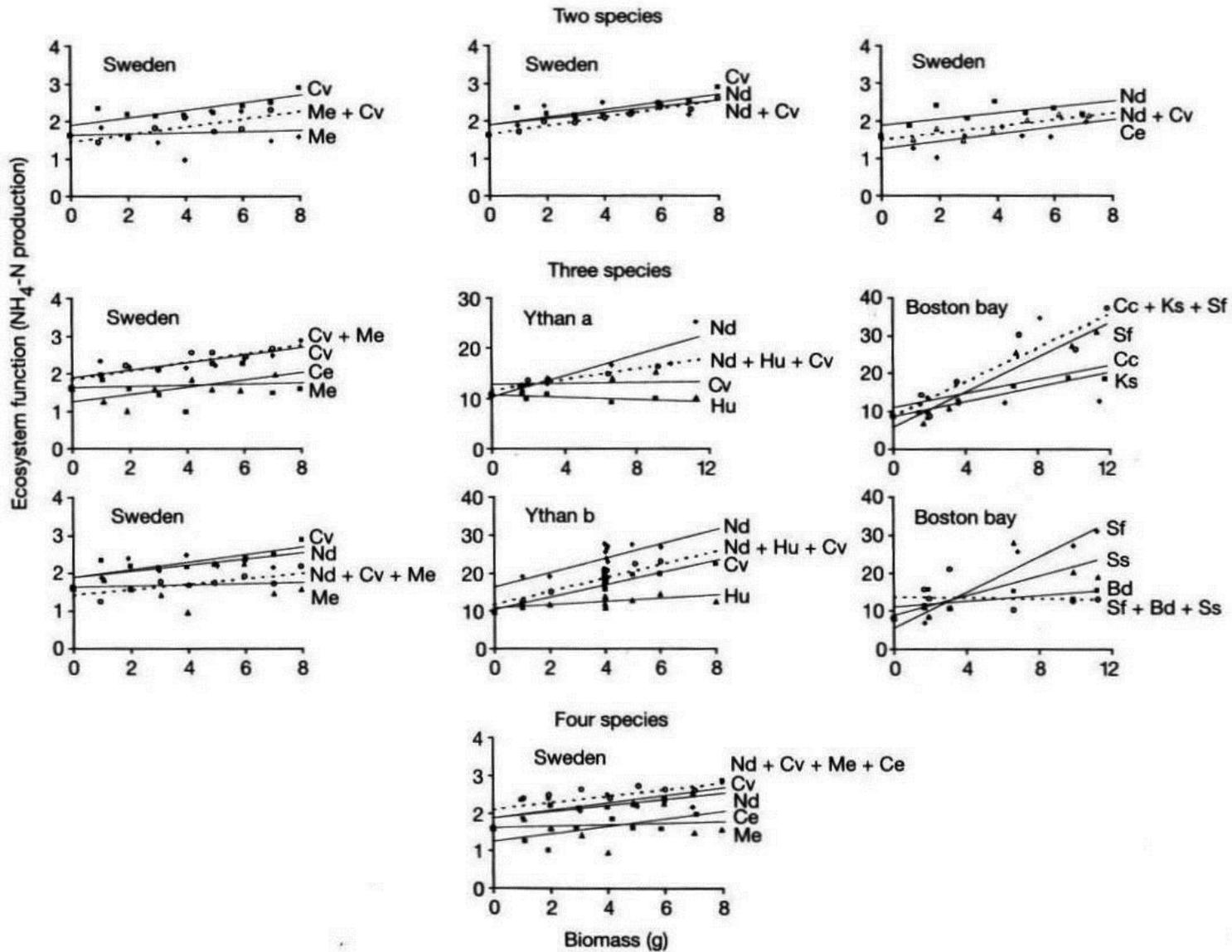
Redundancy hypothesis:



Functions/traits



Courtesy of Susan Chamber, SNM



Understanding of ecosystems relatively new: In a perfect (terrestrial) world, spatially explicit hierarchical sampling







© CBESS

Greenhouse gas measurements



© CBESS

Fish diversity



© CBESS

CO₂ fluxes



© CBESS

Microbial diversity



Invertebrate diversity



Invertebrate diversity



Net primary production



Lateral root stabilisation

Time: Season and Year

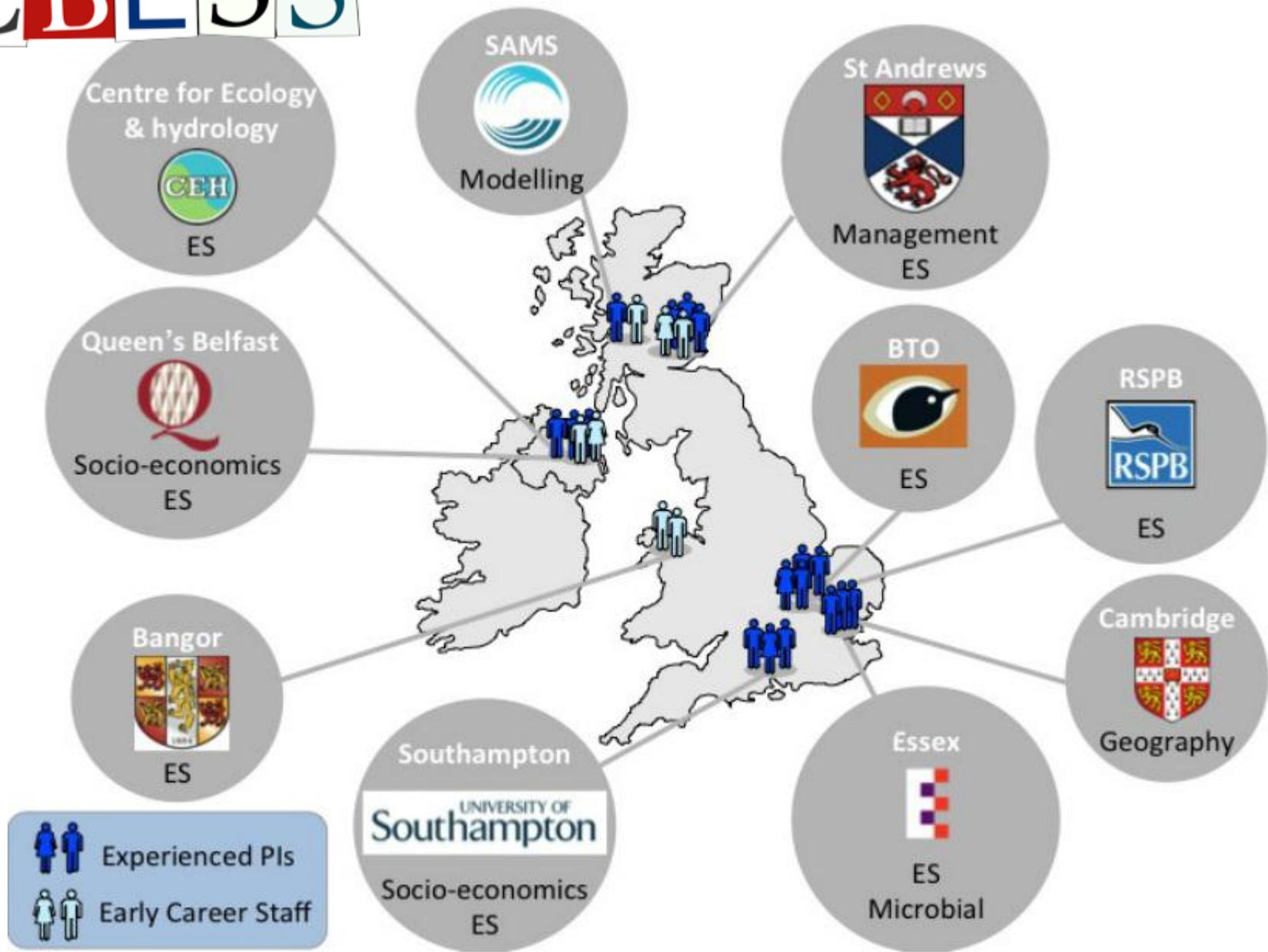
Summer



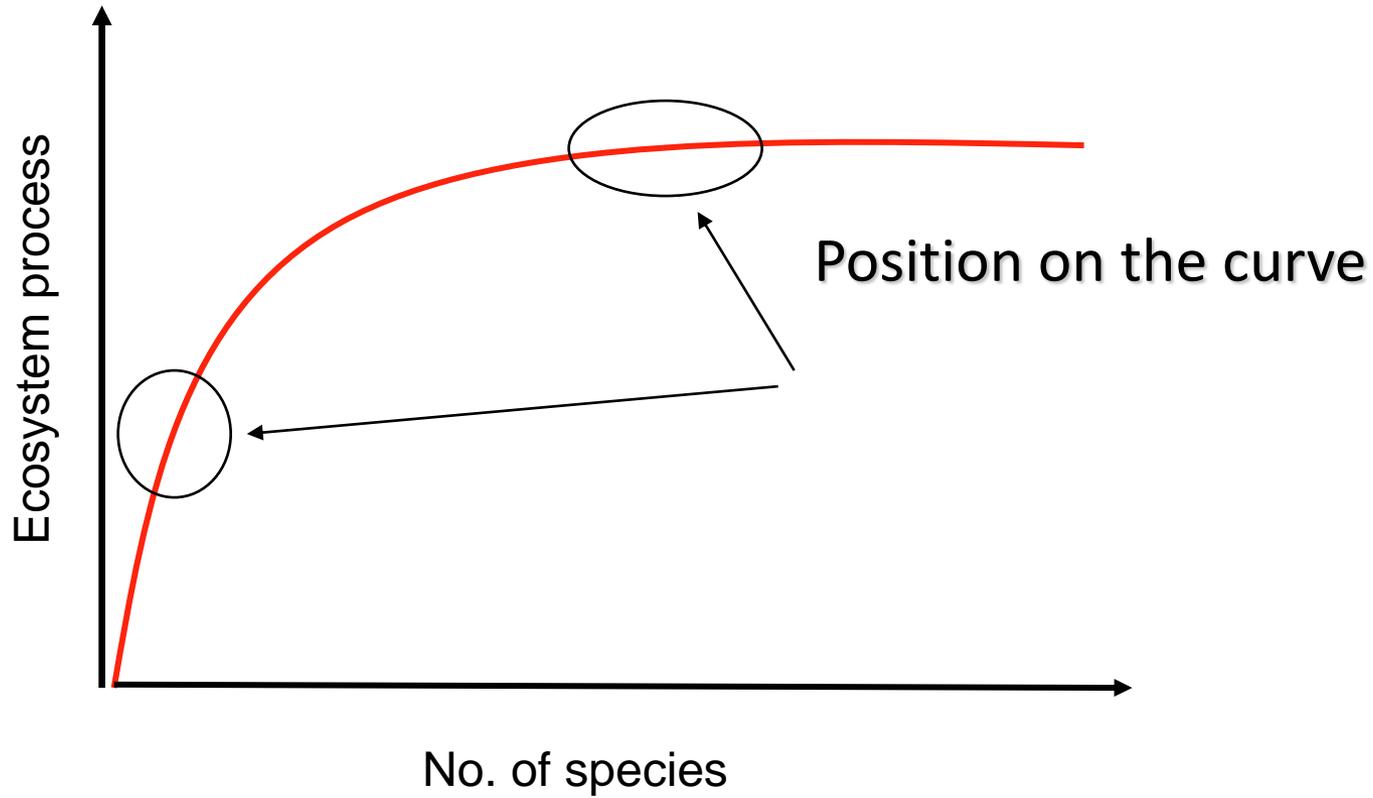
Winter

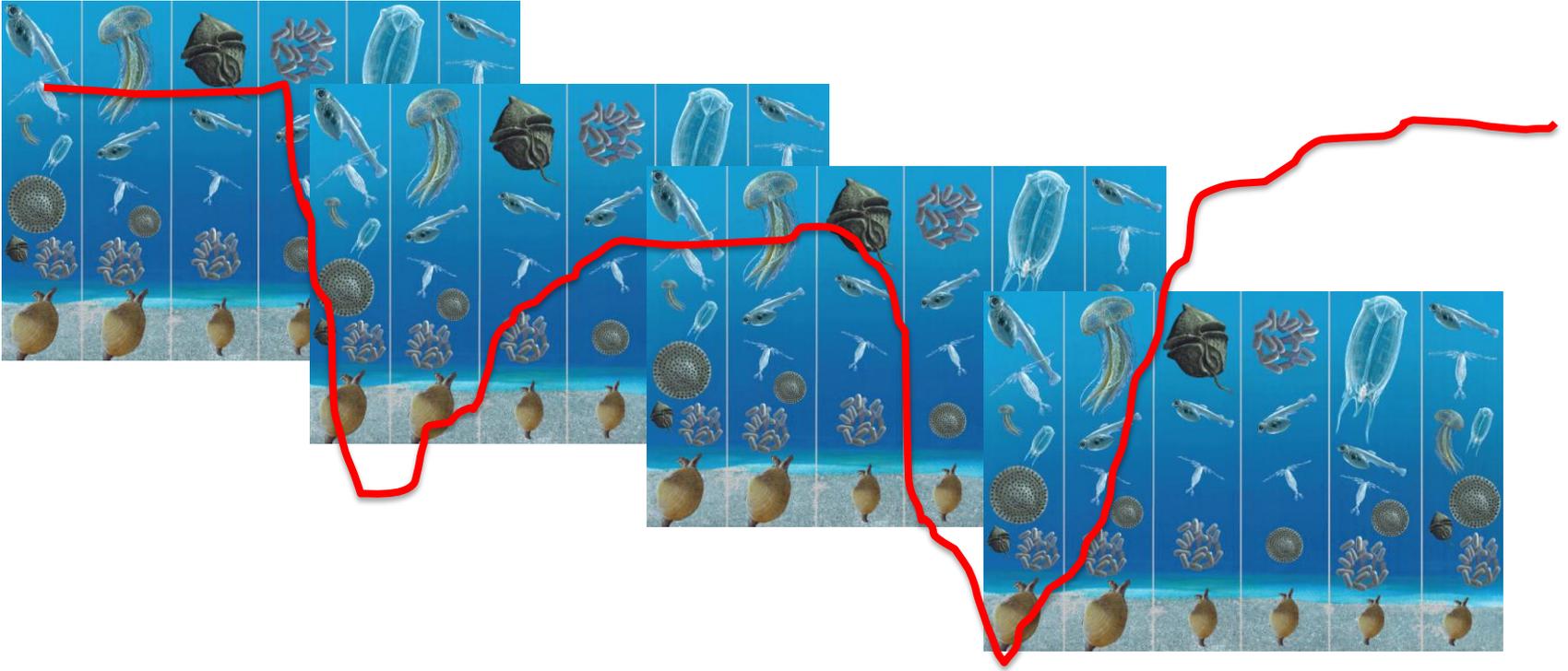


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Context of decommissioning





Before

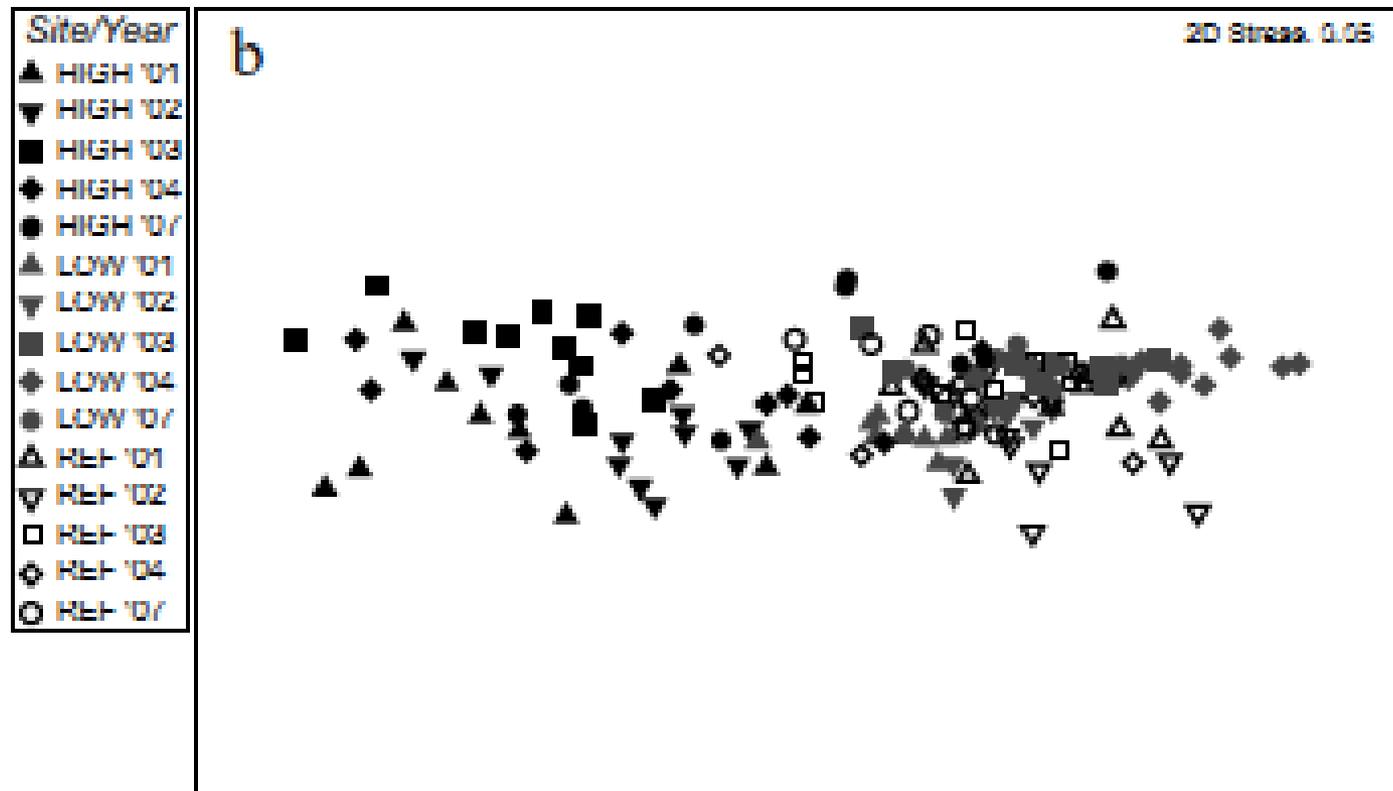
Installation

Operation

Decommissioning

Recovery

- Case study



Progress on data and protocols:

The problem: Data of variable accessibility and quality

Appropriate methods: Example type of grab/mesh size

Appropriate design: Before-After Control-Impact Design

Appropriate replication: No pseudo replication

Appropriate statistical design: Type I and II error

Progress on data and protocols:

The solution: Change of ethos and regulation

Promote best practice (e.g. DNV)

Appropriate methods: Example type of grab/mesh size

Appropriate design: Before-After Control-Impact Design

Appropriate replication: No pseudo replication

Appropriate statistical design: Type I and II error

New ethos of data sharing and cooperation



Grabs: Take your pick BUT result may vary with size of sample

Progress on data and protocols:

The solution: Change of ethos and regulation

Promote best practice (e.g. Oil and Gas)



Potential environmental impacts

As cuttings piles started accumulating at the feet of installations in the Northern and Central North Sea, oiled cuttings were identified as having the potential for long-term environmental impact on seabed fauna. As a result, UKOOA (now Oil & Gas UK) established a Joint Industry Project (JIP) to generate the detailed information required to develop a robust cuttings piles management strategy for the UK oil and gas industry. (2009)

Murray Roberts and Lea-Ann Henry project on impact of drill spoil heaps from historic data - 10% of over 200 surveys useful for this!

- Decommissioning
 - ‘Lifetime Stewardship of the Environment’
 - In a perfect world
 - New ethos of data sharing and cooperation
 - Can we get it right from the start...

Thank you