

Harvesting marine resources sustainably ensures the long term profitability of fisheries and provides food security.



Scientific survey data of Queen scallop densities in the waters around the Isle of Man.



#### Sustainable harvesting



Distribution of fishing effort for king scallops in the waters around the Isle of Man.



Monitoring fishing activities and understanding their spatial distribution is critical for the implementation of an ecosystembased approach to fisheries management.



### Monitoring fishing activities



Scallop fishing gear being towed over the seabed.



Understanding the impacts of different fishing gears on the wider environment is essential to set sustainable levels of fishing activity.



### Understanding impacts of fishing activities



Habitat biotope classification of the seabed of Isle of Man waters.





Knowing the spatial distribution of sensitive habitats provides the basis for conservation management.



#### Conservation





Raised belly bag modification

Hydro dredge

Development and testing of lower impact fishing gears to mitigate their environmental impacts.

Ramsey Marine Nature Reserve  $(60 \text{ km}^2)$ (proposed) Niarbyl Restricted Laxey Restricted Area Area (6km<sup>2</sup>)  $(4km^2)$ Port Erin Douglas Bay Closed Area Closed (4km<sup>2</sup>) (4.5km<sup>2</sup>) Emergency Closed Are Closed Areas estricted Area

Distribution of no-take zones and Marine Protected Areas (MPAs) around the Isle of Man.

Technical measure can help to mitigate impacts on target and non-target species.



#### **Technical measures**



Blue mussels grown in the Menai Strait.

Reducing impacts on coral reefs by rearing clown fish.

#### Developing cultivation techniques for food production and hobby aquarists.





Raising shellfish and fish from egg to harvestable adult sizes increases production and decreases pressures on wild stocks.



#### Hatchery technology

Feeds used in intensive aquaculture contain high levels of wild-caught fish.

Development of alternative feeds based on plant proteins is a key step in ensuring long-term sustainable production.



Next generation pellet feeds for shellfish and fish aquaculture production.



#### **Aquaculture feeds**



Hydroponic cultivation of samphire remediates excess nutrients in waste water from aquaculture facilities and is itself a food resource.



Samphire grown in poly-tunnels for waste water treatment.



#### Waste water remediation









Diverse mangrove forests have higher productivity.

The restoration of mangroves and species diversity promotes biomass production and carbon capture in replanted mangrove forests, as well as increased fisheries yields.

Enhancing mangrove growth increases resilience and provides coastal protection.



#### Habitat restoration

Aquaculture management models can integrate wildlife and thus promote conservation.

Effects of stocking and feeding regimes on other ecosystem components such as birds can be predicted and adjusted.



The promotion of birds and other wildlife in fish/shrimp ponds located within a National Park balances aquaculture and conservation and has enabled worldwide sales of high value eco-fish products.



#### Integrating aquaculture & conservation



Spatial distribution of expenditure related to recreational activities i.e. scuba diving, sea kayaking, wild life watching cruises.



Cross-disciplinary research that interfaces socioeconomics and marine science enables us to map use of the coastal zone.

This information is essential for managers to formulate robust evidence-based policy for spatial management.





#### You're invited to the launch of our new fish range, which is all from responsible sources.

At The Co-operative, we care about where our fish comes from, and more importantly, how it is sourced.

That's why you'll find only fish from responsible sources in all our own-brand products. From frozen fish fingers and ready-to-eat smoked markerel to carned tuna and delcious ready meals - even the juicy prawns tucked under the layers of creamy mash in our Truly Irresistible Fish Pie.

And we're so delighted with our new fish range, we'd like you to come along to our launch event at West India Docks, Canary Wharf and sample it for yourself in our award-winning Good with Food roadshow trailer.

Our chef Simon Woodhouse, who is passionate about fish, wil be showing off his cocking expertise by whipping up a low tastly treats using fish from our new range. Fou'll get the chance to step aboard Bargor University's research vessel. The Prince Madog, to discover more about our responsible fich sourcing policy. For the full kinerary, please see overlead.

We hope you can make it!



Working with industry partners and stakeholder groups is essential to ensure the sustainable use of marine resources and safeguard these for future generations.







#### Society and marine resources