

Natura 2000



UK Marine SACs Project: Partnerships in Action

Edinburgh, 15th-16th
November, 2000

Conference
proceedings



UK Marine SACs Project: Partnerships in action

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Preface

The UK Marine SACs Project: Partnerships in Action was a major international conference held in Edinburgh on 15-16 November, 2000. Over three hundred delegates from around the UK and Europe came together to explore and review the progress achieved on the establishment of management regimes on marine Special Areas of Conservation (SACs) in the UK.

The Project has been a major initiative, developing and trialing knowledge concerned with the management of marine sites across the UK. The conference focused on a series of presentations highlighting the outputs and learning that had been generated on selected sites and on the related scientific, monitoring and social issues addressed over the period of the Project.

The conference was highly successful in disseminating some of this knowledge through high quality presentations, exhibitions and displays. Throughout the two days, time and space was also given over to the delegates themselves, to consider and discuss the issues raised, to renew contacts and to build new ones.

This conference is just one of a range of initiatives to help identify and share the learning and good practice from the experiences of the last four years in the UK. As such, it supports a series of reports and documents. In particular are the 'Indications of Good Practice in Establishing Management Schemes', the internet site www.ukmarinesac.org.uk through which users can interrogate and investigate the learning and knowledge from across the Project, and the many sessions and workshops that have been conducted over this period.

The proceedings are published as a record of the presentations made at the conference and as an introduction to the work and outputs of the Project. The original papers presented have been edited, and in some cases summarised. In many cases, more detailed information on the subject of these presentations is available from the reports published through the Project. Details of these reports are provided in Appendix 2.

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Session 1 – Setting the scene



Bob Earl

Speaker in main hall

Welcome and introduction

John Markland, Chairman SNH

The UK Marine SACs Project: Partnerships in Action is a unique conference. It is the first significant review of progress in implementing the Habitats Directive on marine sites by any member state. In terms of participants, it must certainly rank as one of the largest gatherings of those involved in the management and conservation of marine sites in many years. This conference has brought together an impressive range of organisations and individuals from those statutory authorities and government departments charged with implementing the management of these sites to the interest groups representing the users, the wider nature conservation movement and industrial concerns on these sites. I am particularly pleased to welcome visitors from a number of European governments and organisations who, with us, have interests and responsibilities for safeguarding the special wildlife on these sites.

The event is also highly significant in its timing. Marine conservation is at an important stage in its development, both here in the UK and more widely in Europe. The importance of the health of our oceans to the overall well-being of human societies and the planet is increasingly acknowledged. The presentations and discussions are an important contribution to ensuring that we do protect our seas and the associated wildlife. It is high time the marine wildlife around our coasts becomes recognised and valued – around the seas of this country alone we are fortunate to still have a most incredible, diverse and vivid wealth of plants and animals. For too long these have been out the public's view and concern.

Now, in the last few years, spurred on by the Habitats Directive, we have seen a tremendous growth in concern and action for the conservation of our marine wildlife. Through actions by government, statutory bodies and a wide variety of interest groups and local communities, we have made a substantial shift in taking forward the vision of Natura 2000 into a practical reality on our marine sites. There is, of course, a substantial amount of further work yet to be done to see these initial efforts extended across other sites and taken forward through sustainable site management. But it is an important and significant start. Already, through the proposals to select sites under the Habitats Directive in the open seas, and the emerging role of OSPAR in site protection, we can see that marine conservation is set to grow further.

Since it began four years ago, the UK Marine SACs Project has been a most important motivator and catalyst to all this growth in marine conservation. Without its focus of resources, effort and development of knowledge and approaches, it is certain that the UK would not have achieved the degree of progress that it has today.

The Project was put together by the statutory nature conservation agencies in the UK with the Scottish Association of Marine Science and with the financial support of the European Commission's LIFE programme. It was originally set up both as a demonstration, and to ensure that progress on sites was maintained. It has served this purpose well. Over the four

years, across twelve of the marine sites in the UK, the nature conservation agencies working with other statutory bodies, local and national interest groups, have undertaken a wide variety of work to develop management schemes. Through these we have learnt much, both successes and failures. We have also during the course of the project developed a tremendous body of knowledge and guidance.

It is right and important that the knowledge we have acquired should be made widely available to others working in marine conservation. A large proportion of this knowledge and the work of the last four years has been gathered here in this conference – in the presentations that will follow, in the exhibits and displays around the building and in the reports and publication. This conference is our opportunity to share all this knowledge and experience with you but also to discuss what we have learnt and jointly to shape the challenges that still lie ahead of us.

Natura 2000 in the marine environment

Micheal O'Briain and José Rizo, DG Environment, European Commission

Most EU Member States, some of whom have substantial coastline and marine waters, have responsibilities under the Habitat Directive to conserve marine habitats and species of Community interest. Despite this challenge there has not been a lot of international discussion on implementing the Habitats Directive in marine and coastal areas¹. The organisers of this important conference, which focuses in particular on the management of marine SACs and draws heavily upon the experiences of the strategically important LIFE Nature project on 'establishing management schemes for UK marine SACs', are therefore to be congratulated. The conference provides an excellent forum to share the lessons of this valuable project with a wider audience both within the UK and throughout Europe. The level and range of participation at the conference clearly demonstrates the high interest in this subject among the many users of the marine environment.

In our presentation we would like to outline the vision of Natura 2000 and to provide an update on its implementation across Europe, especially as regards the marine environment. Finally we would like to refer to key provisions of the directive relating to the management and protection of the Natura 2000 sites.

The Habitats Directive is the most ambitious undertaking at European level for the conservation of our wildlife heritage. It complements measures already being taken at national level to protect wildlife and represents a major collective effort by EU Member States in the field of nature protection. It is also fully in line with our international obligations, significantly contributing at Community level to the aims of a range of international nature conventions.

Its overall objective is to safeguard biodiversity in the European Union through the establishment of a common framework for the conservation of animal and plant species as well as natural and semi-natural habitats that have been identified as being of Community interest. It aims to maintain or restore these interests to a favourable conservation status. The main practical mechanism to achieve this objective is the creation of an ecological network called Natura 2000.

In order to achieve these goals the Habitats Directive has introduced several innovative features:

- it establishes the principle of conserving habitats for their own sake and not only because they host rare or threatened species;
- it introduces a 'Biogeographical Region' approach which allows for more meaningful comparison between Member States with similar biodiversity;
- it provides for a strong level of protection for Natura 2000 sites with proactive (positive management), preventive and procedural (dealing with plans and projects) safeguards.

¹ There was an international meeting on this subject which took place at Morecambe Bay, England, 22-24 June 1997. A report on this meeting was published by the Commission titled *Implementing the Habitats Directive in marine and coastal areas*. ISBN: 92-828-4276-2.

Establishment of the Natura 2000 network involves close co-operation and co-responsibility between the Commission and the Member States. The main forum for exchange is the Habitats Committee, comprised of officials from the competent national nature authorities and chaired by the Commission. The Habitats Committee is aided by a Scientific Working Group, which advises on technical issues. The overall aim is to ensure a common approach, especially as regards scientific and legal interpretative issues.

The establishment of Natura 2000 involves three stages. On the basis of scientific criteria Member States were to propose a list of national sites within three years of adoption of the directive (by June 1995). For each of the Biogeographic Regions the Commission and the Member States were to agree a Community list of sites by June 1998. Then Member States would have a further 6 years to designate all the agreed sites as SACs and establish the necessary measures for their conservation.

However, putting Natura 2000 in place has proven to be much more difficult than originally foreseen. Due to the late and incomplete transmission of national lists by the Member States it has not yet been possible to finalise the second stage for any of the Biogeographic Regions. The Commission has taken legal action against a number of countries for failing to fulfil their legal obligations and judgements against several are pending. It has also taken steps to avoid granting Community funds that could be used to damage sites which should be protected in Natura 2000 by informing Member States that they risked delays in the approval of Rural and Regional Development Programmes unless their lists of Natura 2000 sites were substantially complete.

There has been significant progress in the past few years. At present the Member States proposals totalled over 2,900 sites covering more than 209,000 km². However, there are significant differences between Member States in the surface area of sites that has been proposed²

It is difficult to define a marine SAC as many areas that have been proposed contain marine and terrestrial components. For the purpose of this progress evaluation a marine site is an area including some surface covered by category 11 'Open sea and tidal areas' of Annex I of the directive.

More than 900 sites with some marine component have already been proposed for protection under the Habitats Directive. The total marine area of these sites is greater than 2 million hectare, representing 6.5% of the total proposed area. Therefore, despite the limited number of marine habitat types and species covered by the Habitats Directive there is already a substantial area of Europe's marine and coastal waters proposed for inclusion in Natura 2000.

The marine component of the proposed sites varies considerably with half the sites having only a minor marine component (<20% of area of site). Only 13% of sites are predominantly marine (> 80% of area). This is not surprising as most sites are coastal with both land and marine components.

² a NATURA barometer, which provides regular updates on the progress of Member States proposals for Natura 2000 is to be found on the nature home page of DG ENVIRONMENT's web site (<http://europa.eu.int/comm/environment/nature/home.htm>)

Likewise, the marine area of individual sites varies considerably with the vast majority of sites covering less than 5000 ha. Only 5% cover areas greater than 10,000 ha. There also appears to be significant differences between Member States in the average size of their proposed marine SACs. Countries like Denmark, the Netherlands and the United Kingdom have tended to propose larger sites while countries like Italy, which has proposed the greatest number of marine SACs, have tended to propose small sites.

However, this preliminary analysis is based on incomplete information for the Member States and further additional marine sites need to be proposed to ensure sufficient representation of marine habitat types and species in Natura 2000 for the different biogeographic regions. The assessment of the sufficiency of the national lists is made with the framework of Biogeographic Seminars which also aims to determine whether each site proposed is of Community interest. These expert meetings are organised under the joint chairmanship of the European Commission and the European Topic Centre for Nature Conservation of the European Environment Agency.

The conclusions of the last seminar for the Atlantic Biogeographic Region, in which the UK is entirely located, and which took place in September and November 1999, were that all marine habitat types and species³ were insufficiently represented in one or more Member States. The next Atlantic seminar, foreseen for Autumn 2001, will further evaluate the progress by Member States with a view to finalising a list of Sites of Community Importance for this region.

The Commission is of the view that the Habitats Directive applies to the exclusive economic zone (EEZ) of Member States in so far as Member States have competence. This view would now also appear to be supported by legal interpretation of the UK courts.

However, in practical terms there appear to be only two habitat types of Annex I occurring in the offshore environment of the Atlantic Region. These are 'reefs', for which there appears to be significant deep water *Lophelia* reefs in certain offshore areas, and 'sandbanks which are covered by seawater all the time'. A wider range of species, especially cetaceans, all of which are covered by the species protection provisions of the directive, may be concerned. As regards the offshore environment it is also important to consider the conservation requirements of the Birds Directive as significant concentrations of seabirds may be found in this zone at different times of the year.

The application of the Habitats Directive to the EEZ is less advanced although discussions on this subject have started with the Member States. Such discussions involve considerations on how management of SACs might be organised in this zone, including issues such as fisheries management.

Managing Natura 2000 sites: myths and reality

In recent years there have been a lot of myths about Natura 2000 and how it may affect the rights of users and owners of sites. The Commission has tried to respond to some of the most common myths, several of which are outlined below:

³ The only exception to the conclusion was the harbour porpoises, for which some Member States argued that it was not possible to identify sites. It was agreed to examine more closely the criteria for selecting sites for this species.

- **“Natura 2000 sites will all become nature reserves”**

Although Natura 2000 will include nature reserves this is not a prior requirement of the directive. In fact the philosophy of Natura 2000 is not about creating nature reserves where human activities are to be excluded. The majority of sites are likely to be privately owned areas and the emphasis will therefore need to be on ensuring that human activities are sustainable with a view to maintaining the conservation values of the sites. The reality is that Member States have a choice of mechanism to use to manage the sites including statutory, contractual and administrative measures.

- **“We will have to stop all our activities within a site for the sake of preserving nature”**

The reality is that conserving species and habitats is not necessarily incompatible with human activities. In fact nature conservation provides additional opportunities for human use activities such as environmental tourism, pursuit of leisure activities and labelling of natural products. Any restricting or stopping of certain activities that are a significant threat to the species or habitat need to be addressed on a case by case basis.

- **“Brussels will dictate to us what can or cannot be done in each site”**

The reality is that the Habitats Directive and Natura 2000 are based on the principle of subsidiarity. It is up to the Member States to decide on how best to conserve the sites that are identified as being of Community Importance and to put in place the necessary measures for their positive conservation. Although not an automatic obligation management plans are identified as a very useful tool in this regard. Not only do they help in determining what needs to be done but they also provide an excellent forum for the involvement of local groups and other stakeholders in the spirit of cooperation and co-management.

- **“Once a site is included in Natura 2000 it becomes untouchable as regards future development”**

The Habitats Directive does not, *a priori*, prevent any new activities or developments within a Natura 2000 site from taking place. Any new plans or programmes that are likely to have a significant effect on a site must undergo an appropriate assessment before being implemented. If a proposed activity is likely to cause significant damage to a site and all possible alternatives have been exhausted it may still go ahead if it is of overriding public interest and if compensatory measures are provided⁴. It should be remembered that the provisions of Article 6 are equally relevant to activities both within and outside a site once they may affect its integrity.

⁴ The services of the Commission have recently produced interpretative guide titled *Managing Nature 2000 site: the provisions of Article 6 of the Habitats Directive* ISBN 92-828-9048-1.

Some concluding comments

Management planning has a key role to play in the implementation of Natura 2000. However, dealing with management plans for sites in the marine and coastal environment is particularly challenging given the lack of clear ownership in many cases as well as the complexities of resource uses and activities such as fisheries (including aquaculture), shipping and port operations, tourism and recreation. The problem is compounded by the fact that there is also a lot less practical experience of management planning for marine than for terrestrial sites.

Therefore, the experiences of the UK Marine SACs LIFE project are of high demonstration value at this stage in the development of Natura 2000. They are especially useful as they are based on a partnership approach, which has heavily invested in getting all the relevant stakeholders involved. There have also been many valuable outputs from the project, which will be of interest to a wider audience. However, the ultimate success of this LIFE project will be the full implementation of the management schemes which have been prepared for the different UK marine SACs.

Implementing the Directive on marine sites – the UK's policies and frameworks

Trevor Salmon, Department of the Environment Transport and the Regions

Directive 92/43/EEC, on the conservation of natural habitats and of wild flora and fauna (the Habitats Directive) was published in May 1992. Whilst the tone and content of the Directive may lend itself to implementation on land by augmenting existing national regimes, such as the UK's Sites of Special Scientific Interest regime, its objectives do not differentiate between terrestrial and marine sites.

To address the often different coastal and marine circumstances, several clarifications were put in place in the legislation that transposed the Directive into British law – the Conservation (Natural Habitats etc) Regulations 1994. The site protection requirements of the Birds Directive (79/409/EEC) were extended by the Directive and recognised in the 1994 Regulations.

The aims of the Directives are to conserve internationally important species and habitats across their European range. Article 3 of the Habitats Directive requires Member States to identify, designate and protect the most important sites and those necessary to ensure the favourable conservation status of the habitat or species. The sites identified under the Habitats Directive (Special Areas of Conservation or SACs) and the Birds Directive (Special Protection Areas or SPA) will collectively become part of the Natura 2000 network.

Once a site has been designated it is necessary to protect it. Article 6 of the Habitats Directive lays out the overriding principles of that protection.

Article 6(1) and 6(2)

To address the requirements of article 6(1), regulation 34 of the 1994 Regulations requires relevant authorities to co-operate to produce a management scheme for any marine site. The management scheme should require management measures for the site and be co-ordinated by a single authority. The Secretary of State requests sight of established management schemes. Regulation 34 schemes should act in harmony with other strategic plans (i.e. estuary management plans, shoreline management plans, coastal habitat management plans etc). The schemes, together with other objectives placed upon statutory nature conservation agencies, will also fulfil the monitoring requirements of article 6(2).

Article 6(3) and 6(4)

When considering the locus of relevant authorities in the coastal and marine zone it is imperative that all their potential functions and their possible impacts on the site are considered. Government policy is for all relevant authorities to work together in partnership to ensure a fair and just assessment of the sites' conservation needs. As well as setting the tone for the day to day management of the site, management schemes inform any consideration of plans or projects required by article 6(3) and 6(4) and regulations 48-53.

Looking ahead, the UK is developing a number of initiatives regarding marine conservation. A working group led by DETR and made up of representatives from a range of organisations with an interest in the marine environment, is preparing proposals for improving marine nature conservation in England by the end of 2000. Efforts are also underway to establish a means of identifying and protecting sites beyond European territorial waters.

The vision, goals and outputs of the UK marine SACs Project

Sue Collins, English Nature

The Habitats and Birds Directives are enormously important instruments in helping to make a real difference to sustaining the wildlife of our country. In the conservation agencies, we were particularly excited at the opportunity that the Habitats Directive brought to make a significant difference to the conservation of some of our amazing marine wildlife. However back in 1995, shortly after the UK government had set out its approach for implementing the Directive, the challenges ahead of us seemed major and somewhat daunting.

The UK was fortunate in having a number of important and successful initiatives already in place:

- The Marine Nature Conservation Review had between 1987 and 1998 surveyed a large proportion of the inshore waters around the UK's coastline. As a result of this, we had a reasonably good knowledge as to where our richest wildlife sites were located and the some of the features they were home to.
- **The Estuaries partnership** and the **Firths initiatives** in Scotland had both generated strong partnerships amongst statutory and non-statutory interests, and raised the attention to the needs of our coastal and marine conservation in many of the country's estuaries.
- Lastly, the **Voluntary and Statutory Marine Nature Reserves** established around the UK provided a rich source of learning and good practice, as well as also locally building the profile of marine conservation.

So we were far from being in the dark. However, it was clear that the challenges and the opportunities of the Habitats Directive were of a significantly different scale to the initiatives that had gone before. By 1996 the UK had already proposed some 36 marine sites, comprising a substantial proportion of our coastline and with the timescales anticipated for putting in appropriate management measures tight. The conservation and management of subtidal wildlife as well as intertidal features was still very much a novel enterprise. In short, the implementation of the Directive as required by the Regulations posed a number of key challenges:

- Our role in providing ecological advice required the development of new concepts and methods.
- Collation and development of a large body of scientific knowledge to support our new responsibilities.
- Forging new working relationships and partnerships with a variety of bodies involved in the management of these sites – both statutory and non-statutory

As a means of tackling some of these issues and to catalyse resources and effort over a relatively short space of time to progress implementation of the Directive, the LIFE project was put together in 1996.

This Project has brought together all the statutory nature conservation bodies in the UK – English Nature, Scottish Natural Heritage, Countryside Council for Wales, Joint Nature Conservation Committee, Environment and Heritage Services Northern Ireland – and the Scottish Association for Marine Science. We were successful in our bid for funding from the European Commission's LIFE-Nature programme.

The Project's overall objective has been to support implementation of the Habitats Directive on marine Special Areas of Conservation. Given that many of these marine sites are also classified as Special Protection Areas for their bird populations under the Birds Directive, the Project would, through its work on the SACs, be able to support implementation of that Directive in an integrated way.

The Project set itself a number of specific objectives:

1. To establish management schemes on a twelve marine SACs around the UK

One of the principal means by which the UK would implement the two Directives on marine sites was through the establishment of management schemes to provide relevant authorities with a framework for guiding the management of sites. This was a novel approach and by trialing it on twelve of the sites we would be able to use the experiences from these sites to guide the process on other sites. In order that they provided an adequate test of the Regulations, the sites were selected so that as far as possible they represent the range of

management issues likely to be experienced on the wider series. They therefore ranged from sites like Plymouth Sound in the south west of England with large urban populations and multiple activities, to remote sites such as Papa Stour in the Shetlands, off the northern coast of Scotland, with relatively few human activities.

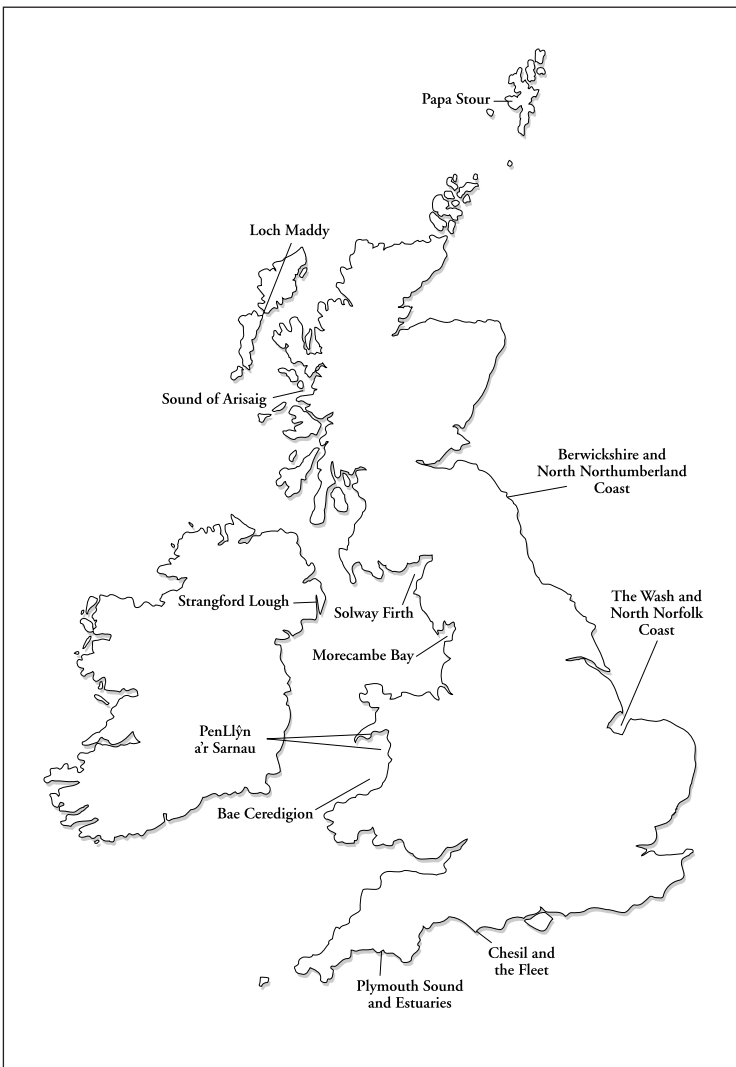
2. To develop the science and monitoring capabilities required to establish these management schemes

The development of management schemes relies upon relevant authorities having the right science and knowledge at their fingertips. This includes:

- knowledge about the ecology of the marine features and their sensitivity to human induced and natural changes;
- the potential impacts of human activities on marine features and the means of managing these; and
- monitoring the condition of features.

Much of this knowledge was already available but it was not easily accessible on account of being spread amongst the existing literature, specialists and practitioners. This

knowledge needed to be compiled and interpreted to provide guidance for those establishing schemes. Likewise there was certain information where our knowledge base and competence was clearly insufficient and needed development – in particular, understanding as to cost-effective monitoring of the condition of marine features. For this, a programme of trials alongside the collation of any existing knowledge was proposed.



3. To share our knowledge and experiences

The point of the Project has been to take the learning and experiences gained through the 12 sites and share it with others both in the UK and Europe. This has been a feature over the four years of the Project. We have been able to take the experiences in the agencies from the progress on the demonstration sites and build on it in the development of the schemes on other sites outside the project as these have progressed.

The sharing of knowledge of course also extends to all the outputs that have been developed through the project and I would now like to turn to some of these.

Scientific advice

We have published reports on the ecology and sensitivity characteristics of nine marine features that are key components of many of our marine sites. These have each been prepared by specialists in the field. The key contents of these will be summarised in a single report providing practitioners with a consistent and brief account of the requirements and sensitivity of marine habitats.



We have similarly published reports on seven common human activities on our sites. Each of these provides a succinct account of impacts and, where available, management guidance from an extensive literature base.

Monitoring features

Twelve broad trials covering a variety of techniques (Figure 1) have been conducted over a three year period on eleven of the sites. As a result of these, and contributions by both UK and European specialists, a handbook to guide the development of monitoring programmes on sites has been prepared. This includes detailed guidelines on the operation of some 32 specific techniques.

Establishing management schemes

Over the four year period, works have been undertaken on the sites themselves to prepare the management scheme documents. This has involved gathering a tremendous amount of information, which has been subsequently interpreted and shared with partners. Alongside the generic studies, these site-based studies have given us a strong platform of knowledge on which to establish this first series of management schemes.

Each site has similarly seen much work to develop and maintain partnerships with both relevant authorities and the wider communities and interest groups. All-in-all a tremendous amount of progress has been achieved on these 12 sites and the final management scheme documents will be completed on the great majority of these over the next few months.

The development and application of many different approaches to these wide-ranging sites, has provided a substantial body of experiences and learning. Through an analysis of this, we are currently preparing a series of reports to share this learning. This will include the important process of setting conservation objectives, the approaches for promoting relevant authority and stakeholder participation, and a report on overall good practice in establishing these schemes.

The development and dissemination of these outputs does not end with this conference. There remain some where further work is needed. In particular we are keen to use the discussions at this conference to explore and refine our views as to the good practice and learning on establishing management schemes. We will use this to add to and improve the draft report that has been provided in your introduction packs. We also intend to relaunch our web-site which will, allowing the practitioner and the interested alike, to gain quick access to the wealth of knowledge that has been created by the Project.

Altogether, the achievements and outputs of the last few years have been impressive. I am delighted that we have the opportunity through this conference to explore and discuss this work with so many of you who, with us, are involved in the management of these special sites. The UK marine SACs Project has been a vehicle for real progress. Now in reviewing this, we must to look to the new priorities ahead of us.

Figure 1: Monitoring 'features' – site trials of different monitoring techniques

Investigate recording techniques by diver, Remote Operated Vehicle (ROV) and hand-held video to:

- Compare measurements of biotope quality and extent using both quantitative counts in quadrats and transect methods
- Compare measurements of species richness using both quantitative counts in quadrats and transect methods
- Compare species counts in individual quadrats against a whole transect survey
- Assess variations between workers to evaluate the degree of variability
- Assess variations over time to evaluate biological change
- Assess the inter-changeability of divers and ROV/video for monitoring the same area

Investigate a strategy for identifying and mapping the extent of biotopes:

- using divers or ROV,
- drop-down video ,
- towed video.

Acoustic remote sensing:

- Evaluate the accuracy and repeatability of Acoustic Ground Discrimination Systems to monitor the extent of subtidal SAC features
- Evaluate the side scan sonar as a technique for monitoring the extent of subtidal SAC features Investigate swath bathymetry systems as a technique to visualise the topography and map the extent of subtidal SAC features

Test the potential of mapping the extent of inter-tidal and shallow subtidal features using the following airborne remote sensing techniques:

- Compact Airborne Spectrographic Imager (CASI),
- Video with spectral measurements (Hyperscan),
- Aerial photography.

Monitoring biogenic reefs:

- Evaluate acoustic and towed video techniques for mapping horse mussel biogenic reefs
- Investigate remote survey and diver collecting techniques to monitor the structural integrity and species composition of horse mussel biogenic reefs

Monitoring the extent and biotope quality of sediment habitats:

Note – these trials considered: intertidal sand, muddy sand and mud, and subtidal sand, muddy sand and muddy mixed sediment

- To establish the level of sampling required to detect significant change above spatial variation within habitats
- To determine the level of detail required for sampling with respect to sieve mesh size and taxonomic level of species identification
- To compare biomass measures with changes in organic carbon in the sediment in order to indicate change

Evaluate methods to monitor the extent and biotope quality of cave features:

- To establish cost effective and repeatable sampling techniques for cave habitats
- Determine which level of detail is required for sampling in order to detect significant change.

Non-intrusive methods of monitoring bottlenose dolphin populations:

- Evaluate the use of fixed and moveable hydrophones to assess dolphin populations, including developing data gathering and storage protocols for acoustic hydrophone data
- Compare shore-based sightings with hydrophone and video monitoring
- Evaluate habitat and prey species monitoring techniques

*Session 2 – Understanding the sites:
the scientific challenge*

Information needs on marine SACs

Dr John Baxter, Scottish Natural Heritage

According to the dictionary information is ‘knowledge or facts communicated about a particular subject’. In order to identify the information needs of a particular marine SAC it is important to have a clear idea of what such information will be used for.

Essentially it is to enable a well-informed discussion about the management options for that site. There is no single magic tick-list of what is required – each site will have its own specific requirements, but at a general level the sort of information that may be required would cover a range of issues:

- information about what biological features are where and how much there is;
- information about the biology and ecology of what is there;
- information about what activities are currently happening on the site;
- information about the aspirations of the local people for the site.

This represents potentially a very considerable information requirement when looked at in these simple terms and risks leading to a never ending, self-perpetuating, process of data/information acquisition. What is required is an agreed understanding of what is actually needed and that can be realistically acquired. The process of meeting the information needs on a site must start by addressing the questions:

- What are we going to use the information for?
- What information already exists and in what form?
- What further information do we **really** need and how do we get it?

Looking at the four general types of information needed in turn:

1. *Information about what biological features are where and how much*

What are we going to use the information for?

Without knowing what is there it is difficult to protect it through any sort of planned management. So first and foremost this information will help us make sensible and justifiable management decisions. Just as importantly however, are the potential secondary uses of this information in terms of promotion of the site and educational purposes.

What information already exists and in what form?

There is a range of potential sources: scientific literature, site reports/local naturalists/local fishermen etc.

What further information do we really need and how do we get it?

In most cases what is required is broadscale mapping of the distribution of habitats or recording the precise location and possibly even numbers of rare or unusual species. In recent years, techniques for observing the seabed have been sharpened. It is important to consider the practicalities as well as the precise techniques for obtaining information. For instance using local fishermen and their boats when carrying out surveys is not only good sense in terms of getting access to their local knowledge of the area but also as a means of getting the message back into the community as to what is going on.

2. *Information about the biology and ecology of what is there.*

What are we going to use the information for?

Having the best possible information about the biology and ecology of different biotopes/species is essential if we are to be able to make informed judgements on the possible implications of current activities on the features of interest. Just as important is the ability to make consistent assessments of such implications and a programme of work that has at least in part been spawned from this project is MarLIN – the Marine Life Information Network. Information about this network can be accessed from their website <http://www.marlin.ac.uk/>

What information already exists and in what form?

This will largely be contained within the scientific literature although some local knowledge regarding timing of seasonal events may be available and very important. It is unlikely that the specific questions about the biology/ecology of features will be addressed in the literature directly and it requires some interpretation, review and scientific/pragmatic analysis. For a number of key features or sub-features such reviews have been done by recognised experts in the area as part of the UK Marine SACs Project (details provided under ‘further information’)

What further information do we really need and how do we get it?

It is a common cry that only very little is known about most marine organisms. This is not

necessarily true and very careful consideration needs to be given to this question bearing in mind the resources needed to answer any particular issue. Opportunities for a partnership approach with universities, PhD students, other research labs, other Government Agencies all need to be explored.

3. *Information about what activities are currently happening on the site*

What are we going to use the information for?

Knowing what goes on where, combined with an understanding of the distribution of the various biotopes enables realistic management proposals to be made. There is no need seeking to impose unnecessary controls. If an activity either does not happen on a site where it might do damage, or simply would/could not occur there then there is no need to control it.

What information already exists and in what form?

This type of information is likely to be very disparate and some of the most difficult to obtain. Some, such as the location of outfalls, anchorages, fish farms etc is relatively easy to obtain from official records. Other information such as where fishing takes place or certain recreational activities requires much more local participation and relies much more on anecdotal reports. Various techniques have been tried to collate this information – topic groups or workshops have been successful on some sites. Elsewhere one-to-one discussions have been fruitful. What is essential is that a comprehensive list of all current and likely activities is compiled.

What further information do we really need and how do we get it?

What is required is a good understanding of the significant' activities and these are defined as those that could have a significant impact on the features of interest. A widespread but benign activity is not something we really need to know about whilst even if an activity is restricted to a small section of the site, if it has the potential to have a significant affect then further should be known. On most sites local knowledge is likely to be the best means of obtaining such information. This not only makes an important contribution to the overall management but it also helps in the process of developing a partnership philosophy.

4. *Information about the aspirations of the local people for the site*

The sites cannot be seen as fixed, sterile entities but rather as living, vibrant, vital systems. As such establishing and maintaining a dialogue with local people is essential so that their aspirations (and fears) can be taken into account. Local contact, constant information exchange are essential.

Knowledge must also be communicated so that it can inform. In considering how to communicate this knowledge we have to identify the audience/s. Different audiences require the information in different forms, but none should feel that they are either being blinded by science' or that they are being patronised.

The challenge of acquiring the necessary' information could very easily present an insurmountable obstacle but by taking a structured approach to the whole information gathering process with the mantra of fit for purpose' firmly in mind the such information needs can be satisfied.

In all of this process however we must not lose sight of reality and the true purpose of the process, and I would just like to leave you with a quote from T S Eliot and a further definition.

'Where is the Life we have lost in living?

Where is the wisdom we have lost in knowledge?

Where is the knowledge we have lost in information?'

And from the same dictionary as the definition of information came from, wisdom is defined as 'The ability to think and act, utilising knowledge, experience, understanding, common sense and insight'. Perhaps there is something yet for us all to learn.

Further information:

MarLIN – Marine Life Information Network: <http://www.marlin.ac.uk>

UK Marine SACs Project: Reports on sensitivity and dynamics of marine features

UK Marine SACs Project: Reports on human interactions

Various approaches for communicating information exist:

- Underwater videos
- Technical/Survey reports
- Scientific reviews
- GIS outputs
- Site-based documentation
- Promotional leaflets

Setting conservation objectives

Dr Malcolm Vincent, Joint Nature Conservation Committee

What are conservation objectives?

Legislation is not always very good at defining concepts, especially those which it thinks are widely understood. However, the consequences of this neglect become all too apparent when the legislation has to be implemented. The 'Habitats Directive' seems to 'assume' that conservation objectives will exist for Special Areas of Conservation, and for Special Protection Areas for birds, as if that were taken for granted. It does not define them, nor does it specifically require them.

Reference to conservation objectives in the Habitats Directive is made in Article 6(3) in relation to the consideration of plans and projects. Where a plan or project is likely to have a significant effect on a Special Area of Conservation, an appropriate assessment of its implications for the site in view of the site's conservation objectives has to be undertaken. There is not very much to go on there.

In the United Kingdom, the Regulations which transpose the Habitats Directive into national law require the statutory nature conservation bodies to advise other relevant regulatory bodies of the conservation objectives of marine Special Areas of Conservation and marine Special Protection Areas. Again conservation objectives are not defined, and apart from the reference to appropriate assessment in the consideration of activities, plans and projects, their purpose is implied rather than explained.

So we need to look at the wider purpose and spirit of the Habitats Directive to answer the question 'what are conservation objectives?'

Favourable Conservation Status

The overall aim of the Habitats Directive is explained in Article 2(1) as being 'to contribute to ensuring biodiversity through the conservation of natural habitats and of wild flora and fauna', and this is immediately followed in Article 2(2) by the statement that 'measures taken pursuant to this Directive shall be designed to maintain or restore, at a Favourable Conservation Status, natural habitats and species of wild fauna and flora of Community interest'.

The meaning of Favourable Conservation Status is defined in Article 1 of the Directive.

In summary, Article 1 says that for habitats listed on Annex I of the Directive, it means that conditions have been established which will ensure that:

- the extent and range of the habitat will be maintained or increased over time, and
- the populations of the constituent species of the habitat, will be maintained over time.

For species listed on Annex II of the Directive, it means that conditions have been established which will ensure that the viability, population size and range of the species will be maintained in the long-term.

Favourable Conservation Status applies to the occurrence of those habitats and species within the European Community as a whole, not just those within Special Areas of Conservation. So what is the relationship between Favourable Conservation Status and Special Areas of Conservation?

Favourable Conservation Status and Special Areas of Conservation

The Directive sees the European Community network of Special Areas of Conservation as a fundamental, indeed as the primary, way of achieving Favourable Conservation Status of Annex I Habitats and Annex II Species. It follows from this, that each Special Area of Conservation is expected to contribute to Favourable Conservation Status in the manner which it contributed at the time of its selection, or, if it was selected with a view to restoration, to a former, better condition, in an enhanced manner.

Each Special Area of Conservation, therefore, is expected to contribute to Favourable Conservation Status, either through maintaining the biological value it had when it was selected, or where appropriate, through restoring the biological value of the site to an improved level. These are the fundamental goals for individual Special Areas of Conservation, and provide the context for achieving Favourable Conservation Status at the site level.

In the United Kingdom, we take the same view with respect to Special Protection Areas for birds. Although the words relating to Special Protection Areas in the Birds Directive are somewhat different to those used in relation to Special Areas of Conservation in the Habitats Directive, their spirit and intent is very much the same. With this in mind, the UK practice is to treat Special Protection Areas in the same manner as Special Areas of Conservation, and my remarks apply to both equally.

The purpose of conservation objectives

Following on from this, the purpose of conservation objectives is to set the goals for each Special Area of Conservation so as to maintain the biological interest for which it was selected, or where appropriate, so as to restore the site to the intended condition.

Conservation objectives also have other functions relevant to the subsequent management of the site. The most important of these are :

- to act as a basis for regulating activities on the site, including plans and projects as required by the Directive;
- to guide the development of positive management measures on the site to maintain or enhance its biodiversity value;
- to serve as a standard against which the condition of the site will be assessed through monitoring.

So conservation objectives have a key role in the conservation of the site after its initial selection; indeed they are the objectives which a Management Scheme for the site should seek to achieve, and against which the success of the Management Scheme, and its implementation, will be judged.

Scope of conservation objectives

Conservation objectives need not only cover the range of biological interests for which the SAC has been selected, or which it is intended to achieve, through restoration, but also to cover the range of physical and ecological processes which are required to sustain the biological interests in the long-term.

Conservation objectives, therefore, relate to the biodiversity of the site, and its supporting natural processes. Conservation objectives do not encompass management actions needed to achieve the conservation objectives; although they do set the context for them.

Setting conservation objectives

In the United Kingdom, the approach we have followed for setting conservation objectives for marine Special Areas of Conservation and Special Protection Areas for birds has four main components. These are:

i. Interest features

We set conservation objectives for the ‘interest features’ for which the site was selected, rather than for the site itself. This enables us to concentrate on the needs of the feature, and also allows us to aggregate the results of monitoring the condition of a particular feature across the range of the sites selected for it, and thus to better understand the condition of that feature across the UK as a whole. By ‘interest feature’ we mean the habitat type listed on Annex I or the species listed on Annex II of the Habitats Directive, and the features for which Special Protection Areas are selected under the Birds Directive.

The marine interest features in the UK which are present on the 12 trial sites within the UK Marine SACs project, in relation to Annex I habitats and Annex II species of the Habitats Directive are:

Annex I habitats	Annex II species
Sandbanks which are slightly covered by seawater at all times	<i>Phoca vitulina</i> (Common seal)
Mudflats and sandflats not covered by seawater at low tide	<i>Halichoerus grypus</i> (Grey seal)
Reefs	<i>Tursiops truncatus</i> (Bottlenose dolphin)
Submerged or partially submerged sea caves	
Lagoons	
Estuaries	
Large shallow inlets and bays	

The equivalent interest features in relation to marine Special Protection Areas are:

- Nationally-important Annex I bird populations
- Internationally-important populations of migratory species
- Internationally-important assemblage of over 20,000 non-breeding waterfowl

ii. Sub-features

We identify important ‘sub-features’ of the feature. These are important ecological components of the features, for example kelp beds, horse-mussel reefs, or seagrass beds, or, for wading birds, high-tide roosts. Sub-features like these have been mapped-out for our sites, and mapped information on important sub-features are frequently incorporated into the formal advice on conservation objectives presented to the relevant regulatory authorities.

iii. Attributes

We identify the characteristics, which we call attributes, of the features, and sub-features, which we consider to be biologically or ecologically important in achieving the goals for the site.

For Annex I habitats, such attributes are likely to include:

- extent of feature;
- diversity of constituent communities/biotopes;
- distribution of important constituent communities/biotopes;
- species composition of important communities/biotopes;
- important topographic features such as bathymetry;
- water temperature;
- turbidity;
- nutrient status;
- sediment (or other substratum) character.

For Annex II species, and bird species for which Special Protection Areas are selected, the attribute list is likely to include some of the following:

- extent of habitat critical to supporting the population of the species;
- freedom from disturbance.

In some cases:

- population size;
- productivity of the population;
- food availability;
- water quality parameters.

The attributes selected will vary, depending on the feature and its sub-features. We are

currently having to make choices about those we select. To some extent these choices are experimental; over time, as our understanding improves, we may need to adjust them. Having selected our list of essential attributes, we then set targets for them.

iv. Targets

We set target values for the selected attributes. These targets are those which we consider it is necessary to achieve if the feature is to maintain the biological interest for which it was selected, or which it was intended to achieve. In other words, the target values necessary for the feature to achieve the contribution to Favourable Conservation Status expected of it. The target values set for the selected attributes are the values we believe necessary if the feature on a given site is going to contribute to the overall Favourable Conservation Status of the feature in the manner we intend. However, when setting target values, we need to acknowledge our limitations, for example:

- our knowledge of the attributes selected may be based on a single survey;
- our understanding of natural fluctuations in the values of particular attributes will be limited;
- our understanding of the relationship between attributes may be very limited. For example, we may not know what values of various water chemistry parameters it is necessary to achieve for a particular biological community.

In the absence of all the relevant knowledge, our starting point for the target is the value of the attribute at the time of site selection, or as near that time as we can obtain information.

There are exceptions to this, for example if the site was selected with a view to restoration; or if we believe an attribute's current value will not maintain the feature in the long-term. In these cases, we are justified in setting a target value which represents an enhancement over its value at the time the site was selected. Targets may be absolute, for example we might set a target area for a feature or sub-feature that had to be achieved or exceeded, or they can cover a range of values in order to accommodate natural fluctuation.

The setting of values is an inexact science based on inadequate current understanding. As with the selection of attributes, we are adopting an experimental approach which incorporates the flexibility needed to learn from future experience.

Summary

There are four main steps in the setting of conservation objectives. These are:

- i. identify any sub-features that are important ecological components of the feature;
- ii. identify the essential attributes of the feature and any sub-features;
- iii. set targets for these attributes;
- iv. formulate conservation objectives for feature on a given site based on the selected attributes and their targets.

Further information:

Joint Nature Conservation Committee 1997. Statement on common standards for monitoring designated sites. Peterborough, JNCC.

UK Marine SACs Project: *Guidelines for developing conservation objectives for marine SACs* – (in preparation)

Understanding and managing human activities

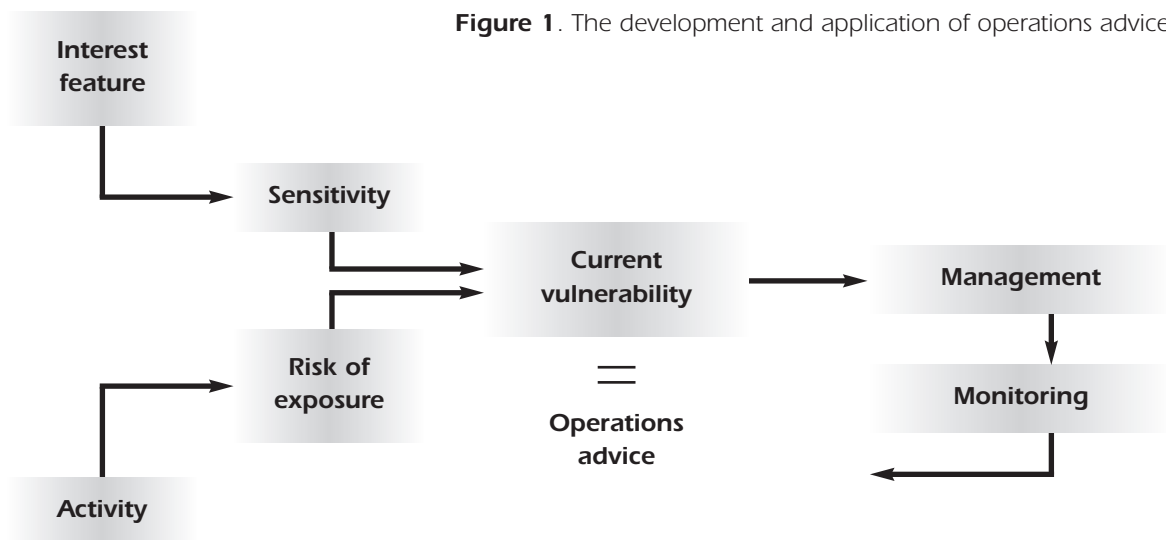
Dr Paul Gilliland, English Nature

The Habitats Directive and subsequent UK legislation (the Habitats Regulations) have, via specific provisions, incorporated sustainable management as a general principle. These provisions require the assessment and management of the impacts of human activities on sites to ensure that the relevant conservation objectives are achieved. The Habitats Directive requires member states to take measures on SACs corresponding to ecological requirements of interest features and species (Article 6.1) and appropriate steps to avoid deterioration and disturbance (Article 6.2).

In the UK, the statutory nature conservation bodies have a duty to advise others of those operations that may lead to:

- deterioration of natural habitats;
- deterioration of habitats of species;
- disturbance of species for which a site has been designated.

The purpose of such ‘operations advice’ is to achieve consensus on the real issues of concern for management. The advice should enable the relevant authorities to direct and prioritise their work on the management of activities that pose the greatest potential threat to the favourable condition of interest features. The development of operations advice involves a series of steps and decisions – see Figure 1.



The advice is based upon an understanding of the sensitivity⁵ of the features to human activities and their level of exposure to each of these activities. Sensitivity information is inherent and generic to a feature. Our understanding of sensitivity has been supported by scientific reviews undertaken through the UK Marine SACs Project of the environmental requirements and sensitivity of a number of habitats and communities. (For details see ‘Further reading’).

⁵ Intolerance of a habitat, community or individual of a species to damage, or death, from an external factor

Data on the exposure of a feature to a particular effect is site-based. It requires an understanding of the pattern of human activities on a site and typically draws from both local knowledge, involving perhaps workshops and topic groups, and discussions with the relevant authorities. The assessment may also draw on a series of reports that review current knowledge and best practice in managing a range of human activities that may impact on marine features (for details see 'Further reading').

The sensitivity of a feature has been considered in terms of 'effects' from broad categories of human activities. Examples of such effects are listed below.

Physical damage

- Siltation
- Abrasion
- Selective extraction

Toxic contamination

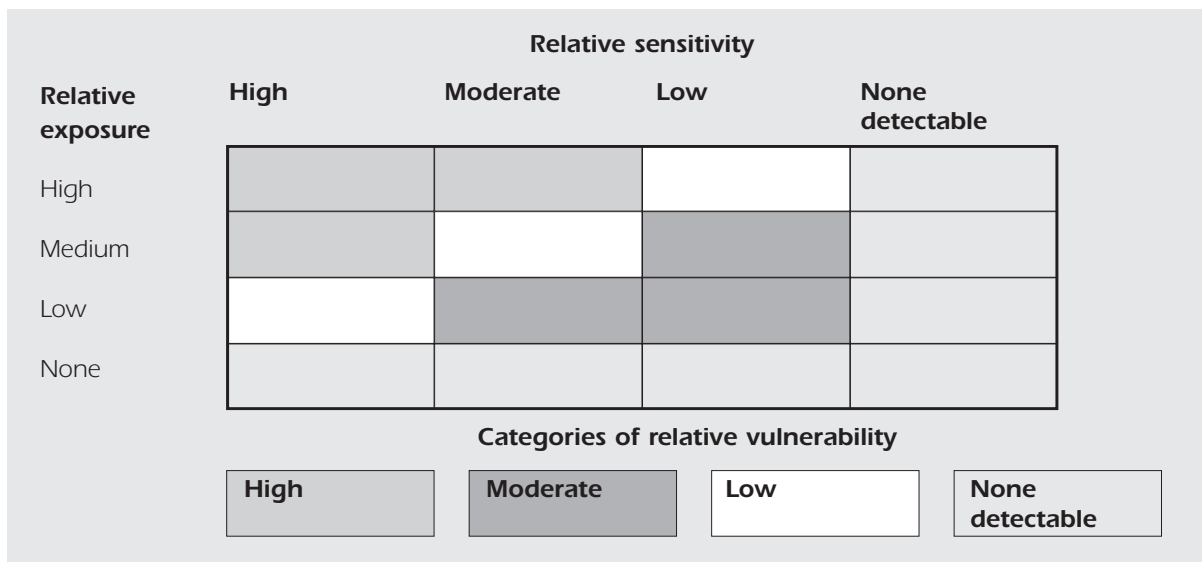
- Introduction of synthetic compounds
- Introduction of non-synthetic compounds
- Introduction of radionuclides

The operations advice is provided in the format of these effects from broad categories of activity to:

- enable a link between human activities and environmental requirements of interest features;
- provide a consistent framework to enable relevant authorities to make an assessment of the effects of activities for which they have management responsibilities;
- robust and stable advice.

Taken together, sensitivity and exposure provide a measure of a feature's vulnerability to an impact, and consequently the associated need for an appropriate management response. This information can be combined in a table as illustrated in Figure 2:

Figure 2. Categorising the vulnerability of a feature of interest to a given impact



By categorising, through some simple scoring mechanism, the relative sensitivity and relative exposure of a feature to certain effects, the most important impacts can be highlighted.

Having determined the scale of potential impacts, additional pertinent information may be required e.g., details on scale and location.

Figure 3. A format for delivering advice on operations

Advice on operations which may cause deterioration or disturbance		SAC Interest features		
Categories of operations	Example of current operations	Reefs	Intertidal mudflats/sandflats	Grey seals
Physical loss Removal	Coastal development Maintenance dredging Trawling	✓	✓	
Non-physical disturbance Noise	Recreational activities Wildfowling			✓

However, the indicative operations advice (provided by the statutory nature conservation agency) will ultimately lead to one of the following management responses (via the management group):

- no impact of concern – likely that no action is required, although the situation may need to be kept under review;
- a potential impact of concern – e.g., implement initial management measures and investigate further to confirm;
- a definite impact of concern – there will be a need to evaluate and probably amend current management measures; the presentation will highlight a number of examples.

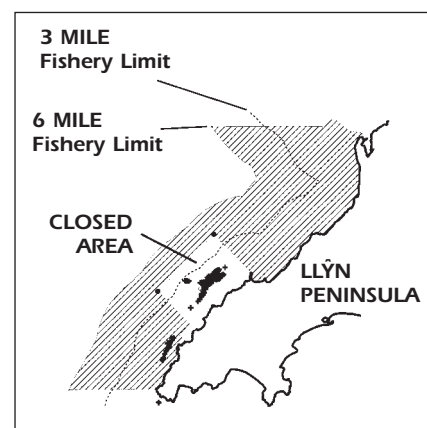
Case study: The Fleet – example of investigating a potential impact

There has been concern that the wildlife features of the Fleet lagoon may be suffering from high levels of nutrients. An assessment of sensitivity indicated that certain lagoonal features were sensitive to elevated nutrient levels. A superficial review of nutrient inputs indicated that there was a clear risk of exposure. More detailed information was needed about the levels and

fate of nutrients to determine the likely degree of an impact. Through collaborative exercises with the Environment Agency and Cardiff University, surveys of nutrients were conducted and a model developed of their fate within the site. As a result the west end of lagoon was noted to be highly vulnerable on account of poor flushing with a risk of negative impacts to features of conservation importance. Applying the precautionary principle, given that a lagoon system such as the Fleet might take a long time to recover, lead to need for management to consider reducing inputs of nutrients to the site.

Case study: Pen Llŷn a'r Sarnau – example of evaluating and amending management

One of the features for which this SAC is identified are *Modiolus* biogenic reefs. Collaborative survey had identified substantial areas of *Modiolus* around the north-west side of the Llŷn peninsula. The *Modiolus* reef is known to be a fragile and slow growing feature, sensitive to effects such as abrasion, removal and smothering. Certain fisheries that occur in the SAC, including scalloping and beam trawling, are known to cause some of these effects. An assessment of the exposure of the *Modiolus* reefs to the effects from such fisheries indicated a low exposure due to fishing patterns and existing fisheries management measures and concluded that the feature was moderately vulnerable. As a result, the Sea Fisheries Committee assessed the current management measures and, as a precautionary measure, introduced a restricted fishing area which is closed to scallop dredging to protect one of the main *Modiolus* areas. They will also monitor bottom trawling activity in case this increases from current low levels triggering a consideration of further management measures.



Map of Llŷn Peninsula showing area of SAC closed to scallop dredging to protect *Modiolus* beds.

A number of areas require further development, building on progress to date, including refining risk of exposure and investigating cause and effect. The development of operations' advice under the Project, and of management schemes generally, have substantially progressed our collective understanding of what is required and how to deliver a series of sites in which conservation goals and human use are compatible.

Further reading:

UK Marine SACs Project: Reports on dynamics and sensitivity of marine features

UK Marine SACs Project: Reports on human activities

UK Marine SACs Project: Johnston, C.M., Gilliland, P.M. (2000) *Investigating and managing water quality in saline lagoons*. 134 pages.

Monitoring marine SACs

Dr Jon Davies, Joint Nature Conservation Committee

Context

The UK's interpretation of the requirement for monitoring marine SACs was derived directly from Articles 11 & 17 of the Habitats Directive.

References to monitoring and site assessment of The Habitats Directive

Article 11

Member States shall undertake surveillance of the conservation status of the natural habitat types and priority species.

Article 17 (1)

Every six years.... Member States shall draw up a report... shall include...[an] evaluation of...the conservation status of the natural habitat types of Annex 1 and the species in Annex 11 and the main results of the surveillance referred to in Article 11.

The UK intends to use its Common Standards for Monitoring of wildlife sites to fulfil these requirements. The standards define three activities, which are defined as follows:

Surveillance: *A continued programme of biological surveys systematically undertaken to provide a series of observations in time.*

This shows the variability of a feature over time and helps refine the *target* value of a feature's condition.

Condition monitoring: *A survey undertaken to ensure that formulated standards for a habitat or species are being maintained.*

The '*formulated standard*' is the condition of the Annex I habitat or Annex II species defined in its conservation objective (see preceding paper by Dr Malcolm Vincent for an explanation).

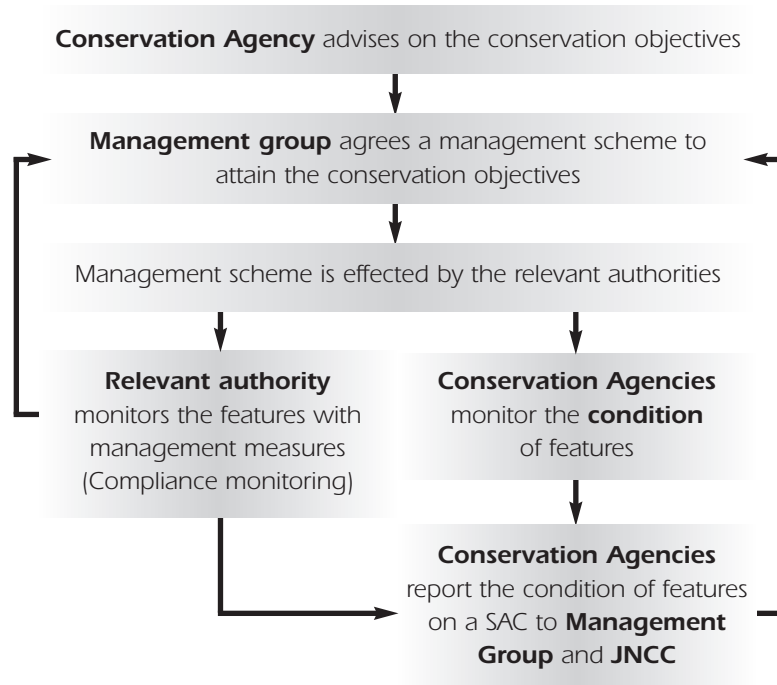
Compliance monitoring: *Checks the management measures agreed for a SAC are in place and operating satisfactorily.*

Compliance monitoring considers the range of *human activities* likely to influence the condition of SAC features.

Overview of SAC monitoring

There are a number of stages in the establishment of a monitoring programme on a marine SAC. Figure 1 outlines the process showing how the results from both compliance and condition monitoring will feed back into management of the site. Condition monitoring has a series of stages, each of which has an associated set of issues to consider. The UK Marine SAC project investigated a number of these associated issues.

Figure 1. An overview of the processes involved in SAC monitoring with an indication of the organisations involved at each stage



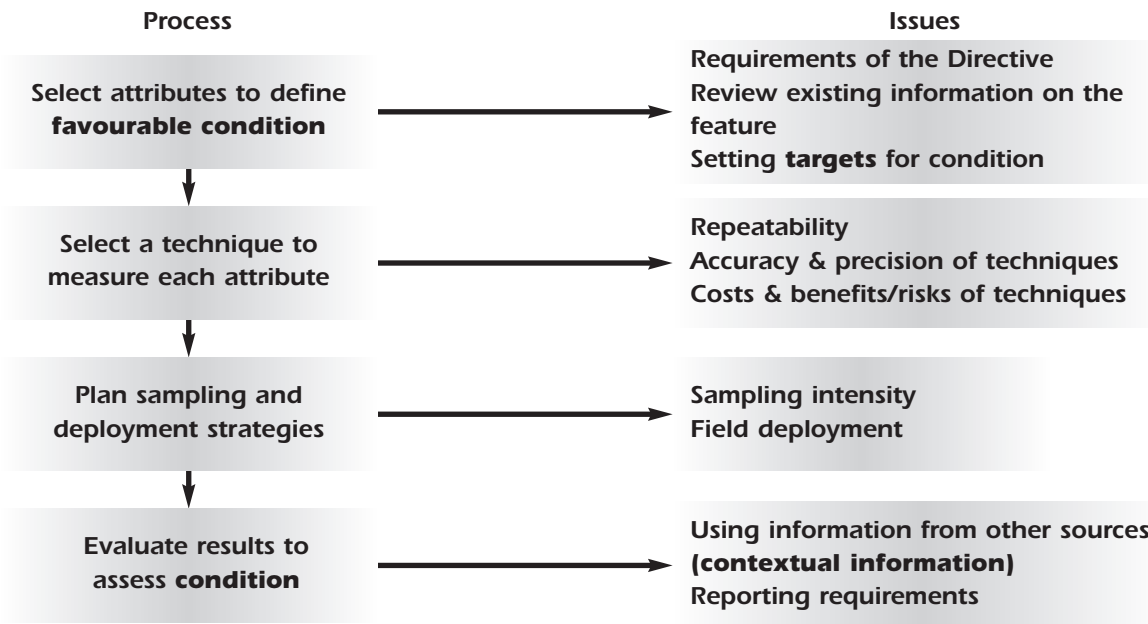
The UK Marine SACs Project monitoring trials

A series of trials were conducted across eleven marine sites, aiming to improve our understanding of SAC monitoring issues. The broad themes addressed were:

- Intertidal extent with Compact Aerial Spectrographic Imagery (CASI), aerial photos and direct sampling
- Subtidal extent with sonar systems
- Sediment sampling strategies
- Assessing biological composition and quality with Remotely Operated Video (ROV), towed video and SCUBA diver
- Extent of structural integrity of horse mussel reefs
- Monitoring techniques for bottlenose dolphin

These trials resulted in a significant improvement in our understanding of the issues identified in Figure 2.

Figure 2. Flow diagram showing the stages of the condition monitoring process.



The Marine Monitoring Handbook

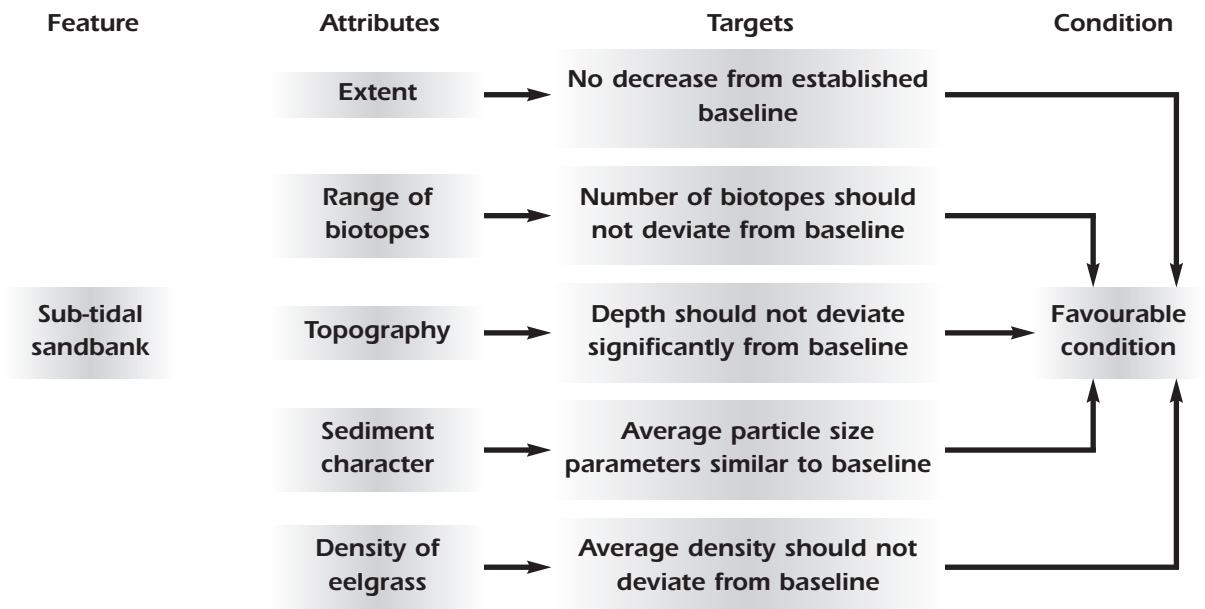
A key output of the UK Marine SACs project is a handbook setting out best practice on marine SAC monitoring. The Joint Nature Conservation Committee is responsible for this task. A draft Marine Monitoring Handbook was prepared for this conference and the final version will be published in 2001 (Davies *et al* 2001).

The main conclusions of the monitoring trials were converted into practical guidance. The handbook presents these conclusions, together with a series of procedural guidelines on appropriate monitoring techniques to be used as a basis of establishing common standards in condition monitoring programmes. The handbook is available on the JNCC website (<http://www.jncc.gov.uk/marine>).

Evaluating results to assess condition

The assessment of condition of a feature will involve the aggregation of information collated from the various attributes – an example using the sub-tidal sandbank ‘feature’ is provided in Figure 3. The assessment will also need to consider contextual information that might indicate wider environmental trends – for example the results from the National Marine Monitoring Programme.

Figure 3. Using an example of a sub-tidal sandbank 'feature', this figure gives an overview of the process for monitoring the condition of a SAC feature.



The reporting of condition is required every six years. In the UK, the nature conservation agencies are responsible for coordinating the monitoring of site condition, although the actual collection of information could involve a number of organisations. The JNCC will collate the conservation agency's results to present a view of the condition of a particular feature across the UK – and report the results to the UK government for transmission to the European Commission.

The UK has four agencies undertaking condition monitoring, and there needs to be good quality assurance and control measures in place to ensure consistent results across the UK. Further development is needed on these quality measures at both the data collection and assessment levels.

The main aim of the Habitats Directive is the maintenance of biodiversity and natural heritage at a European level. Because threats to SAC features are often of a transboundary nature, it will be necessary to take measures at a European Community level in order to achieve the aim of the Directive. Consequently it is vital that Member States work collaboratively to develop effective SAC management. Such collaboration can only be achieved through regular dialogue at events such as the URM.SACs conference and its associated monitoring workshop.

Further information:

Davies J. *et al* (eds) 2001. *Marine Monitoring Handbook*. Joint Nature Conservation Committee, Peterborough. (See <http://www.jncc.gov.uk/marine>)

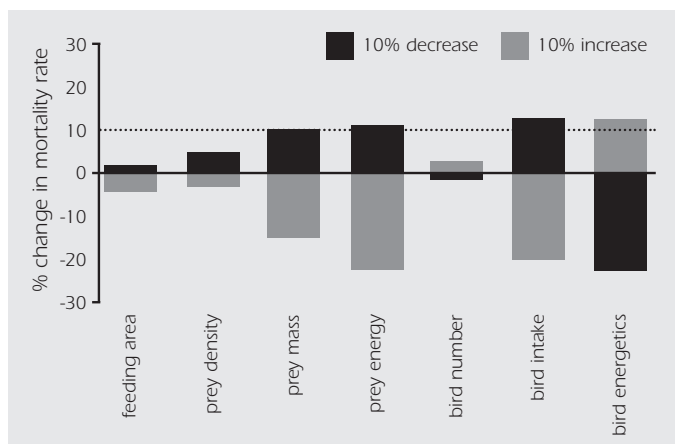
Science's role in evaluating and monitoring impacts

Ian Townend, ABP Research Ltd

Karl Popper noted, the scientific method must start with the development of generalisations – ‘anticipations rash and premature’ – each of which is formed into an hypothesis to be tested through ‘every conceivable means to prove our ‘anticipation’ to be false’. In short it comprises a series of logical steps:

- Observation, gathering and ordering of data
- Induction of generalisations
- Development of explanatory theories
- Deduction of Hypothesis to test theories
- Testing of the Hypothesis
- Support or adjustment of theory
- Peer review

Figure 1. Humber bird model sensitivity analysis



Key Issues in the Marine Environment

Understanding the ecology of the marine environment and the interactions with human usage is fraught with difficulties:

- Spatial scales are large and 3-Dimensional
- High temporal variability
- Baselines of questionable value
- Difficult environment to collect data
- Repeatability can be a problem and expensive
- Populations affected by events remote from site
- Lack of knowledge on structure and function

Scientific research can be a critical element in managing marine sites by contributing to understanding. It operates at a range of spatial and temporal scales from blue sky research which can act at global scales and applies across centuries in time to applied research of a more local and more immediate impact.

Use of models

Examples were given of two different models, operating at different temporal and spatial scales that illustrated how the scientific method can be used to better predict the likely impact of activities on features. Both models related to the Humber Estuary. One concerned Land Ocean Interaction Study (LOIS) and provided understanding on natural process changes over the last century and more (Figure 1). The other modeled benthic and bird interactions associated with a dredging site, and concerned ecological relationships over a ten-year timescale.

New Outlook

Science is progressively shifting from viewing the natural world in terms of simple deterministic models to taking a more complex system approach. The understanding and models derived from these two extremes involve opposing considerations of the natural environment:

- | | |
|---------------------------|------------------------|
| ▪ Focus on species | ▪ Ecosystems |
| ▪ Single scale | ▪ Multiple scales |
| ▪ Short term response | ▪ Long term change |
| ▪ Humans outside system | ▪ Humans integral |
| ▪ Resource exploitation | ▪ Sustain productivity |
| ▪ Management intervention | ▪ Adaptation |

(Source: Kenneth Sherman, NOAA)

The future (Figure 2) will see the increasing adoption and application of these systems models in which there may not be simple outcomes and where there is an in-built flexibility to adapt.

Ultimately, managers and planners require appropriate tools for decision making that are, transparent, user friendly, credible.

Further information

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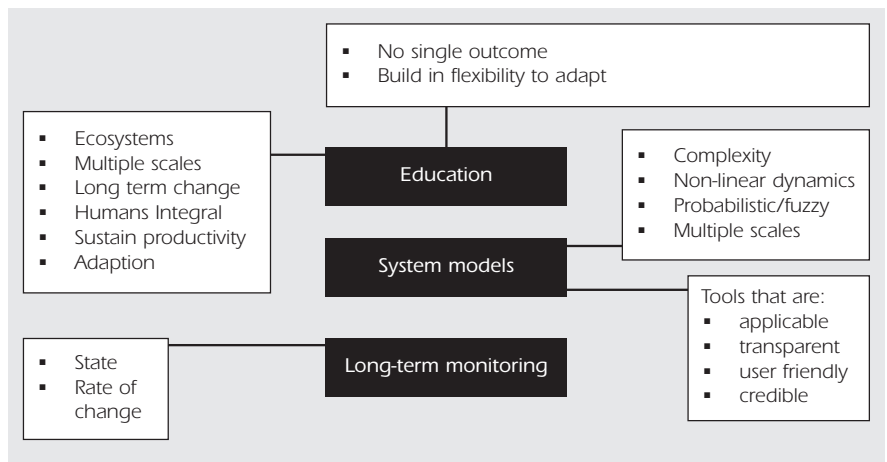
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Figure 2. Future Scope



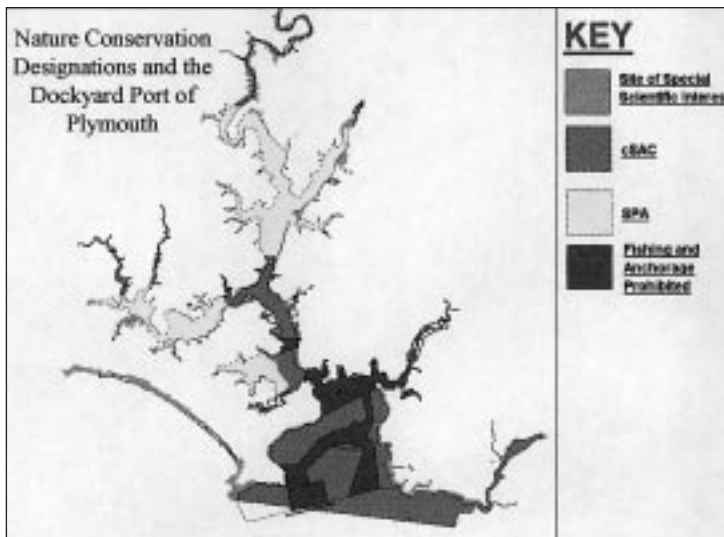
A case study from Plymouth Sound and Estuaries

Jo Crix, English Nature

Cmdr Shaun Turner, Queen's Harbour Master

David Fletcher, Plymouth City Council

Our purpose is to try and explain how information needs, conservation goals, potential impacts, activities and site monitoring aspirations have been addressed at a site level to deliver a single scheme of management. We hope to identify lessons learned and some of the practical and technical challenges encountered and foreseen for the future. We'll end by summarising what we see as the challenges for the future and some suggestions as to their solutions.



Background

The Ministry of Defence (MOD) has had an enduring interest in the estuary, formalised in 1865 with the Dockyard Ports Regulation Act. The act established the Dockyard Port of Plymouth such that the national interest is protected, and the Queens Harbour Master (QHM) was appointed to 'protect the port'.

The Tamar Estuary is not just an environmental jewel, it is also a very busy port. As the largest Naval Base in W Europe, it includes major ship repair facilities. Nuclear submarines, capital ships and other units are based

here, and there are many visitors from other nations for sea training. Royal Marines and other elements of the armed forces also train here. There are some 18,000 military or support movements each year in the Sound and 600 commercial movements each year into the Cattewater, as well as many others using the Sound, with 1.3 million tonnes of hydrocarbons each year imported, among the cargoes. We have 500 Brittany Ferry sailings each year and a blossoming liner trade. 400 moorings, 6 marinas, 17 sailing clubs and thousands of race participants each year are part of huge recreational volume with economic benefits. There are hundreds of tourist and water taxi movements – water significant in tourism and increasingly in commuter movement. We therefore have to salvage, maintain structures such as the Breakwater, dredge to keep channels and anchorages open, anchor ships, maintain navigation marks and generally use the port.

Despite all of this, there is an environment suitable to be designated a candidate SAC (cSAC).

Relevant Authorities

Politically we have 2 county councils, 4 local authorities, port authorities and other bodies with an interest in the estuary. In 1992 QHM looked to reduce the area of Dockyard Port of Plymouth to better reflect the MOD interest. This was not popular with other players who wanted MOD to stay and to have more influence on the estuary. The Dockyard limits were confirmed, but interest in estuary management was invigorated. One such outcome was that the Port of Plymouth Marine Liaison Committee (PPMLC), a long standing consultation forum, was reinforced, and became the user group for the estuary with 120 groups and interests represented. A coastal officer was recruited and English Nature involvement grew.

In 1997 the Tamar Estuaries Consultative Forum (TECF) emerged from long debate as the managing body for the estuary – non executive, open forum, co-operative and very lively. The participants found strong mutual benefits through involvement and in the first 3 years, a million pounds in funding was generated for an outlay of £100,000. An estuary wide oil spill plan was also established.

Management scheme

The cSAC management process was built on the base of the established estuary management, with TECF becoming the single management group required by the Habitats Regulations. Close links and good cooperation between PPMLC and TECF have been maintained and this has allowed a good integration between the Tamar Estuary management plan – which combines human, economic and environmental goals – and the SAC management scheme.



Royal Navy – Devonport

Tamar estuary and Plymouth

Plymouth Sound and Estuaries is one of the most data/ information rich systems in the UK. Organisations actively involved in research, information and data gathering within the cSAC include:

- Plymouth Marine Laboratory
- Marine Biological Association
- MarLIN project
- Ministry of Defence
- Universities of Plymouth, Southampton, Newcastle (and others?)
- Consultancies
- Local Authorities
- Government Agencies
- South West Water
- Regional Development Agency

As well as the large number of different data sources and collectors, the information is often held disparately. Therefore information and co-ordination are key measures in the estuary management plan and the SAC management scheme. These issues are arguably one of the most time consuming elements of the Coastal Officers role and are likely to become more significant with the SAC monitoring coming on stream.



Royal Navy – Devonport

Royal Navy submarine

A wide range of collaborative projects have been undertaken, often with the support of the LIFE funding, to co-ordinate and collate these information sources.

- 1997 Guidebook to Tamar Estuaries
- 1997 Bibliographic database of the Tamar Estuaries
- 1998 Nature Conservation Review
- 1998 Geographical Information System (GIS)
- 1998 Oil Spill Sensitivity Mapping
- 1999 Audit of Coastal Change
- 1999 Aerial Photography
- 2000 Internet site

The information projects have been lead by the needs of the two management plans and have become more sophisticated with developments in the technology. Key projects have been the Nature Conservation Review, the database, research and ‘notebooks’.

The need for quality information in part reflects the shift, brought about by the SAC, from a voluntary non-statutory management forum to a forum that also discharges its statutory duties under the Habitats Directive. This has required standards and confidence in data to be elevated to new levels. Two examples illustrate how information has been well applied:

Aerial photography of mooring

Moorings have been steadily extending within the estuaries. This creep has management implications – right of free navigation and potentially conservation implications e.g. possible disturbance and increased activity. These changes were identified clearly through a collaborative aerial survey of the site that provided important information on the locations of the moorings and on the extent of intertidal habitats. The outputs were incorporated on to the geographic information system managed by QHM on behalf of TECF.

Remote Ammunitioning Facility Tamar

This substantial development within the site galvanised and focused the Forum and the appropriate relevant authorities with a live and real challenge for the SAC. There were major national interests and nuclear and conventional weapons safety issues tied up with the proposal. There were also potentially a significant risk of conflict and fracturing of partnership, especially as the plans were elaborated at same time as English Nature’s advice on conservation objectives and operations for the site.

Appropriate assessments were conducted. Geographic information systems were used to assess extent of impacts on the interest features. This focused on the impacts of dredging, which whilst not significant compared to the dredging throughout the site, could have a major effect. The proposal was considered to be of overriding public interest and the next stage was to consider the parallel conservation management plan needed by way of mitigation including further monitoring of sediment dynamics and opportunities for management retreat. In overall terms, the assessment procedure confirmed the importance and value of the existing information tools and systems to support management decisions. The SAC management scheme has also allowed the benefits of the mitigation measures to be maximised. The debate that developed around the proposal and the availability of quality information furthered cooperation and understanding between parties.

The information challenges can be summarised as:

- Data maintenance – Local issue – national standards
– Common architecture of systems – training – shared experience
- Internet solutions – Innovation
- Training issues – Info exchange of local/national
- Funding – National policy plus local innovation
- Participation – National & local promotion/info exchange
- Data exchange – Local issue – national standards
– Technical Issues
– Territoriality

The management challenges ahead include:

- Resources
- Group chemistry
- Cautions
- The issue of who runs the SACs – is it the European Commission, DETR, English Nature, local management schemes...?

In conclusion, we are established and are making ground. We need resources and space to grow, strengthen, define and evolve. We need support from international and national levels, financial, distilled advice, guidance on best practice, and we can expect to be assessed on how well we do. But we also need to retain ownership of what is a local site of national importance. In summary four key themes or challenges have been raised throughout this presentation –

- Information exchange
- Plans and Projects
- Resources
- Who runs the SAC?

Key discussion points: Session 2

Ian Townend, ABP Research Ltd

Implementing management on marine SACs will require more resources once the LIFE project has ended. Government representatives acknowledged this request and noted it was the subject of on-going discussion between the statutory nature conservation agencies and UK government departments.

There is a plethora of organisations and initiatives involved in the marine environment, creating an increased need for 'joined up thinking' across them. The management schemes themselves offer a means of bringing together some of these organisations.

Consideration of economic arguments in management decisions is up to the respective relevant authority in the management group. The primary consideration is protecting the feature.

The terminology behind the conservation objectives and operations advice was felt by some to be confusing. However JNCC and the statutory nature conservation agencies are attempting to standardise these terms.

The difficulties were highlighted of intervening to maintain or restore marine features which were subject to significant natural change. An intervention will normally be needed only when a downward change is observed. Another LIFE project (Living with the Sea LIFE Project) is considering issues concerning the dynamic nature of some habitats and the compensation for loss of features. The underlying principle here is that there should be no net loss of features.

Concerns were raised that the important economic value created within the coastal zone could be damaged through the subordination of economics to environmental arguments. However, in general, existing levels of activity will continue on sites, provided there is no evidence for a downward trend on feature condition. For new plans and projects, there is a separate process established that provides a means for dealing with the economic interests.

Dimitrios Dimopoulos introduced the afternoon discussion session with a review of the experiences of Sea Turtle Protection Society of Greece in the creation of a marine national park in Zakynthos island and in a LIFE project at Kyparissia.

The issue of ensuring consistent standard in marine monitoring procedures was identified. The first task has been for the UK's statutory nature conservation agencies themselves to agree common standards before these can be more widely applied to other contractors.

The risk was raised that the shortfall in knowledge of natural impacts will lead to poor or inappropriate management of human activities – for example the impact of wash caused by jet skis may be trivial in comparison to natural wave action. This is an area of continuing research. However in the absence of all the information, it is still necessary to make a judgement using the best information available.

The constructive involvement of partners to the Plymouth Sound and Estuaries management scheme was explored. From the start, the partners on this site had been enthusiastic to apply the approach devised for the Estuary Management Plan to producing the SAC management scheme. Their support had been maintained through having a transparent process. This contrasted with other sites, where there had been no earlier initiatives, and there was a high degree of initial suspicion and resistance.

The absence of certain important marine habitats from the Habitats Directive was raised, eg deep sea lochs. The EC's priority however was stated as achieving a good implementation of the existing series of features, before adding new ones. EC representatives also noted that the Directive would expect the process of management plans and the consideration of plans and projects to be separate, though clearly closely connected.

Session 3 – Building partnerships on sites

What makes for successful partnerships? Experiences across 12 sites

John Torlesse, UK Marine SACs Project

Partnerships are as important to the successful management of European marine sites as knowledge about the features and activities. Being statutory nature conservation designations, it is sometimes tempting to focus on the scientific aspects and the legal imperatives for action on sites and overlook the people.

Much has been done on the sites to establish new partnerships and to build on those already existing, so that the right people are involved in the developing the schemes. The Project has commissioned a study by University College London into the learning we can take from these experiences.

Why have partnerships?

At one level, there are legal reasons for partnerships. The UK legal framework places a duty on each relevant authority to act in accordance with the Habitats Directive, and the option to develop a single management scheme to assist them in this. The UK approach anticipates and expects that the development of management schemes must at least involve the set of relevant authorities on a site.

Beyond this, the policy guidance offered by government, particularly to England and Wales, recommends that this top-down imposition of the Directive and responsibility on relevant authorities be tempered with a bottom-up involvement of wider stakeholders comprising users, interest groups and local communities. In fact it suggests a model for the involvement of these various groups with a management group for the relevant authorities, liaising with stakeholders through an advisory group.

But, based on the experiences in this project, there are also real practical benefits that justify partnerships.

Build up trust and confidence

We have found that partnerships which allow for the real participation of stakeholders and relevant authorities in management decisions *do* build up trust and confidence between the parties. This trust and confidence is important because it provides the basis and frameworks through which concerns and management issues can be resolved more easily and amicably.

Use local knowledge

Secondly, effective partnerships can be an important vehicle for learning about the sites. Our knowledge of marine features and the pattern of human activities is pretty poor. In fact, given the constraints of time and money in undertaking extensive new surveys, this local knowledge has formed a significant and valuable proportion of our understanding of the sites and upon which these management schemes are developed.

What sorts of partnership arrangements seem to work best?

The statutory framework in the UK for establishing the management schemes allows for a certain degree of flexibility, and this has been a distinct advantage and necessity. As a result, different partnership arrangements have developed for each site. A number of points can be highlighted as to what influences how these various participants group together and relate to each other to make the partnerships most effective.

Structures for relevant authority and stakeholder groups

The relevant authorities and wider stakeholders can participate in the development of the management scheme through separate groups as envisaged in government guidance for England and Wales or through flatter, joint structures. Table 1 below shows how the differing characteristics of sites can favour different types of structures

Table 1. Structures for relevant authorities and stakeholder groups.



Suited to sites in more urban locations – higher populations and more potential stakeholders	Tended to operate on more rural sites – fewer potential stakeholders however their interests and dependance on the site are stronger
Stronger political culture for local communities, industry and other interest groups to act through representatives who work in collaboration or consultation with statutory authorities	Many instances there is an accepted culture for decisions affecting local resources to involve both statutory and community groups together
Existing high level of trust and confidence between the participants, perhaps developed by previous successful conservation strategies. If trust and confidence between participants is still fairly weak, extra attention is necessary to ensuring wider stakeholder involvement in the scheme.	Better suited where past conservation initiatives have not developed strong levels of trust and confidence between the participants. Single structures and more consensus ways of working can be applied to large urban sites

Geography of sites

The marine sites vary from small bays and lagoons to long lengths of coastline stretching for over 60 miles. This physical nature of these sites has an impact upon how stakeholders and participants view the site and therefore their willingness to become participants. Small bays and estuaries will often have a fairly well defined identity as a place and associated communities. A large and open site may however not be recognised as a distinct entity and could comprise many separate stakeholder communities. This means it can take much longer to develop sufficient awareness, familiarity and support for larger sites. It also means it may be necessary to establish separate stakeholder and relevant authority groupings around these sites that are more meaningful to how the site is perceived.

Existing initiatives

On some sites there are existing management strategies and partnerships such as the estuaries partnerships in England, the Firths partnerships in Scotland, and national and voluntary marine sites. Potential advantages:

- developed existing networks between the key participants that can be readily applied to the European marine site – thereby reducing the investment of time in building these relationships up;
- a heightened awareness of the site and the management issues as well as a base of existing knowledge.

But there can too be some risks. The new European marine site may be viewed as a threat overriding and replacing the earlier objectives and efforts. The existing strategies may have opened up some conflicts, that remain unresolved.

Therefore whilst it is valuable to build on existing initiatives, three things are important:

- researching the situation well;
- explaining fully how the new management scheme fits alongside existing strategies and showing an integration or development of the objectives;
- involve previous project officers and networks in the development of the management scheme.

What encourages good levels of participation

Having designed the partnership arrangements to fit the needs of the site, it would be nice to think that open, full and constructive participation of all the key players would then follow. Unfortunately this seems to be rarely the case. Gaining and maintaining the support, enthusiasm and commitment of all parties is not straightforward. Factors that appear most critical are highlighted:

Legal

The new legal responsibilities on relevant authorities that were brought by the Habitats Regulations, have certainly contributed substantially to their participation in the management schemes. Without a basic legal commitment, it is difficult to see how this intersectoral approach could work in practice. But there are difficulties with the legal basis to participation:

- i. getting sufficient awareness within relevant authorities about their new legal duties takes time, particularly in large authorities where communication between many departments can be poor;
- ii. reliance on legal arguments may provoke negative perceptions. This is a particular risk in the early stages of establishing the scheme. It may be better to put the legal responsibilities in the context of the wider justification for the site. It is also beneficial for messages of a legal nature to come from central governments directly rather than the nature conservation bodies.

Project officers to facilitate participation

Perhaps the critical ingredient in gaining participation and support of relevant authorities and stakeholders is the project officer. This is someone who is on the ground and able to set up workshops, but most importantly meet relevant authorities and stakeholders individually. These one to one meetings have been highly valuable in explaining the scheme process, the rationale for the site and in gathering local information and concerns.

Project officers need to understand the culture of the site they work in. Existing staff are particularly valuable for the knowledge and enthusiasm they can bring. Staff appointed from the local area have been a distinct advantage in those sites where the communities have close economic and social attachments to the sea.

Identifying the benefits of European marine sites

One of the more common initial perceptions about marine sites is the threat to local livelihoods from anticipated restrictions. These fears are often unfounded and need to be countered, before they grow into a wider resistance and hostility to the site.

It is therefore essential to show the positive sides of these sites. This may include:

- the mutual benefits of safeguarding marine wildlife and supporting local fisheries;
- setting up topic groups to look into opportunities for taking forward tourism opportunities;
- using local facilities and resources in developing the management scheme – such as hiring fishing boats for survey work, using local artists in publicity material.

Promotion

Promotion is an essential element in building participation. There are many ways to promote sites. So it is important to be clear about the purpose of the promotion. Raising awareness about the process of the management scheme and opportunities for people to participate is of course vital. Simple newsletters, newspaper advertisements and community workshops have all been successfully used on sites. There is lots of potential to promote the sites and their wildlife. Generally there is little appreciation on sites of the marine plants and animals – there are some amazing sites to see and stories to tell. Underwater video footage from surveys, leaflets and participation in intertidal surveys have all been valuable approaches. Time and resources are the only constraints.

So where have we got to with our partnerships?

Much has been done on the sites, but there is still some way to go. I would like to end with suggesting three priorities the developing this participation further:

- identifying the benefits of the marine sites;
- promoting the features;
- continuing the partnerships.

Avoiding conflict through partnerships

Peter Tevendale, Project Officer, Sound of Arisaig

In order to create a management strategy for the LIFE sites, partnerships are essential. Partnerships, that is, between local agencies and local users. This sense of partnership is particularly important in the Sound of Arisaig because of the remoteness of the site in the West Highlands of Scotland. There is also an emerging concept to develop, on the part of the authorities, a working relationship between themselves and the local people. Scottish Environmental Protection Agency (SEPA), Scottish National Heritage (SNH), the Highland Council and the Scottish Executive have worked alongside crofters, farmers and fishermen in a combined effort to agree how this area should be managed. These local people are from local community councils or individuals that work in or near the site. The only thing that links all these people are that they have an interest in the site and how it should be managed. The ideal behind this gathering is that all interested people to decide how the site should be managed and then to hand this over to the authorities to put into effect – but they were only part of the story.

The Sound of Arisaig has a rugged coastline of sea lochs, peninsulas and exposed open coast. It has two communities on its shores and several others that rely mainly on the bounty from the sea and the income from tourism. The area has a very small population – a population that has a strong connection to the land and sea and has done since ancient times. There is a vitrified Stone Age fort more than five thousand years old, overlooked by a large modern house inhabited by a self-made computer



Fishing port of Mallaig

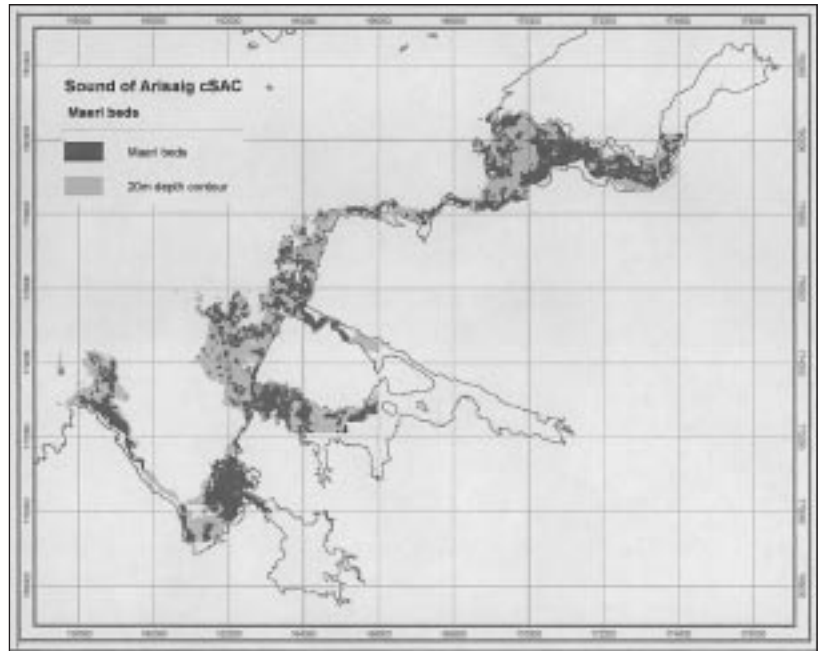
millionaire. There are fishermen who catch velvet crabs for export to Spain and prawns that grace the best restaurants of London, Edinburgh and Paris. Crofters have continued to eke out an existence for centuries, many of them proud of their links to the 1745 uprising in which their ancestors fought alongside Charlie in the Jacobite cause. There are also 'incomers' from around the world as well as from cities and other parts of Scotland. All are attracted to the beauty of the area and all have a vested interest in seeing the Sound of Arisaig working for them, for their children into the future.

It is this rich diversity of people covering the whole spectrum of income and views that have a stake in the future of the area. They were asked to work with the relevant authorities in order to create a way of managing the Sound of Arisaig to ensure the future of the features of interest as well as their own future as part of the fragile economy of this area.

The site has been proposed under the Habitats Directive for its 'sandbanks which are slightly covered by sea water all the time'. Of these, the maerl beds and the incredibly rich marine

chairman. Eventually the local Highland Councilors – members of the lead authority with statutory responsibilities – but also elected to that post by the local people – were appointed as co-chairs.

These debates continued to rumble through meeting after meeting. On one side were the fishermen – traditional users of the site – who felt that they had harvested the resources of the sea for generations without harming the scientific interest for which the site was selected. On the other side were the authorities who were obliged to deliver a management strategy and uphold the conservation objectives of the site and who felt that a policy of “leave things as they are” left too much to chance and that a more substantial plan would be needed.



Map of Maerl beds – Sound of Arisaig

Many of the fishermen’s objections were principled ones generated largely by a lack of early communication and mistrust of the conservation agenda. This was because the site was originally selected almost without an option to decline the designation. Consequently much of the forum’s work was in trying to persuade them to set aside this mistrust of any restrictions being imposed on their practices and to involve them in discussing practicalities. Even asking for information about where fishing went on proved difficult in this suspicious world.

Scientific documents strongly indicate that scallop dredging is an operation that damages maerl marine communities. The forum also knew that scallop dredging was *practiced* within the site. The forum, therefore, needed to discuss the specifics of scallop dredging. The fishermen said their fishing *licenses* allowed them to fish wherever they wanted. They argued that if the site was in as good condition as the designation documents suggested they had clearly done no harm and so should just be allowed to carry on. Much debate ensued. It soon became evident through discussion that areas of concern, where overlapping interests occurred were actually quite specific. Scallop dredging only went on in certain areas within the site. Through the course of these debates understanding the responsibilities on one side and the concerns on the other evolved. The fishermen, responding to the openness of the forum and good two-way communication, set aside some of their mistrust to discuss these points. In the course of time they abandoned their objections in principle to the designation. In return, the authorities were obliged to find the minimum level of change or restriction needed, including the notion that no change was a possibility, to allow the site to be maintained.

Whilst the forum was the platform for much of the decision making and was made up of many of the most vocal local interests a lot of information gathering and informal negotiation was conducted outside the forum. This was undertaken in a series of smaller groups where specific points relevant to one interest group were aired. One of the most active was the fishing group that was keen to voice many concerns over a wide range of subjects. Many of these concerns were outside the remit of this forum but it should be noted that there seemed to be few previous genuinely influential broad based partnerships through which fishermen could voice opinions. The presence of the two local *Councilors* in these informal meetings and their one to one conversations with individuals had an important role in fostering trust and two way communication.

In tandem with these topic groups and the work of the *Councilors* the newly-created Marine Ranger started to canvas opinion. The Marine Ranger, a local person from Mallaig which is the main fishing town in this area, went from boat to boat to find out what all the local scallop fishermen thought of a recently tabled proposal that no dredging should occur in the shallow maerl beds. They were also told that the scheme was to be managed voluntarily. As this caused little change in current fishing practice the fishermen agreed with the understanding that this was necessary to the effective management of the site and that any further management changes in the future would be decided through the forum.

The outcome was that there would be no scallop dredging in less than 20m of water with a further 5m depth of water acting as a buffer zone. This was incorporated into the overall strategy as set out in this map.

As this example demonstrates, such a forum can promote partnerships that can lead to change, even where change was not particularly welcomed by many of those involved. The considerable distrust felt by fishermen was salvaged through genuine efforts at communication – both formal and informal – where they were able to discuss their concerns and move towards a consensus. It is, therefore, possible to achieve the conservation objectives whilst accounting for local interests and without causing harm to the local economy. Compromise was required on all sides once a degree of trust was established. Implementation is on a voluntary basis and enforcement as an option will only be considered if these voluntary agreements fail and there is evidence of such failure from future monitoring efforts.

It is hoped that such enforcement will not be required and that fishermen will continue to ensure the future of the Sound of Arisaig, the features of interest and the livelihoods of all those who live on, in and around the site.

Developing a management scheme through the wider community on Strangford Lough

Caroline Nolan, Strangford Lough Management Committee (SLMC)

Strangford Lough is a fjord like inlet, 30 km long, on the east coast of Northern Ireland.

It has been designated as an SAC for its large shallow inlet and bay. It also includes important SPA features: light bellied brent geese, redshank, knot, nesting terns, the overwintering bird population

At its entrance the fast flowing tides of the Narrows rush through a central y-shaped channel, up to 60m deep, past rich and colourful tidal communities. In complete contrast the northern end spreads out to wide expanses of intertidal sand flats that are rich in eel grass, shellfish and worms making the Lough very attractive for overwintering birds.

Between these two extremes of rock and sand there are many kinds of shore. Across the Lough, there are over 70 islands and many rocky pladdies. The surrounding land is characterised by rolling drumlins with many small farms and some larger estates. And sub-tidally it is just as rich and diverse.

But beyond these pictures of tranquillity, the real scene at Strangford Lough is that the people there are as varied as the wildlife and the Lough is very close to Belfast and within an hour's drive of 1 million people. Trawling and dredging for scallops and prawns along with potting for crabs and lobsters takes place. Fishermen have had a mixed reaction to shellfish aquaculture – which is viewed as the new kid on the block. There is a degree of jostling for space between them, the yachtsmen and the aquaculturists. The area is increasingly a tourist destination and recreational facility and motorised water sports are growing. Meanwhile people continue to enjoy walking around the Lough. But with all this activity there are growing concerns for disturbance to wildlife. Preferably delete this bearing in mind there are many other problems

As well as having so many interests on the water there is the very complex system of landownership, lease-holding, and public rights, especially with respect to the inter-tidal/foreshore area. Landowners are not always amenable to environmental management. There is, (some would say healthy) resistance from stakeholders to having any kind of management forced upon them by government. Early designations were not well received, particularly the introduction of Area of Special Scientific Interest (ASSI) legislation in 1988. At that time Government was heavily criticised for lack of consultation and for not taking account of local interests.

Following this bumpy start the Strangford Lough Management Committee (SLMC) was set up as an advisory committee to Government in 1993. It brings the different stakeholder interests together including recreation interests, conservation bodies, fishing organisations, farmers unions, and yachting associations. The Committee's remit covers all aspects of the Lough's management and it is working towards a shared vision for the area.

Whatever way you look at it, the Committee is now well established and, seven years on, meetings are still very well attended with local and specialist interests sitting down together to debate issues of common concern.

Strangford Lough Management Committee's involvement in the Management Scheme

Being well established and very active SLMC seized the opportunity to help in the production of the Management Scheme. The Committee felt that this input would help to produce a draft document that would encapsulate their approach and increase the amount of informal consultation with stakeholders. The Strangford Lough Office, working informally with Committee members and other bodies made the following contribution:

- A blueprint for the Management Scheme – including a management structure
- Draft factors tables and related action plan
- Draft monitoring programme
- Collaborative projects (particularly in relation to communications and data sharing)

It was important that this input should not compromise SLMC's independent advisory status. Therefore the final production of the Management Scheme and formal consultation remained the duty of Environment and Heritage Service (EHS).

The mechanisms used were as follows:

- Themed workshops and meetings with Lough users, landowners and statutory bodies
- Review of scientific research and monitoring activities
- Discussion papers for consideration by the statutory bodies
- Access to SLMC own reference material
- Informal consultation with members
- Formal consultation response to EHS document

Management Structures

One proposal in the blueprint was the setting up of an acceptable management structure. A Liaison Group was set up to coordinate effort across the four relevant authorities government departments, relevant authorities, the National Trust and the Strangford Lough Office. A good working relationship between the Committee and the Liaison Group is essential. This is being achieved through having the Strangford Lough Office included on the Liaison Group.

Connecting people

In developing the Management Scheme it became clear that the statutory bodies are even more disparate than the users of Strangford Lough. In some instances it was a novelty for officers from different departments and local government to sit down with each other to have informal discussions on how the area should be managed.

There have also been some very encouraging transformations or at least changes in perception.

For example the way that the Department for Agriculture and Rural Development Fisheries Division (DARD) entered into discussion with SLMC on the issue of managing commercial shellfish collection and took the lead in addressing the need for new legislation has helped change

the perception that they would not take account of environmental objectives and local interests.

DARD are currently putting through an amendment to their legislation, which will give them powers to regulate fishing in the intertidal area. These new powers will also enable them to regulate fisheries for the purposes of marine conservation. They have done this in collaboration with all interested parties including SLMC and in a very open manner.

Wider connections

Good communications are essential for the implementation of the Management Scheme. Even though great strides have been made in some respects, the general public are still very much in the dark. Their help is needed both to influence politicians and as Lough users.

SLMC started to address this problem in 1998 by commissioning research on what people knew or wanted to know about the Lough and its management. The research involved face to face interviews with the public and workshops involving interest groups and statutory bodies. The SLMC communications strategy sets out to address the needs identified through this research.

This led to the setting up of the Strangford Lough Information Network in 1999. This collaborative project is steered by local councils, the National Trust, EHS and SLMC. The Network operates through the Strangford Lough Office but is very much a partnership with input and support from a wide range of organisations. The Network has helped to develop a common identity on Strangford Lough that many organisations can buy into in an informal way.

The Network has already developed a range of materials. Some of these are aimed at those involved in the Lough's management, such as Handbooks with bibliographies, directories of contacts and info on environmental designations sections. Others are aimed at the general public such as the Out and About booklets that give information on how to access the Lough while at the same time promoting sensitive use of the environment. Future plans include posters for schools, a gateway website, events etc.

Each organisation benefits directly in some way. The network is seen by councils to complement their tourism development work, for EHS it raises the profile of the Marine Nature Reserve and environmental management and for the National Trust it gives recognition to its key role in the management of the Lough.

Another collaborative project initiated through SLMC is a shared Geographic Information System.

Linking projects and plans under the strategic framework is an essential part of the approach being taken on Strangford. We are heavily dependent on using what is already in place. For example the existing National Trust's Strangford Lough Wildlife Scheme will meet many of the SPA conservation objectives. The benefit of this approach is that it demands that the Scheme's environmental objectives are embedded into different organisations' own work programmes. There are understandable fears that without an overarching single authority this approach may not work and only time will tell. We believe however that it is the best solution for this area at this point in time.

Recommendations for making it last

Timing: Allow each organisation to slot environmental management objectives into its own agenda and work plans

Flexibility: Aim to be not too prescriptive, use stepping stones, be opportunistic, be prepared to adapt to new scientific information and changing circumstances

Strangford Lough Management Committee

The key characteristics of the Committee are as follows:

- Wide remit and well informed – encompasses all aspects of the Lough’s management and all interests
- Recognised and supported by Government
- Independent, objective
- No executive function
- Open/transparent
- Flexible – adapts to needs/opportunistic.

Furthermore, the neutrality of SLMC, its purely advisory status and its emphasis on face-to-face communication has helped to bring people together, breakdown barriers and enlist support.

The main value that the SMLC has brought to the development of the scheme has been in the form of:

- Advice to Government drawn from wide ranging experience and knowledge of the area. SLMC is area orientated, addressing a range of tasks and issues. Many statutory bodies are task orientated across a wider region with little hands-on knowledge of any specific area. Both approaches are combined under the current structure, bringing mutual benefits.
- A forum for open discussion of issues – considered opinion
- Encourages high levels of participation in informal consultation and communication
- A driving force and critic
- A nucleus for collaborative projects

No one ever said working in collaboration like this would be easy, and it is not. However, the Management Scheme is helping to develop shared objectives and many bodies have already shown considerable commitment to making this work. With an area as superb as Strangford Lough it is surely worth the effort.

Papa Stour is located some 150km north of the Scottish mainland, almost the same distance from Aberdeen in Scotland, Bergen in Norway and Torshavn in Faeroe. It has a population of some 22,000 people and important activities include fisheries, tourism, crofting and Europe’s largest oil terminal.

The coastline is mainly rocky shores with caves, arches, stacks and skerries. The conservation features of the cSAC are the Annex I habitats reefs and submerged and partly submerged sea caves. The island has been settled perhaps since the 6th or 7th century, it had a prosperous fishing industry and over 300 people during the 18th and 19th centuries. By the mid 20th century its fishing and population were in decline and during the 1990s population fell into the 20s.

Promoting sites and communicating marine science

Austin Taylor, Shetland Islands Council

Papa Stour marine cSAC includes the island of Papa Stour, skerries and some Shetland mainland coast at Sandness. The coastline is surrounded by submerged bedrock and boulder reefs. It is an excellent example of a high energy wave exposed environment – kelp forests are found down to 30m. The reefs have wave exposed gullies – rich, surge-tolerant communities – and numerous sea caves, tunnels and arches -that are the best examples of their type in Shetland. Visit the web site for more: www.users.zetnet.co.uk/papa-stour-sac/.

Initial proposals for 3 marine SACs were greeted with suspicion and concern – the Council formally objected. The objection was withdrawn after further discussions with the Scottish Office and Scottish Natural Heritage. During those discussions I suggested the establishment of a broadly-based consultative group, which was established in 1996 as the Marine SACs Advisory Panel. The Panel was given a remit to:

- Discuss and make recommendations on any further proposals for possible marine Special Areas of Conservation.
- Consider the implications of final designations.
- Consider proposals for the management of sites
- Keep sites under review and suggest changes in management arrangements where appropriate.

Representatives on the panel are from the following groups:

Shetland Islands Council Members and Officers.

Interest groups e.g. fish farmers and fishermen's associations, agricultural, amenity, tourism and voluntary wildlife bodies.

Government Agencies including Scottish Natural Heritage, the Fisheries and Environment Protection agencies and the Water Authority.

Community Councils both the Association and relevant individual Councils.

The panel has met 12 times so far; it took some time to develop, but the broad membership and sound remit proved themselves when discussing marine cSACs. The panel has proved to be of particular value in bringing together a number of bodies not used to regularly talking to each other. It agreed to participate in the UK Marine SACs Project so as to produce a management scheme for Papa Stour.

The main role of the panel has been in overseeing the Papa Stour management scheme. The scheme is now close to publication [note – it was published in December 2000] – it will be a valuable tool in ensuring the conservation objectives for the site are met and a valuable source of reference for others developing management schemes.

The panel has played a wider, pivotal role in the consultation process for subsequent proposed SACs. Within the past year a site has been sought in Shetland that would consist of a Voe complex – a series of drowned river valleys in an area of high relief. Initial proposals received by the Panel, including specific cases for (1) Busta Voe and Olna Firth and (2) Sullom Voe, have been rejected on the basis of weaknesses in the scientific justification.

How has participation worked?

The Project Officer works closely with the 30+ Advisory Panel members. She has held many discussions, both individually and with groups working together. The PO has also worked closely with the local community – workshops, open days and individual meetings - to ensure their input to the management scheme. A number of educational and interpretation events have been organised:

- Children have decorated the local ferry waiting room with marine images and schools have had educational talks and visits, one with life-size inflatable whales.
- Two “marine chests” with books, games and marine creatures created, for loan to schools.
- Major marine exhibition “Sea Here!” has been held, which was very well attended.
- Leaflets, posters and postcards published.

The Panel has been fundamental to the success of the management scheme in that it has allowed for constructive dialogue to take place. The local community is still sceptical of SACs but believes the Project Officer has helped to foster much useful discussion between it and the agencies. The panel is a major undertaking – it requires commitment of significant resources by partners. It is likely to have a continuing role through involvement in the monitoring process and in considering development proposals. Decisions are now needed on how to continue the effectiveness of the Panel, particularly since it is very keen to retain a Project Officer for all the European marine sites.

The Liaison Group has since helped formulate the draft management plan for the SAC. It has been a positive and enthusiastic force and been particularly useful in aiding consultation on the draft plan. A third set of public meetings held in October 2000 to consider the draft management scheme achieved a relatively poor and disappointing level of interest. Feedback indicates that this may be because many people's original fears about the management scheme have not materialized and, as a result, people do not feel such as need to be involved. Although limited in terms of the number of respondents, the consultation on the draft management scheme has indicated that there is strong support for continued liaison.

The involvement of stakeholders in the development of the management plan would appear to have been a success. A number of lessons can be taken from the process adopted on the site:

- The relevant authorities need to be clear about the role they envisage the stakeholders playing in the management process.
- Effective distribution and provision of information remains a problem. How many people have seen the information already put out?
- People are amazed by the variety of the marine wildlife in the cSAC. There is a demand more information about the site and its wildlife, in particular in schools
- Identifying stakeholders can take more time than might be anticipated and timetables need to incorporate sufficient flexibility to accommodate this
- The public meetings were a very beneficial way of directly involving people and for obtaining information both about the site and how people wanted to be involved. The use of a professional facilitator for the initial meetings was very effective
- The Liaison Group has appeared to work well as a manageable forum for discussion between the Relevant Authorities and those stakeholders so far identified
- The Relevant Authorities have had to work together as a cohesive group and deal with the general public as such and this has reinforced the group as an entity

The steps taken to involve stakeholders in the development of the management plan have been very warmly received. There is considerable support from both the stakeholders and the relevant authorities group to continue and try to improve the communication and liaison structures already in place as we move into the next phase of implementing the management plan.

Key discussion topics: Session 3

Lucy Kay, Countryside Council for Wales

As an introduction to discussion session 3, Harrald Marencic presented a review of the value of the UK's experiences to other sites, in particular the Wadden Sea. He explored some of the useful components of the UK approach, including: the acceptance and willingness of stakeholders to cooperate in the development of schemes; the development of trust between different groups; and the establishment of clear organisational frameworks. The plans developed for each site needed to be considered and developed within the context of broader plans, covering wider geographical areas, timeframes and sectoral interests.

The discussion initially focused on the role of voluntary measures in the management of fishing interests and how compliance could be monitored. On the Sound of Arisaig, the voluntary measure had been successful in part because of its minor impact on fishing effort and due to the investment in getting fishermen on board. The principal means of monitoring was through self-regulation.

The management of transient stakeholders such as visitors was highlighted. Where an issue, the management schemes needed to identify measures to deal with visitor impacts and interests such as through better interpretation or codes of practice. A number of the LIFE demonstration sites had included such measures in their management schemes, for example Cardigan Bay.

There was discussion over whether there was a compensation package for stakeholders affected by management schemes on sites. It was acknowledged that there is no right of compensation within the existing arrangements and therefore that impacts needed to be agreed between all parties through negotiation.

The role of local radio stations and newspapers was raised. On some sites, these routes have been used to assist in advertising public workshops and meetings; local press have also been keen to receive stories from the sites. It should be remembered that large sites may be extend over the boundaries of a number of distinct radio stations or local journals.

It was noted that the role of national government bodies such as DETR, MAFF (now DEFRA), and Ministry of Defence was less clear in the preparation and funding of management schemes than some of the local stakeholders and relevant authorities. Government representatives noted that there is a process through which bids for funding could be made and that government needed to ensure that funding was made available. The valuable role of the management groups was highlighted as a means of considering and filtering plans and projects at an early stage on sites.

Given the importance of participation in developing schemes, there was interest in how this had been monitored on sites. On Pen Llŷn, some follow-up interviews had been conducted through telephone to explore participation levels in public meetings. This was felt to be more effective than sending out questionnaires in eliciting information.

Session 4 – Managing sites: turning science and partnership into action

Establishing management schemes

Dr Adam Cole-King, Countryside Council for Wales

Management schemes

- What are they for, do we need them, and who's involved?
- OK, so where do we start?
- Exactly whose schemes are they?
- What should they look like?
- Have we done a good job?
- What should we do differently next time?

What are management schemes for?

Management schemes are one of the main measures in the UK for implementing marine SACs (and SPAs). The development of these schemes is through a voluntary partnership to fulfil a statutory duty which involves two main groups:

- “Relevant Authorities” including marine environmental managers, marine sectoral managers and (some) marine environmental “users”.
- Non-statutory partners all schemes involve wider consultation with local communities, users and NGOs

The UK's Habitats Regulations identifies the purpose of management schemes as follows:

“the relevant authorities...may establish for a European marine site a management scheme under which their functions...shall be exercised so as to secure in relation to that site compliance with the requirements of the Habitats Directive.”

A key phrase in the above is “Requirements of the Habitats Directive”, which is interpreted as the need to ‘establish the necessary conservation measures corresponding to the ecological requirements’ (Article 6.1), and to ‘avoid deterioration and disturbance’ (Article 6.2). Management schemes are one of the principal mechanisms through which these two requirements are met on marine sites. To develop and implement a management scheme, all the partners in the process need to fully understand what these phrases actually mean for a site.

Management schemes are **not** about:

- Article 6.3: “plans and projects” – for which the UK Regulations specify a separate process;
- Habitats/species outside SACs/SPAs;
- all decision-making affecting sites.....some authorities are relevant but not *relevant*... in other words many of the decisions affecting sites are outside scope of the management scheme.

Management schemes are to help relevant authorities meet their own obligations, but not to deliver UK compliance with Article 6 of the Directive. They may not be required on every site.

Certainly for more complex sites with multiple activities and impacts they can be a valuable tool. But on simpler sites, a full management scheme may well be unnecessary. The question is whether they will produce a conservation gain.

Where do we start?

The legislation provided by the Directive and the Regulations is only a framework. The practical application of this framework involves interpretation and this has been a cause for debate:

- Aim of the Directive – what are the favourable conservation status and site conservation objectives (conservation objectives are “common ground” between plans and projects and management schemes)
- Plans and projects – what actually is a plan or project? And how to deal with them

Guidance on these issues emerged relatively late....and there is little case law.

So far little clear direction has emerged from this debate. Official guidance from the Commission is beginning to refine the ground rules. But there is still a lot of discussion, negotiation, persuasion about the “rules” as well as about the actions needed on the sites.

Whose management schemes are they?

Relevant authorities are collectively responsible for the scheme – or more accurately they are individually responsible for their parts of it. In practice, a management scheme tends to be a compilation of the separate undertakings of each relevant authority.

But there has to be some common ground: a shared agreement on the need for management action.

Although the advice of the nature conservation agency is intended to inform the relevant authorities, the undertakings of each authority ultimately depend upon its understanding of what it needs to do to comply with the legislation. Hence the earlier point about the need for each authority to understand what actually are the requirements of the Directive.

So management schemes can be thought of more like a timeshare than a freehold. And for the partners, the benefits of participating in a scheme are:

- it helps initiate the management process;
- it should lead to better informed decisions;
- it helps promote an “identity” for the site;
- it provides a mechanism for involving local communities and NGOs.

What should a scheme look like?

There are a number of core elements that can be found in all the management scheme documents developed in the UK marine SACs Project:

- acknowledgment of the statutory purpose;
- site-specific conservation objectives;
- appraisal of existing site use and management against the objectives;
- a series of actions for meeting gaps in management;
- a framework for monitoring of achievement of objectives and of compliance with actions.

But the document is the “trivial” bit – the *process* is more important. A management scheme (as opposed to a document or “plan”) is:

- a consultation structure;
- set of “rules” and constraints;
- a register of assigned actions (management, research, information gathering...);
- a means for recording actions (not) completed;
- a monitoring programme;
- a means of reviewing actions, and required actions;
- a means of reporting (to government and thence to the EC).

There is no single design or format for a management scheme that fits all sites – it’s a case of whatever *works*. Its important to remember that a printed document will never be up to date and is likely to require regular revisions. Electronic publications of the document and systems for recording and managing the above tasks and may be an appropriate option, particularly if there are large numbers of participants/tasks involved. Some lateral thinking is needed...and some serious design work.

Have we done a good job?

Across the twelve sites within the Project, management frameworks have been established on each site through which the parties may participate in the development of the schemes. Eleven management scheme documents have been completed in draft.

This work has involved many different people and helped raise their awareness of the sites and the new legislative frameworks. Documents and action plans have been produced, without needing government intervention. However the acid test as to the success of these plans – maintaining or restoring the favourable conservation status of the features – will only become apparent over time.

Management plans – have we done a good job?

Successes we've had	Successes we haven't had yet
<ul style="list-style-type: none">▪ 12 schemes▪ got people talking▪ raised awareness▪ been inclusive▪ basis to build on▪ other sites already benefitting▪ sites are still not statutory	<ul style="list-style-type: none">▪ Schemes are a bit light on actions▪ Resourcing the process in future▪ How to involve government

So why are the schemes “a bit light on actions”?

I think it's because of a major assumption that has been made: that current activities are compatible with achievement of favourable conservation status. If we assume things are OK, it's hardly surprising that the schemes don't change the way that sites are currently being used and managed!

But how precautionary is that assumption? In many, if not most cases, we don't know a great deal about the conservation status of the features, and the impact that various activities are having, and have had, upon them. We are effectively giving current (and past) activities “the benefit of the doubt”. This is in contrast to the way that the Directive requires us to treat new activities – plans and projects, where the “burden of proof” is reversed. Thus the definition of what is or is not a plan or project becomes rather important.

And how *scientific* is the above assumption? In his earlier presentation at this conference, Ian Townend quoted Karl Popper's principle for “good science”: “Start with a rash and premature conjecture, then do everything possible to disprove it”. Well, we seem to have the rash and premature conjecture. Perhaps now we need to try and disprove it!

So have we done a good job? It's fair to say that we've probably done everything we could, which is both a criticism and a commendation! There are some interesting times ahead.

What should we do differently next time?

In terms of lessons for the future and for other sites, there is no “how to do it” manual for management schemes. I think what we have got now is a set of do's and don't's. Perhaps the most important of which is:

- Don't set out specifically to produce a management scheme, but do set out with a genuine intention to tackle the conservation issues of the site. A management scheme – of the right structure, complexity and emphasis – will hopefully evolve.

Progress towards achieving the sustainable management of marine SACs in the UK

Dr Dan Laffoley, English Nature

Over the past two days we've focussed our thinking on the outputs of the LIFE Project. I'm going to try and put all that into a broader context and try and set out for you an assessment of how the UK is doing with regard to sustainable management of marine SACs. My aim is to provide you with a view on:

- what has been achieved;
- has it been successful? and,
- the challenges and priorities for the future.

What has been achieved?

To put this into a broader context let me take you back 10 years:

- The year is 1990. In this month 10 years ago Margaret Thatcher, Britain's longest surviving Prime Minister resigned....The Earth Summit in Rio is still two years away.....and in a notable news story of that year...a Professor Lacey was accused by the Government of 'scare-mongering' over BSE in cattle and links to human health.
- On the marine conservation front, we were into the last year of the Nature Conservancy Council. This would be split up the following April into the three statutory conservation agencies and JNCC – The Joint Nature Conservation Committee.
- We were also celebrating our second statutory marine nature reserve. Skomer had declared on 5 July that year. Just two small reserves around small offshore islands after nearly ten years of trying by the then Nature Conservancy Council.
- And...many organisations didn't even have the ability to take conservation measures into account in discharging their duties. It was only in the first few years of the 1990s that many organisations responsible for managing the marine environment became able to take account of nature conservation. Later, as we know in relation to the Habitats Directive, they would be able to use their powers to further conservation.
- It was against this background that the Habitats Directive came along. The Directive was adopted on 21 May 1992. It would be two more years before Regulations to transpose the Directive were introduced for England, Scotland and Wales, and a year after that for Northern Ireland. Further Regulations were introduced that year to ensure proposed sites were treated as if they were already designated. From 1995 onwards consultation began over possible sites to forward to the European Commission. In effect, that process has continued since then up to the present day. The effects of moderation introducing another batch of possible sites in recent months. And it was in 1998 that policy guidance, to guide the implementation of the Regulations was published by Department of the Environment, Transport & the Regions DETR and the Welsh Office – after being around in draft form for a year or so before. Although no formal guidance has been issued in Scotland and Northern Ireland, they have followed the leads given by this work.

So what have the key developments been in the UK, stimulated by the Directive? They have focussed on:

- Developing an overall implementation framework. This relates to a complex combination of legislation, policy, people and responsibilities.
- Partnerships. As we have seen this is at the core of implementing the Directive.
- Then there's greater knowledge. A key development in order to collect and collate the necessary information, not just about sites, but methodologies, processes and even sorting out who it is that actually has responsibilities under the Directive, nationally, but most importantly, at the level of individual sites.
- Knowledge has been formulated into conservation objectives, required under legislation and to provide a guide to others about what is important in these sites and what may damage such interests.
- And finally, there are management actions. We have reached a stage on the LIFE sites, and on many other sites in the UK, where we are setting out, in a massive collaborative effort, what we believe are the actions required to sustain the wildlife interests of these areas.

What has it achieved?

The question I want to focus in on is what has actually been achieved by all this, other than just the focus on the wildlife of European interest? At an international level it is fair to say that the UK is providing a lead in Europe on ways to implement the Directive. We are ahead of most countries in tackling the issue of putting the Directive in place across our coastal waters. The LIFE project, at its time and perhaps even today, is one of the largest in Europe looking at this specific issue.

You will have heard over this conference of ways in which we have been interacting with other Member States – there is, for example, a monitoring workshop for invited European experts tomorrow in this very building – funded by the project. This type of work, and the many publications that have been produced, tackle common issues for many countries and build into an impressive array of good practice. Within the UK, we can say without hesitation that work on all the sites has massively raised general awareness of the issues. This is at both national and local levels, with key Government departments and others, from a wide variety of sectors, not just conservation. In so doing, new relationships have been forged whilst others have been strengthened. The implementing of the Regulations presented a major spur to such activities. And greater understanding has been achieved both between those that are enthusiastic about the Directive and those that are less so, or feel threatened for a variety of reasons.

Much effort, particularly by the conservation agencies – but also from a variety of interest groups and sectors – has focussed on providing supporting information. Often we focus on the conservation objectives – as these are seen as crucial to the process. But much work has been invested through new partnerships looking at the impacts of various uses on the European conservation interests.

All this action has started to implement the legal and policy frameworks put in place by Government. In so doing it is also testing such approaches – focussing thinking and highlighting gaps and difficulties.

One thing the LIFE Project did was provide resources, a key ingredient of the process seem by many as essential from day one. I think without the money – we would not be in the position we are today. Many organisations on other sites also regularly invest resources into implementing the Directive and they should not be forgotten either. And, even though its early days, the resultant experience is already helping us to better understand the complex world of coastal and marine management.

Such experiences have already been put to work both at a European level and within the UK – for example with respect to ideas on integrated coastal zone management or the future plans of the Government to revise the national protection and management of our marine wildlife.

The question that now needs to be raised is whether these actions will deliver sustainable management of sites under the Directive? I don't pretend to have the answer to this question. When I asked a few people this before the conference they said such things as: "its early days"; "a positive start"; "challenging times ahead"....

I do honestly believe that whilst we have made some rapid and significant progress it probably really is too early to say that we have been successful or not. By way of illustration I want to, for a moment, draw in on some of the issues and dilemmas that trouble our minds with implementing this Directive.

I think the first thing to say is remind everyone that all the progress and achievement I mentioned – all the presentation you have seen here – are really the *start* – *not* the *end* of the process. When this LIFE project is long gone, people will still have their SACs and be progressing management measures.

Next, there is the really tricky issue of baselines and sustainable management. Often we have only had general information about sites or we know about trends, often in the form of deterioration. Malcolm Vincent reinforced the point that 1992 should be taken as the reference point. But what about the point of balancing effort on establishing baselines with that of developing models or understanding cause and effect.

Then there is handling uncertainty. I do think many people wish for an uncertain world to be made certain. Well it would make life easier!! To be honest, a pretty remote possibility as far as the natural environment is concerned.

I remember an American ecologist summing up his careers' experience by saying 'ecosystems are more complex than we think – ecosystems are more complex than we *can* think'. And I have some sympathy with that view. I think our real problem is that, for what ever reasons, there is a tendency to try and reach that position where we can reduce the marine environment to a set of numbers. If we meet them we are OK and if we don't, some form of action is required. That's frankly not going to be the case. We have got to take action despite uncertainty – judgements play a part of this as well as opinions. But all this sits uneasily with regulatory regimes and legislative frameworks.

The next issue and dilemma concerns significance and cumulative effects – tests really at the heart of the Directive. We are developing and gaining experience but certainly have not completed that process. How to assess them for individual developments can prove difficult, as well as applying them in a consistent and practical manner. Such efforts invariably impose financial burdens on industry and developers. But what happens when the costs for a small developer of making assessments exceeds the financial benefits that could have arisen if the development proceeds. It is inevitable that experience in applying the Directive on UK sites will lead to clearer answers being obtained over the coming years.

Then there is the problem of trying to achieve simple, straightforward approaches for implementing the Directive. The approach taken by Government which enables all those who already managed the coast to act for the Directive, if required, should have been both simple, and straightforward. It should result in local decisions and local ownership. But the development decisions, I've just referred to, impose additional tests and processes for decision makers. So if we are not to lose local responsibility and ownership, there is now a need to streamline those decision making processes. The Ports Division of the Department of Trade and Industry have taken a responsible lead in trying to do just that for their area of interest.

Then there is a related aspect of *integration* of responsibility. Clearly it is not just local government and organisations that have significant roles and responsibility. Within the UK many consents are administered by central, or now devolved, Government Departments. But management of sites, as we have seen, is developed – and predominantly delivered – locally. So there is a need now to bring those national processes together with the locally based management plans to ensure decisions (taken with good intent) complement and don't contradict one another.

A final issue, which the Habitats Directive has inevitably become caught up with is devolution. This has occurred within the relatively short life time of the Directive. Not only do we now have separate conservation agencies but also devolved government. This continues to present challenges to all of us in maintaining a consistent approach for the management of marine SACs across the UK as a whole.

So what are some of the key messages I can draw from our experiences of progressing towards sustainable management of our sites?

Well, the first is surprisingly simple but equally surprisingly difficult to achieve. It has become evident that if a clearer vision and outline of the processes had been given (when we started) there might have been less suspicion and mistrust. If people had been given more certainty from day one, particularly on the implications of the Directive, then things may have run smoother. Easier to say than do....hindsight is a wonderful thing. But with the experiences we have now got in the UK, this is something we would encourage other European countries to think hard about before diving into processes.

Next there is the double edged sword of ‘must do’ versus ‘want to do’. It is undeniable that we have only progressed so far because legislation required us to. We wouldn’t be in this room unless legislation had given us duties and responsibilities *and* the EU had established a timetable and continues to press countries for action. This can sit uneasily with growing support for the Directive and creating a climate of people who want to act for nature conservation. Perhaps that is a pipe dream and only a strong legal base will deliver actions for marine conservation?

Key players. Essential to the process. These are the individuals who must be involved with putting the Directive in place if it is to be successful. This is particularly important for sites. Pressing timetables to put sites in place often squeeze the time needed to bring everyone up speed on the processes to be followed. Often I think that this is to the detriment of success. Something supported by the view that the Directive has been easier to put in place at locations where some form of management structures existed prior to the Directive.

Then there is the issue of sustaining the partnerships the LIFE project has taken a lead at stimulating. Undoubtedly we have made a good start but what will happen when the LIFE project finishes? Somehow these partnerships must be nurtured, encouraged, supported and maintained into the future if we are to capitalise on all the efforts to date.

Another point, which I hope should be self evident from the past two days, is that there is no single solution to developing and managing sites. Something that works well in one area won’t necessarily work well everywhere. There will always be the need, even within our legal and policy frameworks, for local solutions for local problems, if we are to get the best out of the Directive.

Finally there is the need for integrated conservation into business. Up to now, efforts may have been seen as an add-on to the work of many authorities. Well, the time has come where such responsibilities and funding requirements must be integrated into the day to day workings of all organisations. This is particularly important if we are to be successful in sustaining the partnerships I mentioned earlier.

Future priorities and issues

In conclusion, I’d like to look towards the future and give a perspective of how the Habitats Directive sits with regard to other key conservation developments which will affect the seas around the UK. The overriding message is that the pace of change we have already encountered for marine conservation (due to the Habitats Directive) is going to continue and perhaps even accelerate over the coming years.

Most relevant to this conference is the requirement confirmed by the UK courts, that the Habitats Directive applies across our continental shelf and waters. Work is rapidly being progressed by JNCC – under contract to Government – to consider how this may be best achieved. In time, this will lead to sites being proposed. This may be the spur to bring together management of nature conservation and fisheries interests at UK and European levels.

Then there's the OSPAR Convention. Annex 5 sets out important obligations for countries in, or bordering, the north-east Atlantic. These include protection against adverse effects of human activities and conservation of marine ecosystems. Processes are in place for recommendations to be made on marine habitats and species that should be protected and managed under this Convention. Countries will need to take such actions forward as part of their national measures to conserve, protect and manage their marine biodiversity.

In a related move, action is now being taken towards considering how best to improve the effectiveness of measures needed to conserve, protect and manage the UK's marine biodiversity. A Working Group has been established for this purpose by DETR (now DEFRA). This Group will soon report on the types of actions that would be required.

Finally, and inherently linked to marine conservation efforts, is the matter of fisheries management. Both at European and national levels, changes may occur and some say are essential, in order to place the industry on a more sustainable and environmentally friendly footing. It is still far from clear what form these may take but they are bound to impact more generally on how we manage our marine resources both as a community and as separate countries.

Thus in conclusion, I'd like to remind you about the definition John Baxter used in his talk. Wisdom – “the ability to think and act, utilising knowledge, experience, understanding, common sense and insight”.

I hope this conference has refreshed your knowledge or given you new insight into the experiences we are gaining in implementing the Habitats Directive. I don't think any of us would claim to have all, or perhaps many, of the answers at this stage in the proceedings. With time and more experience though I hope we can all move towards the position of being both (inevitably) older and (hopefully) wiser, especially with regard to the Directive.

Key discussion topics: Session 4

Dr Dan Laffoley, English Nature

Congratulations was offered for the range of learning provided by the UK Marine SACs Project and the processes that had been adopted on sites.

Links need to be made with research councils in order to achieve effective implementation of the Habitats Directive. This has started and, with a new project looking at climate change, there are measures to continue this communication.

Reflections were given on progress within other European Member states. In Denmark, previous marine research has provided the basis for a monitoring programme – the priority now was in defining the sub-features for a series of sites. Some 112 marine SACs have been identified in Finland, varying greatly in size and status. In France, good progress had been achieved and valuable links made particularly with other Mediterranean countries. In Germany, the Wadden Sea has been designated an SAC, though generally work to date has focused on terrestrial sites.

Finally, a wider national strategy for coasts was promoted addressing the roles of different parties, the coordination of actions, funding and development of appropriate legal and administrative systems.

Summing up and closure

Sue Collins, English Nature

Issues

The last two days has witnessed a tremendous outpouring of learning, knowledge and experiences from the presentations of the work of the Project and beyond it, from the exhibitions and displays around the building and from the delegates themselves in discussions and informal contact. Out of all this, I want to highlight a few points that I have taken and which I offer as markers for the way ahead over the next few years.

Sustaining momentum

The progress made by all over the last four years has been impressive. On sites, networks and links between organisations have been created, encouraging much greater communication and sharing of knowledge and aspirations. Plans have emerged that will safeguard the important wildlife, setting links across and between the existing plans and policies. And within this, knowledge and experiences have been gathered locally and nationally and shared to those who can use it. This effort has been tremendous and has fuelled real progress and motivation for actions and better management of the site. We must ensure that this is nurtured and built on so that, these plans and these foundations translate into actual, improved and more sustainable activities on site

Implementing the schemes

Preparing the management schemes has been a big step forward on many sites and is the culmination and evidence of support, communication and cooperation across a range of bodies. The next stage is to implement them. This will almost certainly throw up issues and dilemmas that need new solutions. This will test our proposed schemes and through the process of on-going review they have a chance of being improved.

Resourcing the partnerships

During the discussion sessions, the resourcing of the process, particularly for relevant authorities has been raised on a number of occasions. Government has listened and promised to take these messages back. It is clear that the task of managing these sites does not come cheap – project officers need to be on site to foster the emerging liaisons and to take the new proposals forward. That said we must also identify and apply efficiencies – in the way we undertake monitoring of site for example or in the integration of Management Schemes, with the objectives and plans of other coastal and marine strategies.

Continuing the learning

Knowledge and understanding are key ingredients in achieving successful and supported management of the sites. This is being developed, created and experienced at all levels from

individuals working on sites, to national standards and approaches. We must continue to identify and promote new means for identifying, capturing and sharing this learning.

Promoting the sites and their wildlife

The presentations during this conference and the marvellous displays around the venue are all evidence of the effort and creativity being applied to promoting these sites, their wildlife and their demands. We have also heard of the challenge that still remains to convince all those whose lives are linked to these seas of the worth of these places and their wildlife and the importance of initiatives such as these schemes.

Fostering sustainable use

The future management of these sites needs to do more than sustain the wildlife – it must also sustain the communities that rely upon the resources that these seas provide, whether they be economic or otherwise. Through these management schemes we have all started to seek out and practice sustainable uses. We need to continue to promote new approaches of sustainable use, whilst applying and learning from those already in place.

Follow-up action

The UK Marine SACs Project does not end with this Conference. There are still a number of outstanding outputs to complete, not least of which the report gathering the learning and good practice from our experiences on the twelve demonstration sites in the project. The discussions at this Conference have focused attention on where we in the nature conservation agencies, working with our other partners nationally and on sites, can take further actions once this project is completed and I would like to end with highlighting some of those that I feel are most important:

- **Feedback on the good practice report**

We are committed to understanding, sharing and applying the experiences from the UK Marine SACs Project. We would welcome your input to the draft report contained in your ‘introductory packs’ on the learnings and good practice you feel are most relevant to others working on marine sites. In due course we will be publishing a finalised report which we intend to circulate to government departments and managers alike involved in these marine sites around Europe.

- **Get-togethers of relevant authorities**

It is clear that relevant authorities individually or as management groups have much valuable learning and practical experiences in managing these marine sites that could be

communicated and shared with those on other sites. There have already been some useful exchanges between relevant authorities from differing sites. We will investigate and assist where possible to increase and improve these exchanges.

- **Discussions with Government departments**

The implementation of management on these marine sites will involve increasing levels of cooperation between national and local public bodies. There are some critical messages about resourcing the process that need to be fed back and of measures to improve communication between government departments and agencies. We will ourselves take-up these issues in meetings with departments and we would ask other relevant authorities likewise to press their concerns with respective departments.

- **Developing the website**

The Project website (www.ukmarinesac.org.uk) is an important means by which we intend to communicate the knowledge and learning generated over the last four years. An initial version of the website has been up-and-running at the conference. We will be making some further refinements before a live version is available.

- **Further dissemination in Europe**

We have greatly valued the participation of colleagues from other European member states and your contributions at this event. There is much useful learning and knowledge in the Project that we would like to make more widely available to practitioners in Europe. The website is one means by which we will do this, but we will also review the opportunities for further exchanges of practice and learning, perhaps through workshops.

- **Further reflection on implementation in similar forum**

As we have heard over the course of this conference, the implementation of schemes will itself throw up many new issues and provide further feedback on the effectiveness of the processes and approaches that we have been presented. Discussion and exchange of experiences, as has been achieved over the last two days, will be essential ways of identifying and sharing good practice. We therefore recommend that a further event is planned in a couple of years to review progress on implementation.

Appendices

Conference Programme

15th November 2000

Welcome

8.30-9.30 *Coffee and registrations*

9.15 *Take seats*

Session 1: Setting the scene

Chair: John Markland, *Chairman, Scottish Natural Heritage*

9.30 **Welcome and introduction**

John Markland, *Chairman, Scottish Natural Heritage*

9.45 **Natura 2000 in the marine environment**

Micheal O'Briain, *DG Environment, European Commission*

10.10 **Implementing the Directive on marine sites – the UK's policies and frameworks**

Trevor Salmon, *Department of Environment, Transport and the Regions*

10.30 **The vision, goals and outputs of the UK Marine SACs Project**

Sue Collins Director, *English Nature, Chair UK Marine SACs Project*

10.45 A visual tour around the Project's marine sites

11.00 **Break**

Session 2: Understanding the sites: the scientific challenge

Chair: Dr Graham Shimmiel, *Director, Scottish Association of Marine Science*

11.45 **Information needs on marine SACs**

Dr John Baxter, *Scottish Natural Heritage*

12.15 **Setting the conservation goals**

Dr Malcolm Vincent, *Joint Nature Conservation Committee*

12.40 **Discussion Session**

13.00 **Lunch**

Chair: Professor Stephen Hawkins, *Director, Marine Biological Association*

14.15 **Understanding and managing human activities**

Dr Paul Gilliland, *English Nature*

14.45 **Monitoring marine SACs**

Dr Jon Davies, *Joint Nature Conservation Committee*

15.15 **Reflections on applying knowledge and practice to other Natura 2000 sites**

Dimitrios Dimopoulos, *Sea Turtle Protection Society of Greece*

Discussion session

15.45 **Tour of exhibitions, displays and websites**

Break

16.45 **Science's role in evaluating and monitoring impacts**

Dr Ian Townend, *ABP Research Ltd*

17.15 **Understanding the sites: A case study from Plymouth Sound and Estuaries**

Jo Crix, *English Nature*; Cmdr Shaun Turner, *Queens Harbour Master*; David Fletcher, *Plymouth City Council*

17.45 **Discussion session**

18.00 **End**

19.00 **A tale from the sites**

Margot Henderson, *Story teller*

19.30 **Conference Dinner**

21.00 **Speech followed by Ceilidh**

16th November 2000

Session 3: Building partnerships on sites

Chair: Dr Margaret Hill, *Head Maritime and Earth Sciences Group, Countryside Council for Wales*

9.00 **What makes for successful partnerships? Experiences across 12 sites**

John Torlesse, *UK Marine SACs Project*

- 9.35 **Avoiding conflict through partnerships**
Peter Tevendale, *Project Officer Sound of Arisaig*
- 9.55 **Developing a management scheme through the wider community on Strangford Lough**
Caroline Nolan, *Strangford Lough Management Committee*
- 10.15 **Discussion Session**
- 10.30 **Break**
- 11.15 **Promoting sites and communicating marine science**
Austin Taylor, *Shetland Isles Council*
- 11.30 **Pen Llŷn: a case study in growing participation**
Lucy Kay, *Countryside Council for Wales*
- 11.50 **Reflections on applying the experiences and practice to other Natura 2000 sites**
Harrald Marencic, *Common Wadden Sea Secretariat*
- Discussion session**
- 12.30 **Lunch**
- Session 4: Managing sites – turning science and partnership into action*
Chair: Sandy MacLennan, *Natura 2000 Project Manager, Scottish Natural Heritage*
- 13.45 **Establishing management schemes**
Dr Adam Cole-King, *Countryside Council for Wales*
- 14.15 **Establishing management schemes – a VCO review of past achievements and future challenges**
Alistair Davison, *WWF Scotland*
- 14.45 **Progress towards achieving the sustainable management of marine SACs in the UK**
Dr Dan Laffoley, *English Nature*
- 15.15 **Discussion session**
- 16.00 **Summing up and closure**
Sue Collins, *Chair UK Marine SACs Project*
- 16.15 **Tea and conference end**

Further information

The UK Marine SACs Project has produced a wide range of publications and other outputs to disseminate the knowledge and learning that has been acquired through during its course. In the case of reports, limited hard copies have been published and targeted towards those closely involved in managing marine sites. Many of these can also be found on the Project's website (www.ukmarinesac.org.uk), where users are able to search for information from across the reports and access information on the specific sites.

1. Sensitivity and Dynamics of Marine features

Zostera biotopes

Davison, D.M., and Hughes, D.J. (1998) *Zostera biotopes (volume I). An overview of dynamics and sensitivity characteristics for conservation management of marine SACs.* Scottish Association for Marine Science (UK Marine SACs Project). 95 pages.

Intertidal sand and mudflats & subtidal mobile sandbanks

Elliot, M., Nedwell, S., Jones, N.V., Read, S.J., Cutts, N.D., Hemingway, K.L. (1998) *Intertidal sand and mudflats & subtidal mobile sandbanks (volume II) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs.* Scottish Association for Marine Science (UK Marine SACs Project). 151 pages.

Sea pens and burrowing megafauna

Hughes, D.J. (1998) *Sea pens and burrowing megafauna (volume III) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs.* Scottish Association for Marine Science (UK Marine SACs Project). 105 pages.

Subtidal brittlestar beds

Hughes, D.J. (1998) *Subtidal brittlestar beds (volume IV) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs.* Scottish Association for Marine Science (UK Marine SACs Project). 78 pages.

Maerl

Birkett, D.A., Maggs, C.A., Dring, M.J. (1998) *Maerl (volume V) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs.* Scottish Association for Marine Science (UK Marine SACs Project). 116 pages.

Intertidal reef biotopes

Hill, S., Burrows, M.T., Hawkins, S.J. (1998) *Intertidal reef biotopes (volume VI) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs.* Scottish Association for Marine Science (UK Marine SACs Project). 84 pages.

Infralittoral reef biotopes with kelp species

Birkett, D.A., Maggs, C.A., Dring, M.J., and Boaden, P.J.S. (1998) *Infralittoral reef biotopes with kelp species (volume VII) An overview of dynamic and sensitivity characteristics for conservation management of marine SACs.* Scottish Association for Marine Science (UK Marine SACs Project). 174 pages.

Circalittoral faunal turfs

Hartnoll, R.G. (1998) Circalittoral faunal turf biotopes (volume VIII) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs. Scottish Association for Marine Science (UK Marine SACs Project). 109 pages.

Biogenic reefs

Holt, T.J., Rees, E.I., Hawkins, S.J., and Seed, R. (1998) (volume IX) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs. Scottish Association for Marine Science (UK Marine SACs Project). 170 pages.

Marine habitats reviews

Jones, L.A, Hiscock, K, & Connor, D.W. (2000) Marine habitat reviews. A summary of ecological requirements and sensitivity characteristics for the conservation and management of marine SACs. Joint Nature Conservation Committee. (UK Marine SACs Project). 180 pages.

Marine features and species of the Habitats Directive

EN, SNH, CCW, EHS (DoE(NI)), JNCC and SAMS. (2001) Natura 2000. European Marine Sites – ecological sensitivity and management requirements. Managing activities and impacts within the UK's network of marine Special Areas of Conservation (SACs). English Nature (UK Marine SACs Project).

2. Human Interactions

Ports and Harbours

ABP Research. (1999) Good practice guidelines for ports and harbours operating within or near UK European marine sites. English Nature (UK Marine SACs Project). 218 pages.

Collection of bait and other shoreline animals

Fowler, S.L. (1999) Guidelines for managing the collection of bait and other shoreline animals within UK European marine sites. English Nature (UK Marine SACs Project). 132 pages.

Water quality in saline lagoons

Johnston, C.M and Gilliland, P.M (2000) Investigating and managing water quality in saline lagoons. English Nature (UK Marine SACs Project). 134 pages.

Fishing

Gubbay, S., and Knapman, P.A. (1999). A review of the potential effects of fishing within UK European marine sites. English Nature (UK Marine SACs Project). 133 pages.

Water quality

Cole, S., Codling, I.D., Parr, W., and Zabel, T. (1999) Guidelines for managing water quality impacts within UK European marine sites. English Nature (UK Marine SACs Project). 441 pages.

Recreational interactions

UK CEED (2000) A review of the effects of recreational interactions within UK European marine sites. Countryside Council for Wales (UK Marine SACs Project) 264 pages.

Aggregates

Posford Duvivier Environment and Hill, M.I.. (2001) Guidelines on the impact of aggregate extraction on European Marine Sites. Countryside Council for Wales (UK Marine SACs Project).

3. Procedural guidance

Marine Monitoring Handbook

Davies, J et al. (eds.) (2001) Marine Monitoring Handbook. Joint Nature Conservation Committee, (UK Marine SACs Project). 405 pages.

Setting conservation objectives

UK Marine SACs Project (2001). Guidelines for developing conservation objectives for marine SACs – Learning from the UK Marine SACs Project 1996-2001. English Nature (UK Marine SACs Project).

Relevant authority and stakeholder participation

Peter Jones et al. (2001) An evaluation of approaches for promoting relevant authority and stakeholder participation in European marine sites in the UK. University College London (UK Marine SACs Project).

Guidance on establishing management schemes

SNH, EN, EHS (DoE(NI)), CCW AND JNCC. (1997) European marine sites: An introduction to management. Scottish Natural Heritage (UK Marine SACs Project). 16 pages.

EN, SNH, EHS, (DoE(NI)), CCW, JNCC, and SAMS. (1998) European marine sites: Guidance relating to statutory conservation objectives that may cause deterioration or disturbance. English Nature (UK Marine SACs Project). 15 pages.

EN, SNH, CCW, EHS (DoE(NI)), JNCC and SAMS. (2001) Natura 2000. Indications of good practice for establishing management schemes on European marine sites. Learning from the UK Marine SACs Project 1996-2001. English Nature (UK marine SACs Project).

EN, SNH, CCW, EHS (DoE(NI)), JNCC and SAMS (2001). Natura 2000. Guidelines for Developing Conservation Objectives for Marine SACs – Learning from the UK Marine SACs Project 1996-2001. English Nature (UK Marine SACs Project).

Natura 2000



The Joint Nature Conservation Committee (JNCC) is responsible to the UK government for research and advice on nature conservation at both national and international levels, on behalf of the Countryside Council for Wales, English Nature and Scottish Natural Heritage, together with independent members and representatives from the Countryside Agency and Northern Ireland.



English Nature (EN) is the statutory advisor to the Government on nature conservation in England and promotes the conservation of England's wildlife and natural features.



Scottish National Heritage (SNH) is the Government agency which promotes the conservation, enhancement, understanding, enjoyment and sustainable use of Scotland's natural heritage of wildlife, habitats and landscapes.



Environment & Heritage Services EHS (DoE(NI)) is an agency within the Department of the Environment of Northern Ireland which aims to protect and conserve the natural and man-made environment and to promote its appreciation for the benefit of present and future generations.



The Countryside Council for Wales (CCW) is the Government's statutory advisor on sustaining natural beauty, wildlife and the opportunity for outdoor enjoyment in Wales and its inshore waters. The national wildlife conservation authority for Wales.



Scottish Association for Marine Science (SAMS) promotes research and education in marine science particularly on issues relevant to Scotland.

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