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European Fisheries Fund

Sustainable Development Strategy for Northern Irelands Inshore Fisheries

Northern Ireland Sector

- Inshore sector has recently seen considerable growth
- 2010 52% Northern Irish fleet <10m therefore prosecuting inshore region
- Main species targeted in inshore are crab, lobster, whelks, scallops, queenies, cockles, mussels, periwinkles, Nephrops
- 2010 inshore fisheries worth first sale value of £4.4 million (excluding mussels)
- In addition there is the socio-economic value of recreational sea angling (RSA) and the value of intertidal harvesting
- Facing a number of challenges:
  - Obligations to protect marine environment
  - Influx of new entrants
  - Lack of data available
  - Marine spatial planning
  - Sustainability of stocks
  - Optimising economic return

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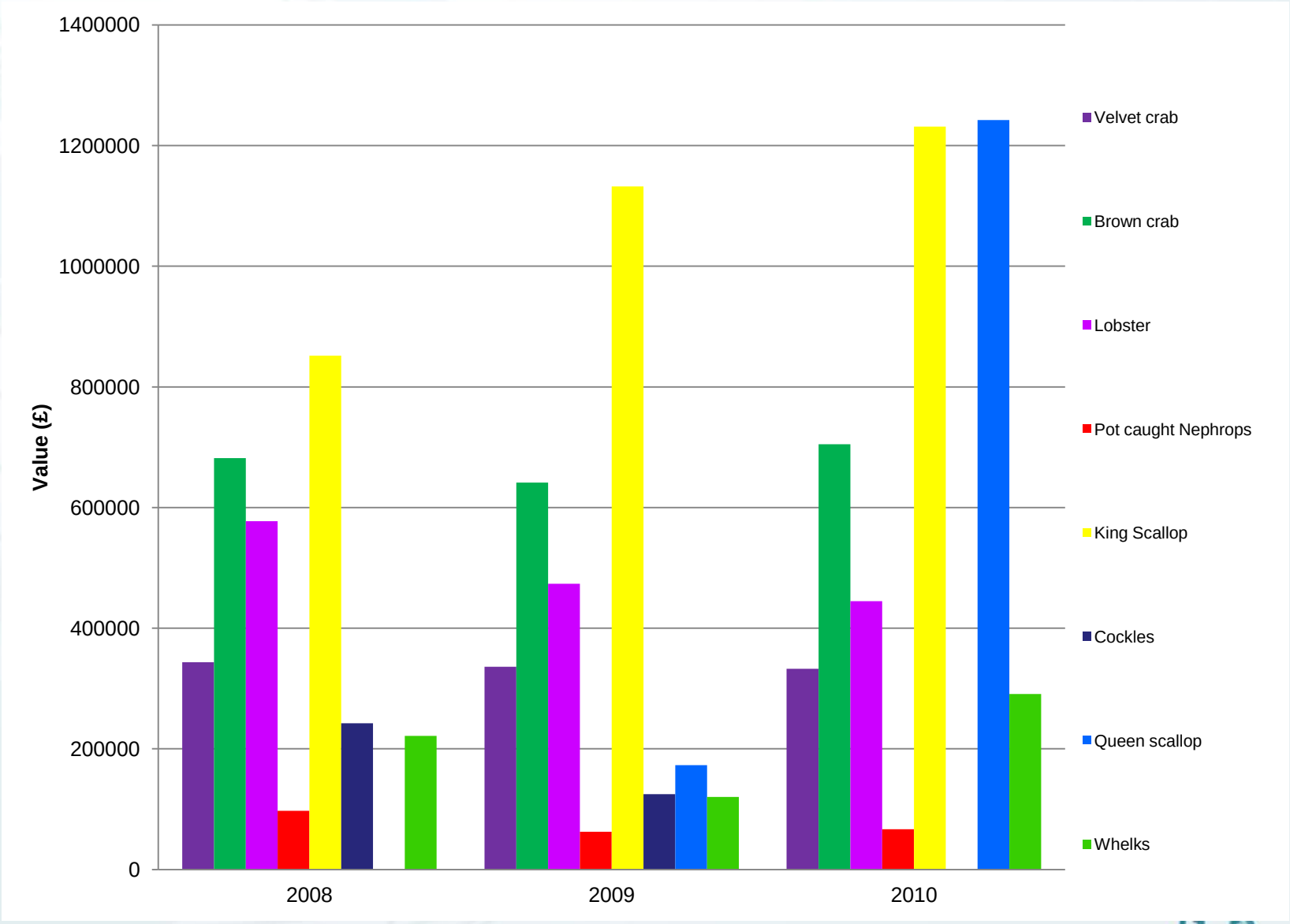

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Some of the objectives...

- To produce a **draft management strategy** for the Northern Ireland Inshore
- To establish a **draft scientific work programme** that meets the requirements for an improved knowledge base on the inshore fisheries sector
- Identification of a **stakeholder role in data collection** whilst setting a basis for scientists and fishers to work together to deliver a credible evidence base for management of the inshore sector
- A **GIS approach** to the inshore sector which recognises the varying spatial and temporal extent of inshore fisheries and the variety of other pressures on inshore habitats and resources e.g. renewable energy, conservation areas

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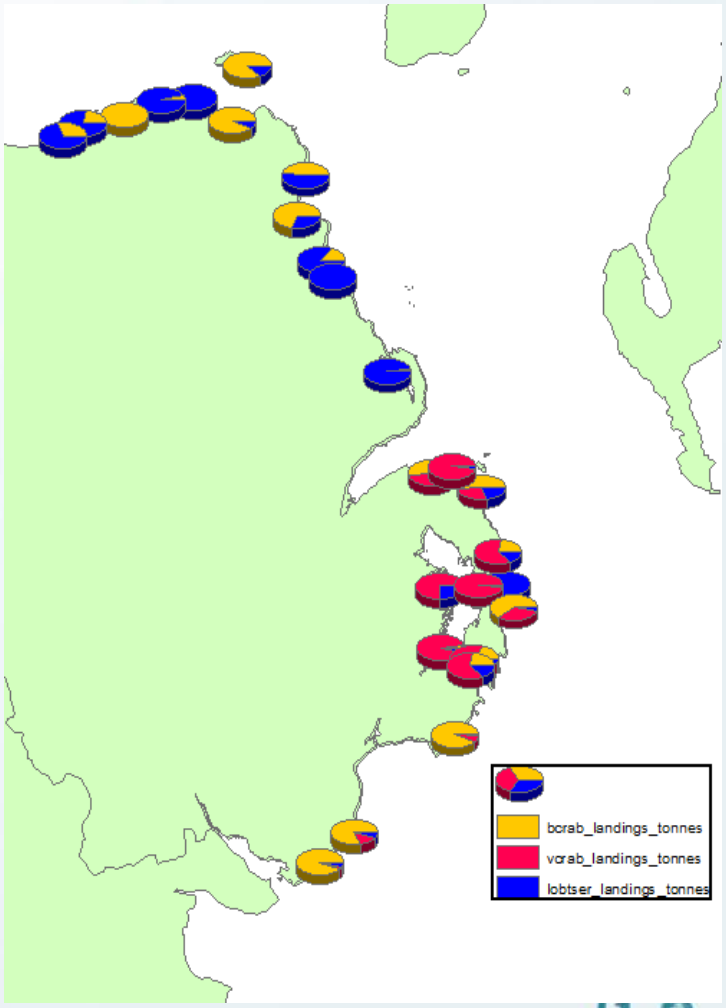
Pot Fishing

- Brown crab, velvet crab, lobster, Nephrops, Palaemon, whelks
- Observers programme

- Age/length frequency
- Sex ratio
- Annual cycle of numbers
- Area specific data
- Seasonal moulting patterns
- Depth of catch
- Returns/efficiency from v-notching scheme
- Proportion of reproductive lobsters
- Bycatch



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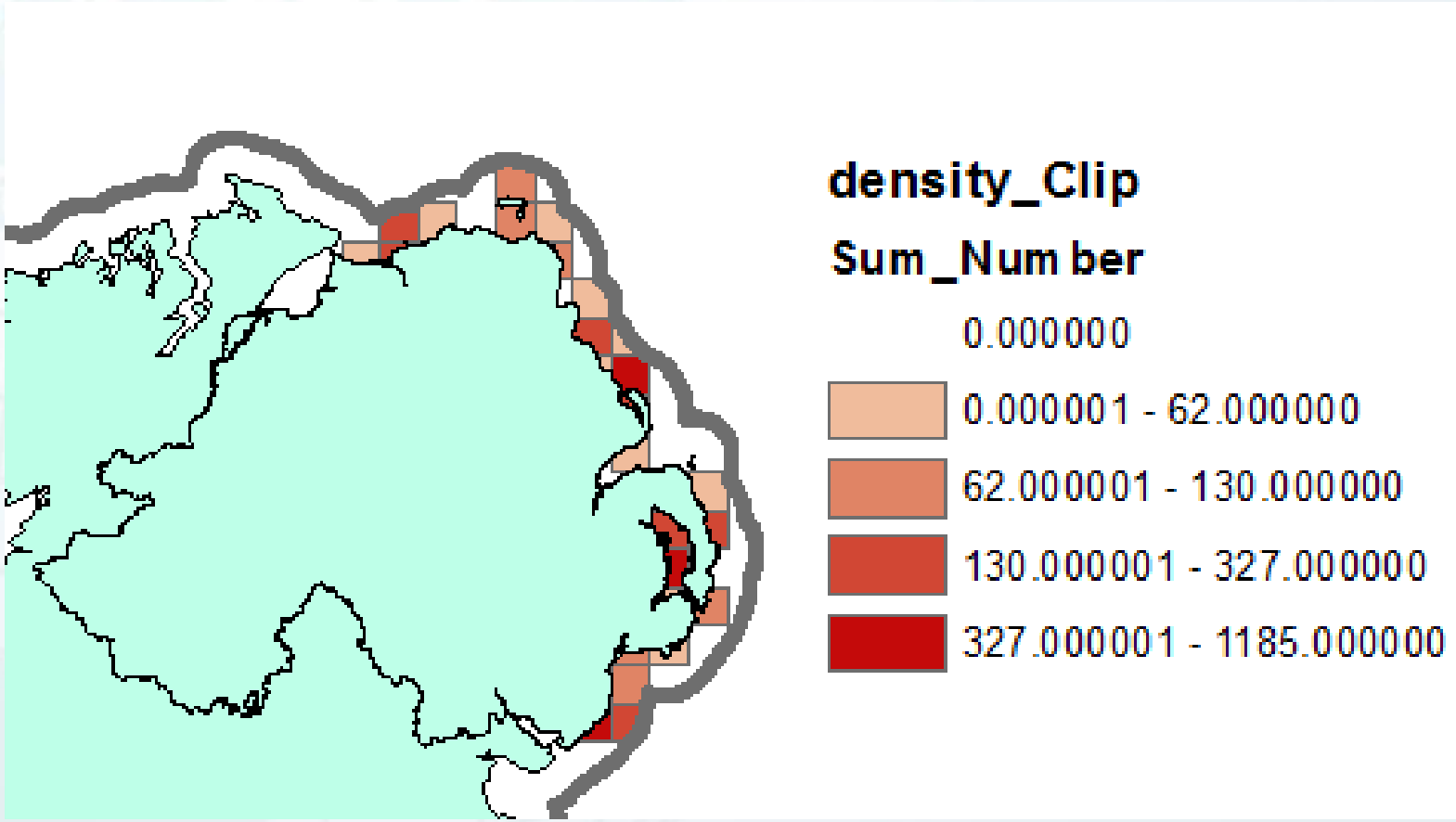
Density of pots sampled



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Lobster tagging

So far:

- 154 lobster tagged
  - 69 female
    - Average length 75mm
  - 85 male
    - Average length 73mm
- Smallest tagged 53mm
- Largest tagged 92mm
- So far 4 returns
- Furthest distance approx 13 km
  - 83mm male
- During tagging period 23% lobster ≥ 87mm but take in to account v-notched, soft etc. landings drop

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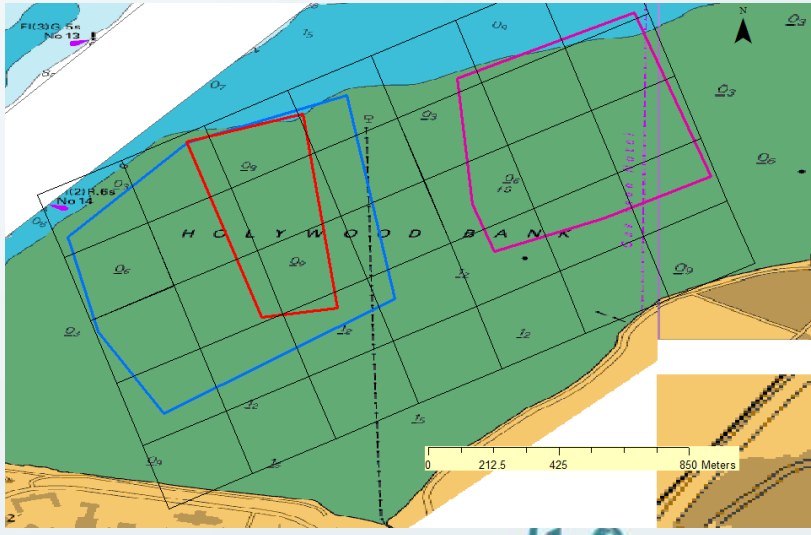
Cockles

- In 2008 there was a pilot fishery in Belfast Lough (2 vessels – 128 tonnes)
- In 2009 fishery an alternative section of the bed was opened for the fishery (13 vessels – 66 tonnes)
- No fishery since
- Twice yearly quadrat survey (stratified random survey design)
- Additional surveys of historical sites
- Lack of recruitment



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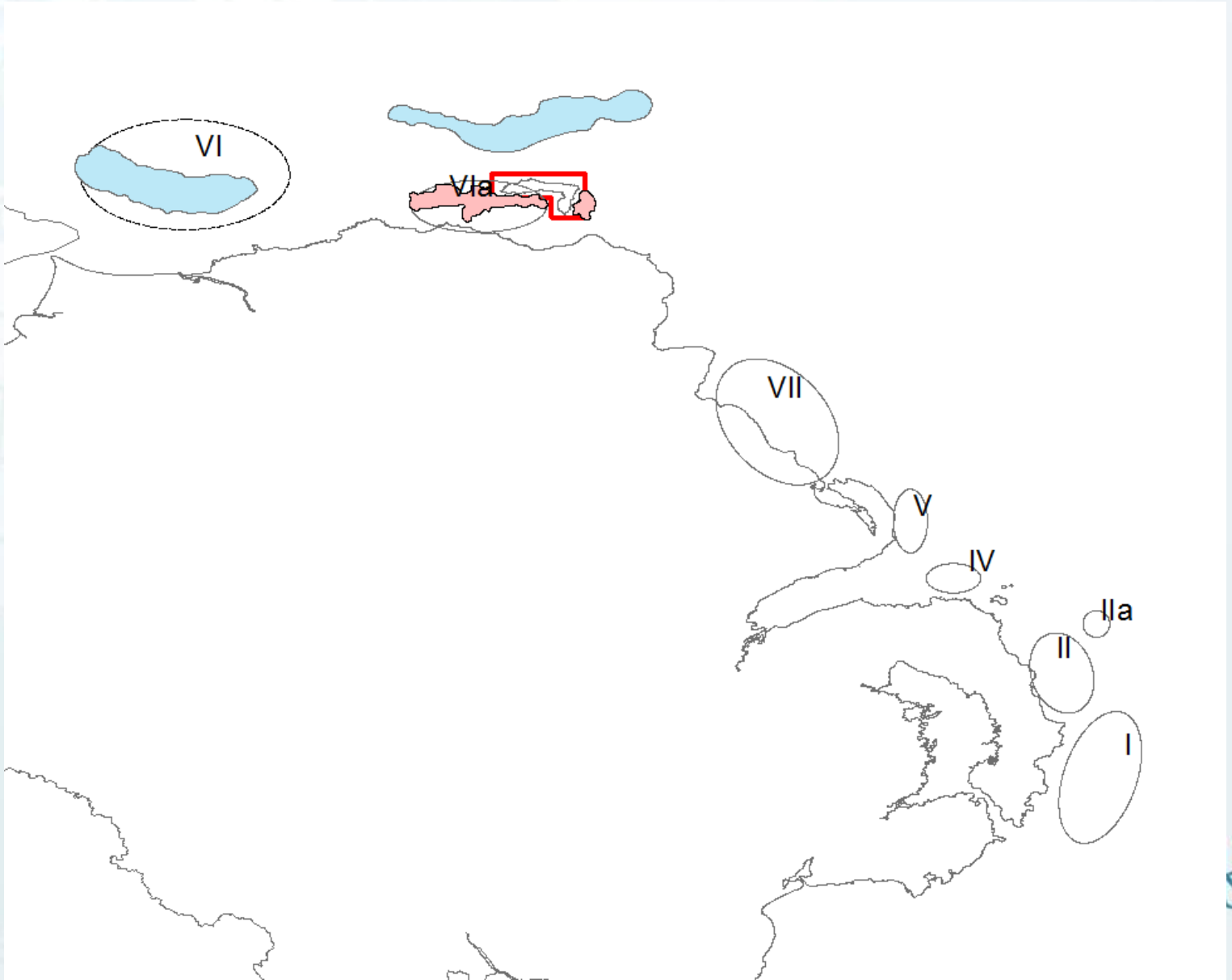
Scallops



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Scallops

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Sea Angling

- 2005 a report stated that in NI:
  - there were over 5,000 RSA with 2,923 anglers fishing from the sea and 2,138 fishing from shore
  - the spending of local sea anglers on expenses such as food, boat hire, travel costs etc was £1,459 per angler per year giving an estimated total expenditure of £7.4 million by local anglers
  - Northern Ireland hosted 450 visiting anglers for the sole reason of engaging in sea/shore angling
- MMO in England – Sea Angling 2012
- AFBI are releasing a questionnaire to establish the spatial variations in RSA as well as establishing the socio-economics – link through AFBI website

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The future of Northern Ireland Sea Angling Needs YOU!

Little is known about sea angling in Northern Ireland.

The Agri-Food and Biosciences Institute are carrying out a survey on sea angling in NI. By providing us with information on your fishing trips, such as where you fish, what you catch, what you spend and your perceptions of how good (or bad) angling is in NI, we will have a better understanding of the importance of angling around our coast.

The information you provide us with will be given to policy makers to ensure that anglers get the representation they are entitled to in marine decision making.

You can become involved in the survey by completing a questionnaire online at **www.afbini.gov.uk/fisheriessurvey**

Alternatively, to have a questionnaire posted out to you contact AFBI on (028)90 255 297 or at **angling@afbini.gov.uk**

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Other work within AFBI Coastal Zone Management

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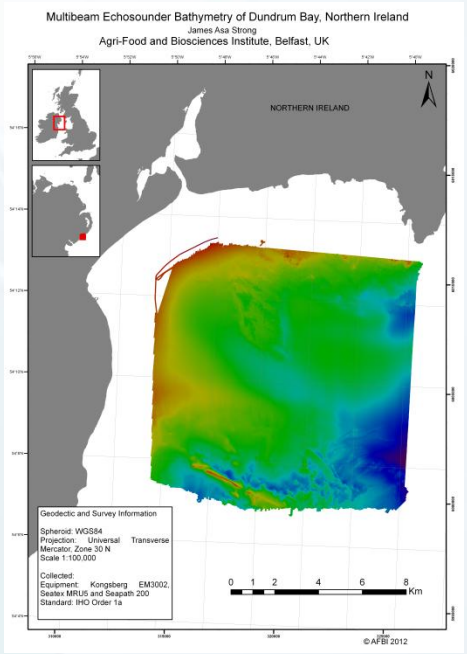
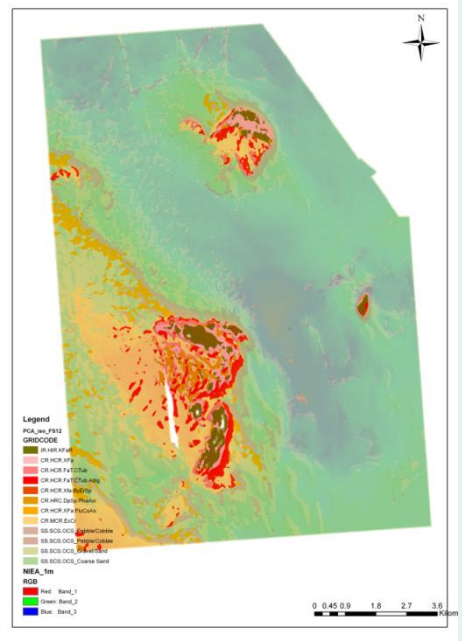
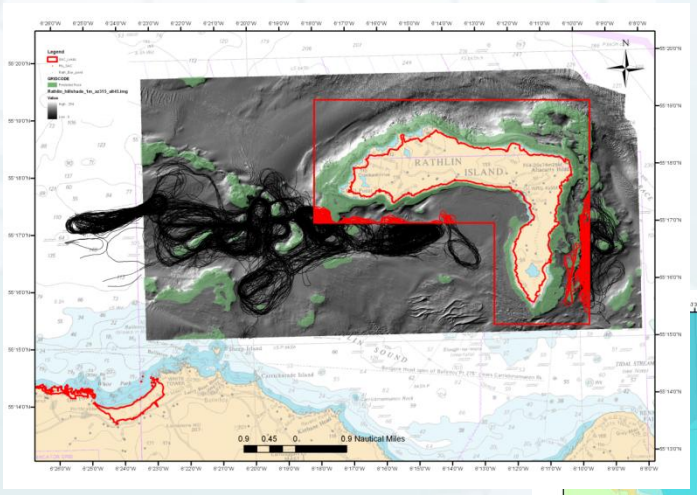
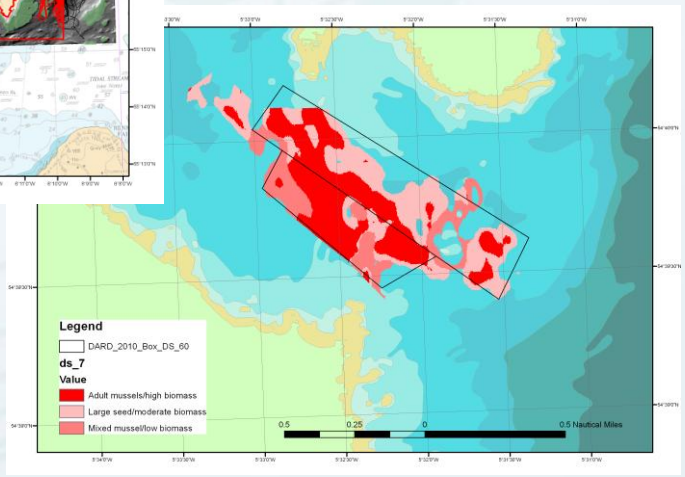
Seabed Mapping at AFBI (James Strong)

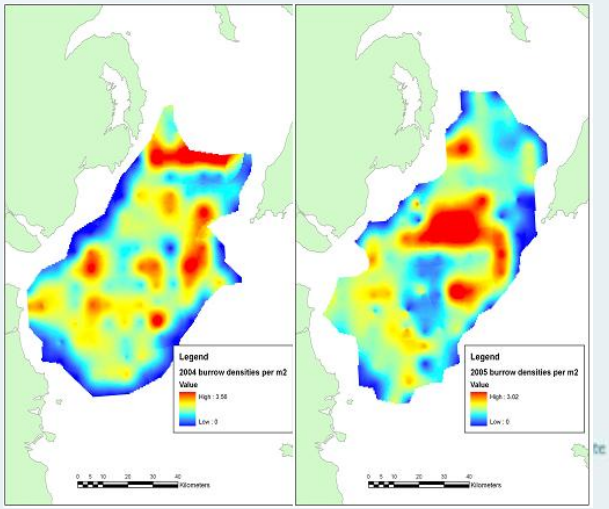
- Multibeam Echosounder surveys e.g. INIS Hydro
- Habitat Mapping e.g. Maidens
- Specific ground types, e.g. rocky reef – Rathlin, or resources, e.g. Mussel seed and *Nephrops* stock assessment







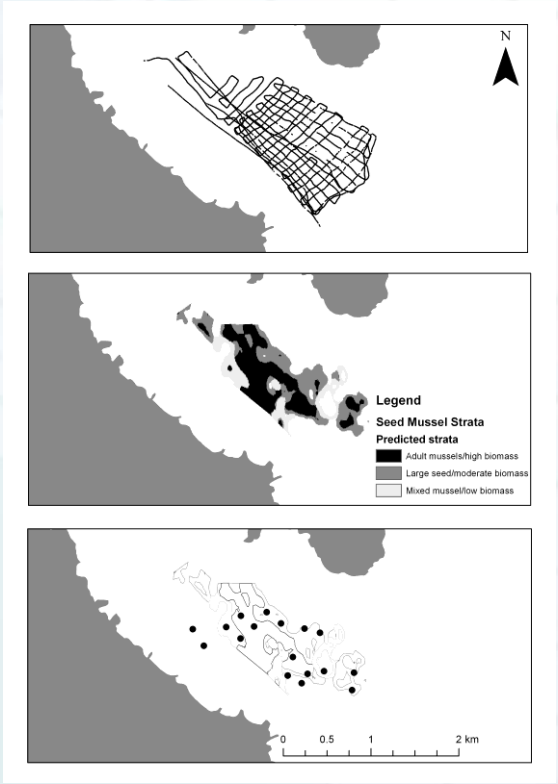




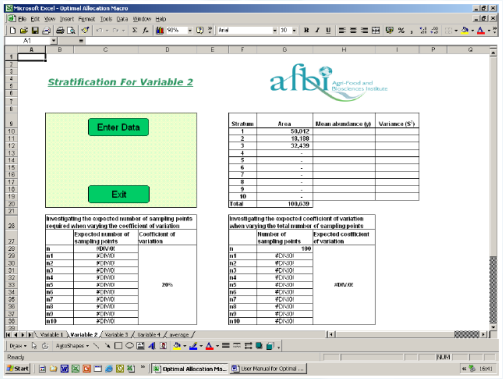
An Optimum Allocation Analysis Planning Tool to Support Habitat Mapping and Stock Assessments

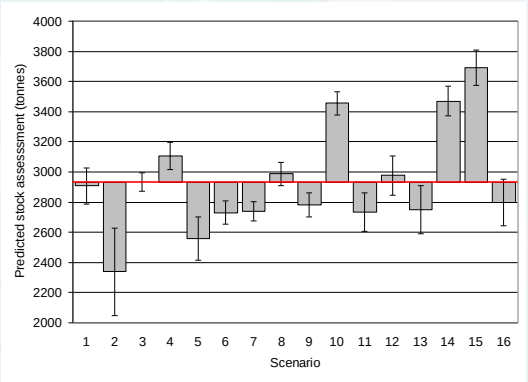
A procedure used in stratified sampling to:

- allocate samples to different strata in order to either maximize precision at a fixed cost or,
- minimize cost for a selected level of precision.

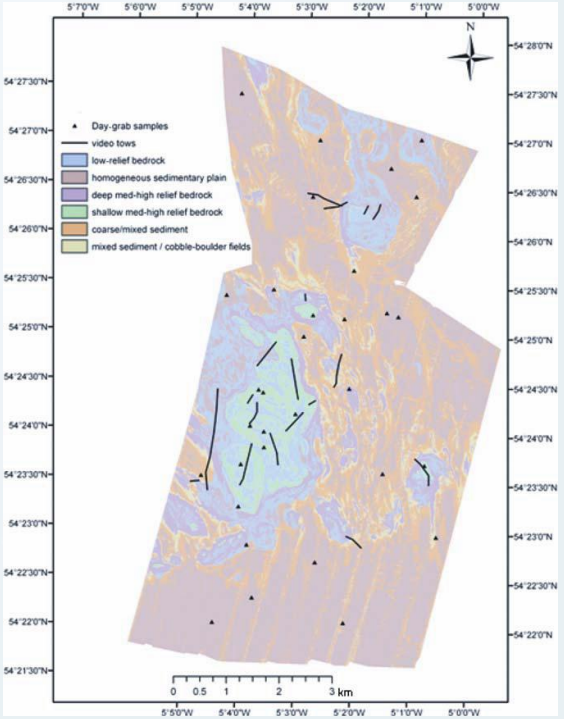


Acoustic Mussel Seed Stock Assessments





Excel Macro and quality of estimated tonnage



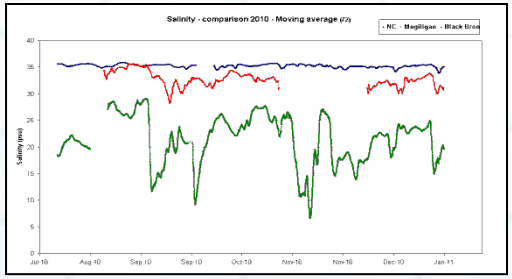
Ground-truthing of habitat maps

Coastal Monitoring

Monitoring Network

A network of moored *in-situ* coastal observation stations.

Established survey points for complete geographic coverage.

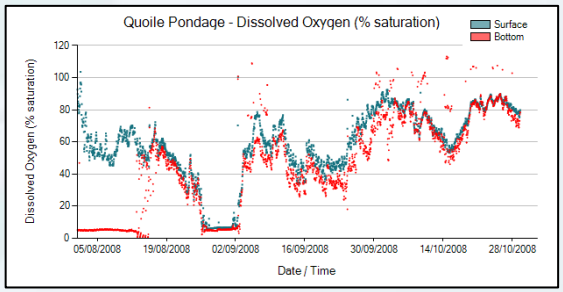


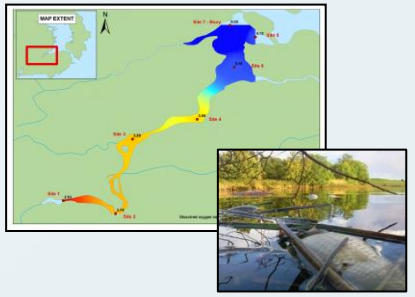
Observational Data

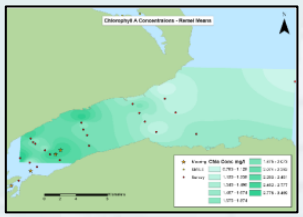
Documenting coastal water processes for CTD, Chl *a*, Turbidity, nutrients etc from estuary to open coast.

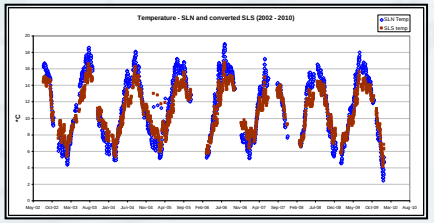
Real time and delayed-phase data

Data to assist with reactive management and monitoring of sensitive coastal water bodies.









Modelling & Analysis

Characterisations, hind-casting and interpolations.

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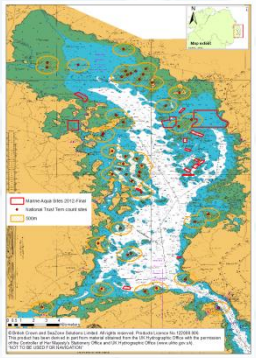
Marine Environmental Impacts

Cumulative Impact Assessments

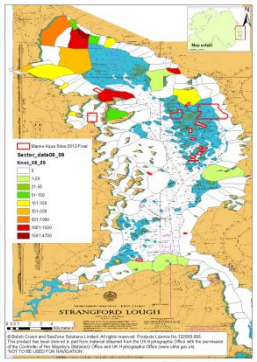
Strangford Lough Aquaculture

- Geographical Information Systems

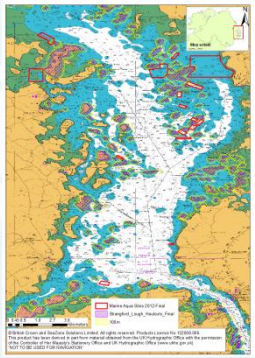
Breeding birds



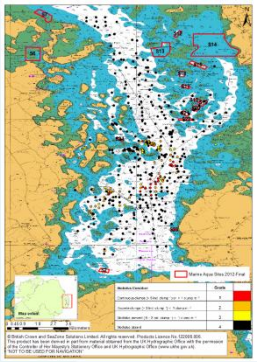
Overwintering birds



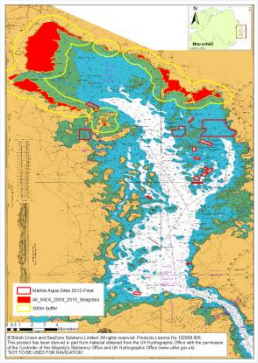
Seals



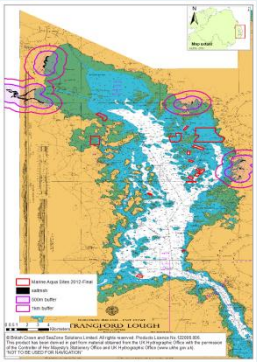
Modiolus



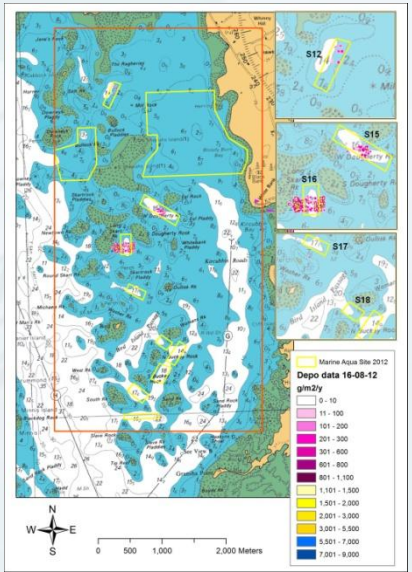
Intertidal Eelgrass



Saltmarsh



- Modelling
  - Depositional modelling: **DEPOMOD**



  - Carrying capacity Modelling: Sustainable Mariculture in northern Irish Lough Ecosystems (**SMILE**)

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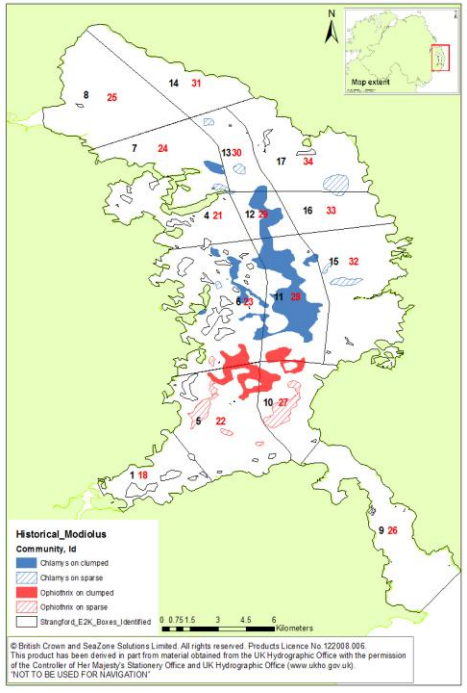
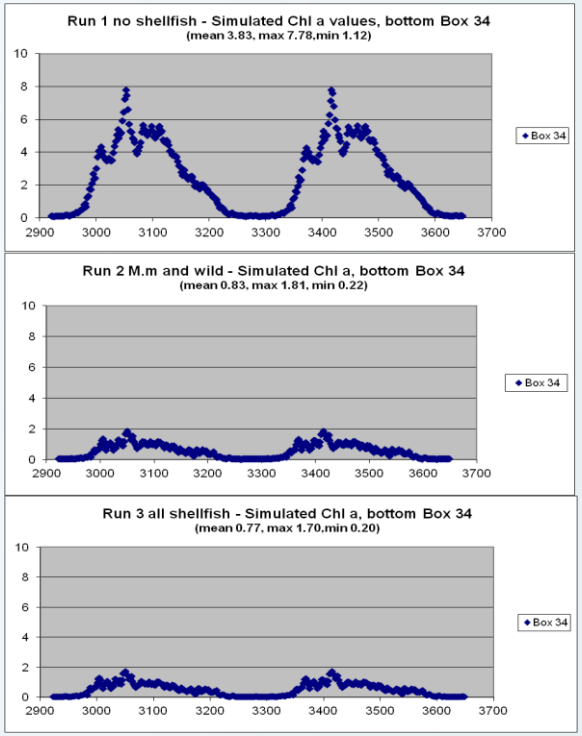
SMILE – an ecosystem tool



Map showing historical *M. modiolus* distribution in Strangford Lough with SMILE model (EcoWin2000: E2K) boxes superimposed (black number upper box and red number lower box).

- Original SMILE focused on shellfish aquaculture carrying capacity
- developed as a tool to investigate ecosystem health
- SL cumulative assessment, chlorophyll a was used as an ecosystem health indicator.
- Chl a as proxy for phytoplankton biomass (FOOD)
- Results showed minimal impact on food availability for wild species* with aquaculture activities at maximum productivity



Simulated Chl a values predicted in Box 28 (deep box,14.2m) from SMILE model Run 1, 2 and 3 showing changes in Chl a as shellfish are added to the system.

*In scenario - wild species included pristine *M.modiolus* population, covering historical sites (map) at density 50 ind/m^2

(AFBI conducted this work as part of the MRRG project)

Thank You

http://www.afbini.gov.uk/index/services/services-specialist-advice/coastal-science/inshore-fisheries

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