



16. DISCUSSION AND CONCLUSIONS

Port na Truin, Co Antrim

The production of this Northern Ireland State of the Seas report is a key milestone in moving towards our vision of clean, healthy, safe, productive and biologically diverse oceans and seas. The report highlights areas of environmental improvements resulting from a sound understanding and a good evidence base. However, it also identifies areas where our knowledge is less complete.

What are the good news stories?

The quality of the marine environment is improving in some aspects. For example, improved waste water treatment has also reduced the quantities of nutrients and heavy metals entering the marine environment helping in the clean-up of some of our most contaminated areas, like Belfast Lough. £136 million has been spent on upgrading coastal wastewater treatment in the last 5 years alone, to improve water quality.

Biodiversity in our seas contributes to over half of overall biodiversity in Northern Ireland. Many of our marine species and habitats are considered to be in favourable condition and new species are being identified on a regular basis.

Fish population studies are an excellent indicator of ecosystem health. The Irish Sea herring fishery has improved to the point where the stock is stable, while the haddock spawning biomass is also on the increase. There is evidence that Dublin Bay prawns and plaice are being harvested sustainably.

Contaminants in shellfish are reducing and are below levels which pose a threat to human health. It is anticipated that the improvements to coastal waste water treatments works will also result in better bathing water quality; although it is difficult to detect any immediate improvement because of the natural variability in the data.

Eutrophication resulting from nutrient enrichment is limited to relatively small areas of poor water exchange, like the tidal Lagan and the Quoile Pondage. In these areas, the coastal observatory buoy network is essential in the day-to-day management of these areas. This is an excellent example of full co-operation between Government Agencies (AFBI, NIEA and Loughs Agency) to fully maintain the network and ensure that the data is readily available to managers and the public.

Northern Ireland has made an excellent start on detailed seabed mapping with about 20% of the whole marine area covered. Our increased investigation of maritime archaeology over the last 15 years has revealed an important but finite resource which needs to be protected.

In what areas is more evidence and management action required?

As in many regions, there are potential threats to our native biodiversity from activities like ocean transport and boating, aquaculture and fishing. Shipping, pleasure boats and aquaculture can introduce and transport alien species which pose a particular threat to native biodiversity. Monitoring and controls will be focused on reducing the impacts of the most aggressive aliens.

Although approximately 20% of the whole marine area has been mapped, a much smaller proportion of this area has been accurately ground-truthed which would allow an accurate assessment of habitat types. This is essential for the future management of our most sensitive species and habitats. In addition, the maritime archaeological resource in the unsurveyed area remains largely unknown.

Although several key fish species are sustainably fished, several others have suffered reduced reproductive capacity and are at historically low levels, particularly cod and whiting. The low abundance of several species of sharks and rays is of concern and there is a need for more evidence to fully assess their status. If these trends are to be halted and reversed it is widely accepted that the management of marine fisheries must evolve towards an ecosystem-based approach, rather than trying to manage fisheries on a stock by stock basis. A major reform of the European Common Fisheries Policy due in 2012, is expected to lead to greater regionalisation in fisheries management, which will contribute to developing management systems at ecosystem scale.

A greater understanding of food webs and interactions between trophic levels (e.g. phytoplankton, zooplankton, fish, higher predators) is necessary in managing our marine

ecosystems holistically. Our understanding of how the marine ecosystem functions and provides the services that sustain biodiversity, fisheries and our aquaculture industry has greatly developed from detailed modelling studies of our sea loughs. This approach is being expanded to the wider Irish Sea, to enhance our understanding of how elements within the complex marine food web interact. An understanding of marine ecosystems structure and function at all levels is essential. We need to understand how our marine and coastal environment will respond to future pressures ranging from climate change, to the wider development of marine renewables.

The management of our coastline and sea defences is piecemeal. There is a need to develop an accurate baseline of shoreline defence structures and sediment transport along our coast. This is to ensure that licensing decisions can be taken with a full understanding of both near-field and far-field effects.

Marine litter continues to be an issue with approximately 70% of litter being plastic. Most of the litter on our beaches and captured in trawl nets is from land-based sources and can only be effectively tackled at source and through changes in attitude and behaviour.

The issues of underwater noise and energy are, as yet, largely undefined, although there is increasing interest in this area with the potential growth of marine renewables.

How will marine management be taken forward in the future?

The Northern Ireland Administration has the smallest marine area to manage within the UK. However, this small marine area has perhaps the biggest range of competing demands, from a well-developed aquaculture industry, and busy ports, through the world's first commercial scale tidal turbine located in Strangford Lough. It is anticipated that the pressures on our small marine area will increase further with activities like the growth in marine renewable energy and tourism. Marine spatial planning is essential to the future management of our marine area.



AFBI Research Vessel, RV Corystes



Murlough bay, Co Down

However, this planning will be reliant on a strong evidence base on which to make good management decisions.

Monitoring and management of Northern Ireland's marine environment is spread across many Government Departments and Agencies. There are currently no plans to amalgamate marine functions between Departments. DOE leads an Interdepartmental Marine Co-ordination Group to facilitate co-operation between Departments in carrying out statutory functions. This Group created an Interagency Marine Science Subgroup with the initial brief of producing a Northern Ireland State of the Seas report. The production of this report is a significant milestone and demonstrates the good co-operation that exists between Government Departments and Agencies. However, this needs to be maintained and further developed to ensure the future protection of our marine resources and heritage.

The marine programme needs to be developed within the bounds of the recently published UK Marine Science Strategy and the UK Marine Monitoring and Assessment Strategy, to which both DARD and DOE are committed. The scientific priorities to address local

and international legislative requirements, in particular those arising from the Marine Strategy Framework Directive, UK Marine and Coastal Access Act and the proposed Northern Ireland Marine Bill, will be identified. The Interdepartmental Marine Co-ordination Group will continue work to ensure good co-operation between Departments and Agencies in further identifying the requirements under the new legislation.

The cooperative work undertaken to produce this State of the Seas Report has already provided several signposts in that direction. For example, current resources for monitoring will have to be maintained and expanded in those areas where the evidence base is weak. Datasets that provide a robust evidence base for assessing changes related to natural drivers such as climate change should be maintained.

Both AFBI and NIEA have invested heavily in ensuring that their scientific data has a strong basis through participation in international working groups and laboratory proficiency schemes. Where other organisations can demonstrate the quality of their scientific data, partnership approaches to monitoring will be further explored. The Seasearch Programme has shown that with appropriate

training and supervision, amateur divers and volunteers can be used to build the evidence base. The evidence collected by marine licence applicants in the environmental impact assessment process will also be incorporated into the evidence base, where possible. Where adequate quality can be demonstrated, data from non-government sources should be used in future assessments.

Northern Ireland has led the way in the coastal observatory monitoring around the UK. We should continue to develop new and novel monitoring techniques. An example of this could be the development of passive acoustic listening devices on the existing array of instrumented coastal moorings, to record cetacean movements around our coast. A strategic programme of seabed mapping will continue to be developed, as delivery of high resolution seabed maps is essential to underpin sound marine spatial planning. Specific research should be targeted at further understanding the structure and function of key marine ecosystems, with work on marine food webs being particularly important. Departments and Agencies will continue to ensure the sharing of monitoring resources and data to ensure good value-for-money for the tax payer. This approach will also be used in developing the new statutory monitoring requirements such as seabed mapping,

noise, litter, food webs and understanding the ecosystem-based approach to management.

Good links with DEFRA and the other devolved administrations need to be maintained on the further development of good environmental status indicators, in addition to UK-wide marine management measures. Work areas that are required to ensure that good marine planning, licensing and fisheries management will be prioritised. This is to ensure that we progress towards the vision of clean, healthy, safe, productive and biologically diverse oceans and seas in addition to good environmental status. Departments and Agencies will work closely with DEFRA and the other devolved administrations in defining and achieving good environmental status on a UK-wide basis. Linkages will also be made with the Republic of Ireland authorities to ensure a consistency of approach in our shared waters.

The new legislative arrangements will provide an excellent framework for the improved management of our marine environment. However, good planning and licensing decisions are reliant on a strong evidence base. Northern Ireland has a strong history in marine science. With further co-operation, joint working, and a modest investment in resources, Northern Ireland will be well placed to deliver the needs of the Marine Strategy Framework Directive.

Diver at 35m down the north wall of Shamrock Pinnacle, west of Rathlin Island

