

## Project Outlines

### 1) **Healthy estuaries and flats**

The NWIFCA District has some of the UK's most important estuaries, sand and mudflats within its boundaries – such as the Dee Estuary, the Mersey Estuary, the Ribble Estuary, Duddon Estuary, Solway Firth and Morecambe Bay ( fed by five significant rivers).

Many of these estuaries and associated sand and mudflats have international, EU or national designated conservation status due to their importance in terms of habitats found within them, or bird species they support or both. They are rich in invertebrate life and perform a variety of ecosystem services.

Sand and mudflats also provide habitat for one of the District's most valuable fisheries – cockles (*Cerastoderma edule*). They are also important for the six commercial flatfish species fished in the District (brill, dab, flounder, plaice, sole, turbot).

This project will focus on the following issues:

- ecosystem services of estuaries, sand and mudflats – capturing ecosystem value
- how estuaries cycle nutrients from freshwater catchment areas to intertidal and fully marine ecosystems
- the value of these ecosystems in how they support massive and internationally important bird populations
- the value of these ecosystems in how they support fish and invertebrate populations
- the value of these ecosystems in relation to their importance to people, whether through enjoyment of the natural environment, tourism benefits or economic value of the fisheries
- the importance of these ecosystems for carbon storage
- the food chains of utilisation of cockles as food for bird and fish
- what level of cockle harvesting is sustainable
- the impact of individual human activity on watercourses that feed estuaries
- the use of estuaries by flatfish inhabit during their life cycle
- flatfish – interaction / reliance on sandflats
- possibilities for flatfish stock enhancement ensuring no genetic dilution of wild stocks
- possibilities of increased local markets for flatfish
- assessment of carrying capacity of these ecosystems for different phyla

Potential Outputs:

- improved management measures for cockle fisheries
- enhanced flatfish fisheries for existing local fishers
- possibilities of diversification of shellfish fishers' income
- educational material for NWIFCA shellfish permit holders on importance of cockle beds as ecosystems
- educational materials for general public on value of estuaries, mud and sandflats

### 2) **Eat Local Shellfish**

Morecambe Bay is one of the most important areas for the harvesting of seed mussel used in the aquaculture of edible mussel (*Mytilus edulis*) around the UK and Ireland and beyond. In most years mussels settle in thousands of tonnes on 'ephemeral' beds, and the NWIFCA

authorises the harvesting of these mussels by hand or by dredge. This activity is very low impact in terms of its effect on the ecosystem. The settlements are usually very dense with little or no embayment to the underlying substrate and quickly build up large amounts of sediment and pseudo-faeces (mussel mud). Within a very short space of time these populations become unstable and vulnerable to erosion through weather and/or tide. If not harvested they would otherwise be washed out of the fishery and a valuable commercial resource lost.

Harvested seed mussel is in turn re-layed by operators for growing on to marketable size and creates a very fine product.

However, the vast majority of these delicious mussels are shipped to continental markets and very little is eaten in the UK. This is an excellent example of a sustainable fishery as the seed mussel is naturally replenished year on year.

This project will focus on the following issues:

- whether there is a requirement to leave any seed mussel on ephemeral beds for bird species, such as Eider duck
- the development of markets for UK cultured mussels

Potential Outputs:

- improved management measures for mussel harvesting
- increased understanding of ephemeral mussel beds by conservation agencies
- educational materials for general public
- local markets for a genuine sustainable food product

### 3) **New Fisheries and Windfarms**

There has been a proliferation of windfarm development in the seas within the NWIFCA District over the past 6 years, mainly around Cumbria – Walney I and II, Barrow, Ormonde, West of Duddon Sands – and off the Wirral coast – Burbo Bank. Construction of some is still on-going, and the use of rock armouring around the base of the turbines is common to prevent scouring.

The predominant substrate types within the District are sand and muddy sand. Traditional fisheries have targeted nephrops in Cumbria and flatfish elsewhere. The windfarm construction has resulted in some fishing grounds being lost.

The use of rock armouring and the pilings themselves have created a hard substrate that may become useful habitat for different fish species. It is assumed that they will become colonised by a host of invertebrate life and develop different ecosystems in their own right. No doubt as long as nothing prevents that colonisation there will be an increase in biodiversity in those areas. Whether or not this change is beneficial is yet to be discovered.

Certain fish species such as pollack (*Pollachius pollachius*) require substrate such as wrecks and hard ground. In the northwest there is a market for pollack but not much is landed.

This project will focus on the following issues:

- Have the windfarms created habitat for Pollack (and other commercial fish species)?
- Assessment of the level of biodiversity

- Are there opportunities to develop fisheries in windfarm areas working with the windfarm operators?
- Is it possible to obtain monitoring data from windfarm operators to assess the changes?
- What low impact fishing methods would be economically viable for local fishers to use to capture these species?
- What levels of fishing would be sustainable and not deplete the stock (if there)?

Potential Outputs:

- increased understanding of the effects of windfarms on biodiversity and changes to community structures
- publication of this data which is of national and international importance
- development of alternative fisheries for displaced nephrops fishers
- development of markets for alternative fish species
- educational materials on the benefits of windfarms to marine biodiversity
- increased co-operation and improved relationships between fishers and windfarm operators

#### 4) **Brown Crab and Lobster Potting**

There are reported under-exploited fisheries of brown crab (*Cancer pagurus*) and lobster (*Homarus gammarus*) in the area between Barrow and Fleetwood. Questions remain as to why this stock is not exploited more fully. Pot fishing has a low impact on biodiversity and ecosystems.

This project will focus on the following issues:

- identifying the issues affecting the under-exploitation of the stock
- is this related to a lack of local markets or processing plants?
- what levels of fishing would be sustainable and not deplete the stock?
- what impacts on the ecosystem would there be?

Potential Outputs:

- development of the commercial brown crab and lobster fishery to sustainable levels
- production of marketing materials to encourage local markets
- development of new processing plants if identified as lacking

#### 5) **Where Has All the Whiting Gone?**

Fishers report that whiting (*Merlangius merlangus*) was once a valuable winter fishery in the North West prosecuted by pair trawling and Scottish seine netting. During the late 80s and early 90s stocks rapidly declined. Very little whiting is now landed in the District. Coincidentally there was a marked increase in the Haddock population and questions remain as to whether there was any relationship between these two events, although it is known that habitat preferences between the two species is very different, and the major haddock fishery is in the western Irish Sea. In the 90s haddock did spread into the St Bees area, Cumbria when typical landings were 3 or 4 boxes a tow. Stocks of haddock are still good.

This project will focus on the following issues:

- did the crash in the whiting stock occur in other areas?
- have any reasons for the crash been attributed?
- is there a relationship between haddock stocks increasing?

- depending on answers to the above – is there any possibility of re-developing the whiting stock and if so, what measures would be needed to provide a market for the catch?
- what level of fishing would be sustainable and not deplete the stock?
- what methods of fishing would be utilised to ensure no or low impact on the ecosystem?

Potential Outputs:

- development of a sustainable commercial whiting fishery in the North West
- publication of data of national importance
- production of marketing materials to encourage local markets

## 6) **Skates and Rays (in particular Thornback Ray)**

Populations of Common Skate (*Dipturus batis*) are reported to be at dangerous levels in terms of viability of this long-lived species' survival. Some North West fishers report never having seen or landed Common Skate in this area.

It is generally stated that despite previous concerns about Thornback Ray (*Raja clavata*) stocks that they are now healthy, and indeed 95% of rays landed in the NE Irish Sea are reported to be either Thornback or Blonde Rays (*Raja brachyura*). The other 5% is reported as a mix of species.

This project will work with the Shark Trust and focus on the following issues:

- what are historical levels of skate and ray stocks in the District?
- what are the current levels of skate and ray stocks in the District – ensuring that there is differentiation of species in any assessment made
- where are the breeding and nursery grounds of each species?
- what measures are needed to protect skate and ray stocks?
- what level of fishing would be sustainable and not deplete the stocks (again assessed on an individual species basis)?

Potential Outputs:

- increased understanding of skate and ray life-cycles (by species), habitat preference and feeding requirements
- increased understanding of skate and ray stocks (by species) in the NWIFCA District
- publication of data which is of national and international importance
- production of educational materials for fishers, both commercial and recreational, promoting protection of, and / or good practice in relation to these species
- production of educational materials for the general public in relation to importance of certain habitats / ecosystems to the life-cycles of these species