

INSHORE FISHERIES REGULATION AND MANAGEMENT IN SCOTLAND : MEETING THE CHALLENGE OF ENVIRONMENTAL INTEGRATION

Report F02AA405



This report should be quoted as:

Symes, D. and Ridgway, S. (2003) Inshore fisheries regulation and management in Scotland ; Meeting the challenges of Environmental Integration.

Scottish Natural Heritage Commissioned Report F02AA405

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Foreword by RSPB Scotland and Scottish Natural Heritage

The coastal and inshore waters of Scotland are of great importance for both wildlife and fishing communities. For example, these waters support:

- A wealth of marine biodiversity, being home to over 5,000 species of marine life;
- Internationally important numbers of breeding seabirds and wintering shorebirds. These depend on healthy stocks of finfish and shellfish as food;
- Over two thousand fishing vessels. This represents over three-quarters of the fleet Scottish, showing clearly the importance of the inshore fishing industry to the economies and communities of rural areas in Scotland;
- Important spawning and nursery grounds for commercial species such as cod and haddock.

The importance of our inshore waters for both fisheries and wildlife is no co-incidence. The high productivity and exceptional quality of Scotland's coastal waters makes them important for fisheries and for biodiversity. However, the inshore ecosystem and the biodiversity that it supports, including its fish and shellfish stocks, is under increasing pressure.

The difficulties facing some of Scotland's key offshore fisheries have been widely reported. However, the future of Scotland's inshore fisheries is also in the balance. Often overlooked in these problematic times for the wider fishing industry, inshore fisheries continue to experience problems of their own. Inshore fish and shellfish stocks are under mounting pressure for a variety of reasons including the displacement of fishing effort resulting from restrictions elsewhere in the fleet.

The sustainable management of these fisheries and their supporting environment is obviously a concern for fishermen and wildlife alike. It is increasingly recognised that closer integration of fishery and environmental considerations will be of benefit to both. Indeed such "environmental integration" is now an explicit commitment within the EU Common Fisheries Policy. However, despite such commitments it is less clear how they should be delivered.

In light of such commitments, RSPB Scotland and Scottish Natural Heritage commissioned the University of Hull to assess how well the current system for managing Scotland's inshore fisheries is working in relation to the integration of environmental concerns into fisheries management. The higher profile of inshore fisheries has been reflected in the establishment of the Scottish Executive's current review of inshore fishery management. Hence, this study was also commissioned as a direct contribution to the review. We are certain that this research will prove a valuable and timely contribution to the current debate about the future of inshore fisheries in Scotland.

We would like to note that the contractors undertook this study as independent research. The report has, therefore, been published as received. Hence, its content and conclusions do not necessarily reflect the policy of the sponsoring bodies (RSPB Scotland and SNH) or those involved in the Project Steering Group (SEERAD and SFF).

Finally, many colleagues from Scottish Inshore Fisheries Advisory Group (SIFAG) and the wider inshore industry have contributed to the study, and we would like to thank them for their valuable contributions. We are also thankful for the guidance from the Scottish

Fishermen's Federation and the Inshore Fisheries Branch of SEERAD through their participation in the project steering group.

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INSHORE FISHERIES REGULATION AND MANAGEMENT IN SCOTLAND : MEETING THE CHALLENGE OF ENVIRONMENTAL INTEGRATION

Preface

Scotland's coastal waters are one of the nation's most valuable national assets. They support a rich, diverse but also fragile and sensitive ecosystem. They form the basis for prosperous and sustainable commercial fisheries and, more recently, for a relatively low impact tourism industry, both of which contribute significantly to the survival of a very distinctive culture embedded in often remote and isolated coastal communities. It is vital that this natural and cultural heritage is conserved through striking a balance between the careful husbanding of the natural resources for the benefit of present and future generations and the protection of the diversity and functional integrity of the marine ecosystems. Recent policy developments in Europe have exactly this goal in mind, insisting that sectoral policies for economic development be tempered by the need to ensure the protection of the environments in which they occur. It was, therefore, a pleasure and a privilege to be invited by the Royal Society for the Protection of Birds in Scotland and Scottish Natural Heritage to consider how well adjusted the existing legislative and management systems for Scottish inshore fisheries are to the task of facilitating environmental integration.

The study was initially conceived as a desk study. But it soon became clear that if we wished to understand how the inshore management system worked we would need to tap into the knowledge, experience and wisdom of those most directly involved as administrators, fisheries managers or conservation managers. Accordingly we held a total of 24 interviews across 18 different organisations and involving 27 individuals both in Edinburgh but principally in the inshore fishing districts of northern and western Scotland (see Appendix 1 for details). We are hugely indebted to all who gave so much of their time to deepen and enrich our understanding of inshore fisheries and marine environmental management in Scotland. Their experience and opinions have contributed in a very profound way to the findings, conclusions and recommendations of this report, though we hasten to add that we alone can be held responsible for any errors of fact or judgement that the report may contain.

The five month project was managed by Stephen Ridgway and the report was drafted by David Symes. We would like to acknowledge the invaluable assistance of Emma Doy in the University of Hull who prepared the text and the steering committee (Darren Kindleysides, RSPB Scotland; David Donnan, SNH; Ian Duncan, SFF; and Gabby Pieraccini, SEERAD) who together provided a good deal of information, ideas and encouragement, thus helping to guarantee the safe delivery of this report.

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Hull University, September 2003

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Executive Summary

Introduction

Scotland's coastal waters are one of the nation's most valuable assets. Not only do they support rich, diverse but potentially fragile ecosystems on which depends a wide variety of marine wildlife, but they also provide the basis for important inshore fisheries which continue to underpin the viability of very many small communities throughout Scotland's long coastline. To ensure that these vital assets are properly protected will require the careful coordination of decision making at national, regional and local levels.

Although the broad patterns for environmental integration into fisheries management are being set by international agreements and laid down largely through European Community policy, in coastal waters it is essentially the responsibility of the member states and their devolved administrations - in this case the Scottish Executive and Parliament - to determine precisely how this integration process should take effect and to guarantee delivery of mutual benefits of sustainable commercial fisheries and healthy marine ecosystems.

It is the task of this report to review current arrangements for inshore fisheries management in Scotland in the light of the imperatives of environmental protection and to make any recommendations as to how the system might be improved to facilitate the integration process.

Scotland's fishing industry

Notwithstanding the decline in catch levels, due mainly to reduced fishing opportunities for the whitefish fleet, Scotland's fishing industry remains an important and distinctive sector of the economy especially at regional and local levels. It is the inshore industry, operating from a large number of boats under 12m mainly within the 6 nm limits, that is the more buoyant sector with a strong emphasis on shellfish. Yet even in this high value sector, turnover and profitability have suffered mainly from rising operating costs set against unstable quayside prices.

Scotland's fishing industry divides into two broad regional types: a large scale, offshore whitefish fleet concentrated mainly in a few large ports on the north east coast and the small scale inshore fleet dispersed among very many small ports strung out along the west coast and in the western isles. Here around 85% of the boats are under 12 m and 75% of all landings are of shellfish. High levels of inshore fishing activity occur along the west coast and in the western and northern isles where employment is dispersed among many smaller coastal communities over a much wider and remoter rural area. Reduction in fishing opportunities threaten local populations in all these areas but the problem is more pronounced in those remoter parts of western Scotland disadvantaged by distance from markets and a less diversified employment base.

It will not be easy for inshore fisheries management to balance the economic, social and cultural objectives associated with maintaining local communities with the biological and environmental objectives of healthy fish stocks and well integrated, productive ecosystems but the rewards for success are considerable.

Scotland's marine heritage

With the exception of parts of the Clyde and Forth estuaries, Scottish inshore waters enjoy the benefits of relatively undisturbed ecosystems in a generally favourable conservation

condition, particularly when compared with the Irish Sea or the central and southern parts of the North Sea. The seas around Scotland are rich in natural resources of fish, energy and wildlife, the latter including huge seabird colonies, winter feeding grounds for migrating wildfowl and waders, important populations of resident grey and common seals, bottlenosed dolphins and migrating cetaceans. The rich variety of marine habitats supports complex communities of flora and fauna.

Although fisheries are just as likely to be the victims as the perpetrators of environmental damage, action is needed to address the direct effects of high fishing pressure on target and non-target fish species, the indirect effects of damage to benthic habitats and communities caused by towed fishing gear and the long term effects of fishing on the functional integrity of marine ecosystems. To date the only statutory measure taken specifically to protect marine wildlife in Scottish waters is the identification of some 35 candidate or proposed Special Areas of Conservation (SACs) with a strong geographical bias towards the west coast. The implementation of SAC management schemes rests largely on voluntarily agreed codes of practice though it is likely that statutory regulation of fishing activities will become the norm.

Evolving Policy Frameworks

To date European and UK policy frameworks for the *marine environment* have been poorly coordinated because of the fragmentation of responsibility between different departments and a lack of overarching strategy. The Sixth Environmental Action Programme commits the EC to developing a strategy for the protection of the marine environment but early indications are that it will simply weave together existing sectoral environmental protection policies. The most significant European legislation concerning environmental protection in inshore waters is, therefore, the Habitats Directive 1992 establishing a European Natura 2000 network of SACs and the development of management schemes to secure the protection of rare or endangered habitats and species.

In the UK, a recent stream of reports on the marine environment call for stronger legislation, closer coordination between departments and agencies involved in the development and implementation of policy and a more integrated strategy with a balance between species protection, ecosystem conservation and area based measures with a nested approach based on the wider sea, the regional seas and more traditional site based protection. Underlying all of these recommendations is the need to develop an ecosystem based approach to marine environmental management. The UK government is invited to 'take a lead and establish a framework' for action to guarantee the successful functioning of ecosystems in the future. The UK *Biodiversity Action Plan* provides the most ambitious statement to date defining goals and principles and identifying priority habitats and species in need of protection, but it also acknowledges that action to implement the individual habitat and species plans will need to be coordinated by several different agencies through partnership agreements.

The management of marine areas for environmental purposes in Scotland has two main thrusts: the development of integrated coastal zone management (ICZM) through voluntary partnerships like the Firths initiative and the establishment of marine protected areas through SACs. The approach is non-specific and non-controversial in style and strongly 'voluntaristic' in its means of implementation.

Progress towards an integrated strategy for the marine environment, adoption of meaningful policies and their implementation at European, UK and Scottish levels has been

disappointingly slow. Policy making remains committed to the traditional approach of designating sites of conservation value even though their management can rarely be prescriptive. The issue of balancing environmental and socio-economic objectives has not yet been confronted and little has been done to develop the ecosystem based approach in operational terms. As a consequence, integrated environmental policy remains essentially aspirational.

The main driver for policies relating to *fisheries management* in European waters is the Common Fisheries Policy (CFP) which applies throughout the 200 mile fishing zones of all EC member states. The EC has exclusive competence in all matters of fisheries policy, though within the 6 and 12 nm zones, member states have rights and responsibilities to take additional measures for the conservation of stocks. Potentially profound changes in the direction of policy were signalled by the reform of the CFP in 2002 which infer a more environmentally integrated approach. A forthcoming action plan on the integration of environmental protection requirements indicates that the balance of the Commission's thinking is shifting towards the adoption of an ecosystem based approach, the precautionary principle and notions that in relation to environmental damage preventative action be taken, rectified at source and administered on the polluter pays principle.

UK policy on fisheries management does not deviate from that set out in the reformed CFP and no major strategy document has been issued by the government in recent years. However, the Strategy Unit's task force set up to review the medium term prospects for the UK industry is expected to publish its findings towards the end of 2003. In Scotland, the Executive has set out the aims and objectives for the successful operation of the industry in its *Strategic Framework for the Scottish Fishing Industry* (2001) and has recently announced a review of inshore fisheries legislation and management with a view to making more effective use of existing measures and resources at its disposal.

Environmental integration

Strategic thinking on marine environmental policy at the European and national levels has made relatively little headway. The interpretation of environmental protection requirements is inconsistent and uncoordinated and their implementation at best patchy. Remarkably, at the European level fisheries policy seems more willing to embrace ideas of environmental integration but these remain theoretical and lacking in specificity. Part of the reason is the lack of scientific evidence as to the long term tolerance of the marine ecosystems to sustained pressure from fishing and the absence of policy instruments specifically designed for environmental integration. Whereas the CFP can be expected to identify the generic problems and solutions it will be left to environmental policy - and marine conservation interests - to define the issues that merit particular attention. In inshore waters the focus for environmental integration is likely to be the regulation of fishing practice in sensitive areas and responsibility for action rests with the member state.

We already have sufficient knowledge of marine ecosystems to initiate appropriate actions for environmental integration in fisheries. To develop an ecosystem based approach to fisheries management more detailed knowledge and understanding of the essential structures and functioning of marine ecosystems and the life cycle behaviours and interactions of key commercial and non-commercial species is required; and this needs to be translated into improved management of commercial fisheries and a more precise specification of the conservation requirements of particular habitats and species. The shift in emphasis towards an ecosystem based approach implies that biodiversity will be conserved by safeguarding the

functional integrity of the ecosystem, maintaining its essential resilience and adaptability in face of manmade and natural changes and thereby guaranteeing its productivity.

But there are some systemic obstacles to environmental integration: the persistence of a sectoral approach to the marine environment; the continuing focus on single species (and particular habitats) in both fisheries and nature conservation management; and a concentration on site based approaches to conservation. In an ecosystem based approach it is important to recognise that ‘the whole (i.e. sustainable marine ecosystems) is greater than the sum of its parts’.

Environmental integration will require several fundamental changes to the institutional arrangements for fisheries management, including

- a paradigm shift in ‘knowledge management’ involving research, assessment and policy advice;
- a shift in the burden of proof so that those who wish to prosecute new fisheries must first demonstrate that there is no risk of environmental damage;
- the introduction of market instruments laying down explicit environmental requirements and rewarding fishermen accordingly;
- the closer integration of ways in which separate structures for fisheries and marine environmental management work; and
- the provision of a legislative framework which gives meaning to the concept of environmental regulation.

The inshore management system in Scotland

Although some of the organisational structures for inshore fisheries management have only recently been put in place, the legislative framework was laid down long before the incorporation of environmental integration became an issue. The primary legislation - the *Inshore Fishing (Scotland) Act*, 1984 - grants the Minister wide ranging powers to regulate fishing activity within the 0 - 6 nm zone without apparently restricting the purpose of such powers. They are exercised mainly through the *Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order* 1989 and subject to a triennial review process. The provisions of the 1984 Act are limited to negative actions (prohibitions) and thus set the context for a largely reactive form of inshore management.

By contrast, the *Sea Fisheries (Shellfish) Act*, 1967 (as amended in 1997) exists for the granting of Several and Regulating Orders to individuals or companies for the purpose of severing or regulating the public right of fishing for a range of shellfish species. Regulating Orders provide for the comprehensive management of the nominated fisheries including the issuing of licences, the opening and closing of the fishery, the introduction of bag limits, etc. through which fishing effort can be restrained. The Act has been little used in Scotland with only one Regulating Order established in Shetland but a recent surge of interest has generated several more schemes at various stages of development.

Inshore fishing activity is being increasingly constrained by a growing body of ‘contingent legislation’ including the *Environment Act*, 1995 which extends the Minister’s powers to act for the ‘conservation of flora and fauna, which are dependent on, or associated with, a marine ... environment’, the *Conservation (Natural Habitats etc.) Regulation*, 1994 which transposes the EC’s Habitats Directive into UK law, and the *National Parks (Scotland) Act*, 2000 which makes provisions for the creation of National Parks wholly or partly within

coastal waters. Likely to exert further influence in the future are the outcomes of the Nature Conservation (Scotland) Bill¹ and the EC's Water Framework Directive.

In terms of organisation, the Scottish Executive Environmental and Rural Affairs Department (SEERAD) - a composite department dealing with four closely related policy areas - agriculture, fisheries, rural development and the environment - has virtually exclusive control over the regulation of inshore fisheries. Two significant developments have occurred since devolution: the establishment of a small Inshore Fisheries Branch primarily to oversee the working of the Inshore Act, 1984; and the setting up of the Scottish Inshore Fisheries Advisory Group (SIFAG) with a majority of fishing industry members to advise on inshore fisheries. Important roles in the management of inshore fisheries are also played by the *Fisheries Research Services* (FRS) and the *Scottish Fisheries Protection Agency* (SFPA), responsible for enforcements of prohibitions under the Order. Each lends its particular expertise in the triennial review to assess three criteria used in judging proposals: soundness on scientific grounds (FRS), enforceability (SFPA) and lack of contentiousness in relation to fishing interests in the area affected (SIFAG).

Marine environmental conservation relies largely on the designation of SACs in inshore waters, where it is the legal responsibility of the state to ensure that favourable environmental condition is maintained, if necessary by the introduction of appropriate legislation. In the absence of separate legal instruments to deal with *in situ* habitat and species protection, existing legislation, including the 1984 Inshore Act, would need to be used.

SAC management schemes require the bringing together of diverse and potentially conflicting interests, sensitive handling of key issues and an enduring sense of partnership through involvement in strategy building and a shared ownership of decisions. This challenge has been met with varying levels of success. Where successfully accomplished, the management scheme has usually been based on voluntary agreement over a definitive code of conduct (Sound of Arisaig SAC). Here legislative action would only be necessary if the agreement were to fail. The voluntary approach has long been the preferred route for resolving local management issues and several examples of good practice can be cited, as in the case of the Shetland sandeel fishery and the Torridon initiative.

The turn of the century may well mark a time of significant change for the management of Scottish inshore waters. Devolution has created the opportunity to invest time, energy and thought into developing a distinctive approach and the imperative of environmental integration provides a catalyst for change. However, concerted action and strong political will is needed to overcome the inertia built into what has proved to be a reasonably effective but limited approach to inshore management.

Institutional barriers to integrated management

In identifying the barriers to integrated management, outlining possible solutions or making recommendations for action, care needs to be taken to understand the complex nature of inshore fisheries and their management. Inshore fisheries exploit a common and publicly 'owned' resource base, in which definitions of individual harvesting or property rights are poorly developed, for purposes of private gain. Yet the industry is managed by central government and subject to legally binding interventions to restrict fishing activity, protect the marine environment and conserve threatened habitats and species, in the public interest. The

¹ Assuming that it is amended to take account of nature conservation activities in the marine environment.

dilemmas posed by the confrontation of public and private sector interests lie at the heart of many of the issues relating to fisheries management.

The primary legislation appears to be effective for managing inshore fisheries though whether it can ensure effective environmental integration has yet to be demonstrated. The only argument for amending the primary legislation at this stage would be to suggest that a simple, overarching Inshore Waters Act, embracing all activities occurring within inshore waters, could give clearer definition of the proper application of the widely endorsed principles of sustainable development, the precautionary approach and environmental integration.

Many of the problems relate not to outmoded legislation but to the complexity of modern governance, the 'bedding down' of new organisational structures and the changing ethos of management. Environmental integration requires not only much closer collaboration across cognate government departments but also an intensive policy learning process for all involved in the policy community.

Despite efforts to achieve greater coordination within SEERAD as a whole, there is still a sense that channels of communication, common projects and working towards an agreed strategy for the marine environment are constrained by the inevitable compartmentalisation of core business within specific divisions or subdivisions with only limited interactions between them. Within the Sea Fisheries Division, the establishment of the Inshore Fisheries Branch has given much clearer focus to the task of inshore fisheries management and greatly improved communications and relations with the inshore industry. Nonetheless, the Inshore Fisheries Branch is acutely aware that currently it is unable to give sufficient direction to the development of inshore fisheries management especially in the context of environmental integration.

One fundamental weakness of the institutional arrangements for inshore fisheries management - common to many countries across Europe - is the representation of inshore fishing interests. Part of the problem is that inshore fishing associations tend to articulate distinctive local views and often have difficulty in uniting around a common accord of what is best for the inshore sector. The danger is that it may leave the sector without a clear coherent voice in external negotiations. In Scotland the problem is compounded by the fact that some inshore associations have opted for membership of the Scottish Fishermen's Federation (SFF) while others have not. This is reflected in the make up of SIFAG where a majority of industry seats are at the disposal of SFF. A strong and unified inshore industry voice is needed inside the policy community. The Inshore Fisheries Branch should benefit from its advice and the inshore industry profit from having a group close to the centre of decision making. But these remain aspirations rather than concrete achievements.

With the growing emphasis on environmental integration, the role of Scottish Natural Heritage (SNH) is likely to become increasingly influential in the policy community. Its relations with the fishing industry have improved of late and, despite some historical misgivings largely over the issue of seals, the industry recognises the common concerns it shares with the conservation interests over issues of biodiversity and a desire to see flourishing ecosystems. Disruptive tensions can sometimes occur at the local level where one or other party is insufficiently briefed about the implications of fishing activities or proposals for conservation action, or where the industry is brought into the negotiations too late to develop a true sense of shared ownership of the proposal.

Local authorities have hitherto played a mainly minor role in inshore fisheries management though many have been hugely influential in supporting the interests of local inshore groups and in developing adequate infrastructure. If, as we argue in the following sections, inshore fisheries management were to be regionalised this could bring into play the latent potential for fuller involvement of the local authorities.

Turning from the actors to the management system itself, the prevailing view is that implementation of the Act lacks imagination, the decision making system too slow and the outcomes uncoordinated and arbitrary. The result is a patchwork quilt of inshore regulation, leaving some areas of the coast quite heavily regulated and others where there is little or no restriction of fishing activity. Moreover, the management measures available through the 1984 Act contain several gaps most notably the inability to manage fishing effort. This failing may in part be redeemed by the introduction of the Shellfish Licensing Scheme later in 2003 which will cap the number of vessels participating in a range of shellfisheries.

Two factors underlie the present reactive, uncoordinated and incomplete system of inshore fisheries management in Scotland: the lack of an agreed strategy for the sustainable development of inshore fisheries and the absence of a comprehensive regional framework for its implementation.

The challenge of integrated management

Radical reform is almost certainly necessary to face up to the challenges posed by the increasing pressures on inshore fisheries as fishing opportunities elsewhere are curtailed; the pursuit of good governance, involving the 'hollowing out of the state' and devolving management competences to responsible user groups; and pressure for more draconian action to protect the marine environment.

For environmental protection to be systematically incorporated into fisheries policy, environmental concerns will need to permeate the basic thinking of fisheries management, become an integral part of scientific assessment methodologies and be the acid test for the legitimacy of policy decisions. Missing from the present approach is a strategic marine environmental policy through which to implement more wide ranging and effective conservation measures. One means whereby environmental protection could be greatly strengthened is the introduction of a coherent and interactive network of Marine Protected Areas larger in scale than the *Natura 2000* network and much less permissive in its approach to natural resource exploitation. Commitments have already been made through OSPAR, the Bergen Declaration and the Biodiversity Convention to establish such networks within the next few years.

In facing these challenges, those responsible for inshore fisheries management must be in a position to demonstrate that they are in command of a robust, far reaching and long term strategy for inshore waters which guarantees sustainable low impact fisheries in a diverse, well integrated and productive ecosystem. Developing such a strategy involves three stages:

- a clear, coherent and imaginative *vision* of the desired future for inshore waters some 15 years hence;
- translating the vision into a more substantial *strategy* for the future development of Scottish inshore waters; elaborating clear objectives for inshore fisheries management; identifying an appropriate structure for decision making; defining the approach to specific issues like fisheries dependent areas, priority areas for environmental conservation and collaboration with other users of inshore waters; and

outlining targets for achieving the strategy, monitoring systems and key indicators of progress;

- using the strategy to fashion a rolling programme of *management plans* which involve the framing of action plans to tackle local issues.

Inshore fisheries management is essentially a local issue, but solutions to local problems need to be set in the contexts of developments at the regional scale and the policy framework established by the national strategy. We believe, therefore, that in implementing the national strategy there is a need to change the present system towards a more regional structure. By bringing together a wealth of local knowledge and experience and providing access to national expertise in fisheries science, marine ecology and nature conservation, regional organisations should be able to maximise opportunities for sound, cost effective advice and action. We also acknowledge that this transformation will not be easy.

In outline, we believe that effective, integrated management can best be achieved by establishing a number of *regional inshore management committees*, probably not more than eight in number. Although the core business of these committees should be the regulation of inshore fisheries, their remit should also include environmental conservation, market planning, infrastructural development and training. The committees should have limited executive powers to frame byelaws and develop local management plans as well as act as first points of consultation over issues relating to the use and management of inshore waters. In terms of their composition they should be of a size which is manageable and ensures a sensible balance between fishing and other interests. Chaired by an independent person, the committees should also have direct access to nominated members of FRS and SFPA for advice on stock assessment and enforcement respectively. Levels of staffing are expected to be relatively small and funding of the committees capable of being met jointly by the Executive and the relevant local authorities.

We also believe that there should be a *national inshore advisory committee*, more broadly constituted than the present SIFAG, to advise the Minister on all matters relating to the use and management of inshore waters and to act as the primary channel of communication between the regional committees and the central administration.

Environmental integration will come at a cost whether it be in terms of costs to the fishing industry, added management costs or indirect social costs. As society is the major beneficiary of environmental integration it is appropriate that much of the additional burden should fall on the state, though reimbursement of the fishing industry should not involve long term subsidies but rather investment grants to individual fishermen or groups of fishermen to assist in the take up of measures linked to environmentally responsible fishing, especially where take up may be inhibited by initial capital and training costs.

However the future management system is constructed it will be important to maintain the right balance between voluntary agreements and legislative action. All sound regulations require a strong measure of agreement among those directly affected - in this case the fishermen - in order to secure a reasonable basis for compliance. But at this crucial juncture in the evolution of integrated management it will be vital not to damage the industry's growing confidence in its own ability to collaborate in the drafting of management schemes through voluntary agreements by too readily assuming that these need to be converted into statutory regulations.

Conclusions and recommendations

There is no escaping the inevitability of environmental integration; the question is not whether but how to do it. This should be seen as providing a challenge and opportunity rather than as posing a threat. Decisions will have to be made about the direction of inshore management - whether to accept the existing system as adequate for the present and foreseeable future or to seize the opportunity to build a new system better placed to manage the challenge of environmental integration. Our recommendations span both these options.

In terms of *legislation*, we believe that consideration should be given to establishing an Inshore Waters (Scotland) Act to give clear direction to the interpretation of existing Acts in relation to environmental integration and create a framework for any future acts. Moreover, the growing number of contingent Acts should be kept under review to assess their implications for inshore fisheries management.

The existing *organisational structure* needs to be kept under review. In particular, we believe that the staffing levels of the Inshore Fisheries Branch should be re-examined in the light of the expanding scale and scope of its workload; that the size, structure and functions of SIFAG be reconsidered in the light of the changing nature of inshore fisheries management; and that further steps be taken to improve the external networking of the principal actors involved in environmental integration and to ensure effective internal communications within SEERAD on matters relating to fisheries and environmental protection. Similarly we suggest that there is a need for closer liaison between SNH, the environmental NGOs and the inshore fishing industry at the local level through regular meetings between local representatives.

There are several ways in which the current *management system* can be improved. In particular, we recommend that: the triennial review process be formally replaced by one which recognises the need for proposals to be made as and when the need for regulation arises; consideration be given to streamlining the consultation process to reduce the time normally take to reach a decision to a maximum of twelve months; all orders to be monitored and assessed over a period not exceeding five years before being reviewed; and criteria for assessing proposals be drawn up and published for the guidance of all concerned. The guidelines for establishing Regulating Orders also need to be re-examined to see whether existing or proposed schemes are in line with the spirit and purpose of the 1967 Act, to consider a role for local authorities and to build in requirements for environmental assessments and environmental objectives within the management plans. Finally we suggest that consideration be given to filling the gaps in the current range of actions that can be deployed to manage inshore fisheries on a more sustainable basis.

Notwithstanding the proven ability of the existing system to furnish an adequate basis for the management of inshore fishing activity and the foregoing recommendations for ways of improving that system, we firmly believe that in facing up to the challenges of the 21st century - and not least the imperative of environmental integration - there is an urgent need to consider major changes to the present *institutional framework*. As a preface to such changes, the terms of reference for the ongoing review of inshore fisheries management should be extended to take account of the need for an imaginative long term vision for Scotland's inshore waters, a strategy for the management of those waters and a rolling programme of 3 - 5 year regional management plans. Consideration should be given to establishing regional inshore management committees with limited powers to regulate fishing within the 12 nm zone and a more general remit to implement the national strategy through plans drawn up to

take account of the region's particular potentials and implement local strategies for environmental integration. We also recommend the setting up of a national inshore advisory committee to advise the Ministers on all matters relating to inshore waters, and that one of its first tasks should be to elaborate financial plans for the development of integrated management, including provision for financial incentives to accelerate the process of environmental integration.

Finally, in the event of a decision to regionalise inshore fisheries management and to enact new legislation to establish regional committees, the opportunity should be taken to review all areas of inshore fisheries legislation to facilitate their enhanced performance.

Key actions for environmental integration in Scottish inshore fisheries

- drafting of an Inshore Waters (Scotland) Act to provide a robust framework for environmental integration.
- implementation of UK marine Biodiversity Action Plans in Scottish waters.
- adoption of an ecosystem based approach to inshore fisheries management.
- reassessment of Regulating Orders as a means of contributing to environmental integration.
- development of an integrated inshore waters strategy for Scotland based on an imaginative long term vision of the role of inshore fisheries in the coastal economy and in the attainment of healthy marine ecosystems.
- establishment of regional inshore management committees to oversee effective and coherent regulation of inshore fisheries in relation to stock conservation, access rights and environmental integration.
- drawing up of regional inshore management plans embracing the objectives of sound fisheries conservation, environmental integration, market planning, infrastructural development *inter alia*.
- consideration of a system of financial measures, involving both incentives and penalties, to assist the adoption of environmentally responsible fishing practices in inshore waters.

Chapter 1

Introduction

There is growing pressure from within the European Community (EC) - and reflected in national policy statements - for a much closer integration of fisheries management and marine environmental conservation to help deliver the mutual benefits of sustainable commercial fisheries and healthy marine ecosystems. Although the pressure for 'environmental integration' is being driven mainly by international agreements and translated into policy at the level of the EC, it is ultimately the responsibility of individual member states to ensure its embodiment in national law - either through Statutory Instruments (SIs) or amendments to basic legislation - and its implementation in responsible fisheries management systems. The new imperative of environmental integration is likely to pose a major challenge to those responsible for detailed policy formulation and implementation especially in the inshore domain.

The UN *Convention on Biodiversity* (1992) places an obligation on all its signatories to develop national strategies, plans or programmes for the conservation and sustainable use of biodiversity, including *in situ* measures to protect or conserve particular habitats and species and the rehabilitation and restoration of threatened species through the development of appropriate management schemes. According to the Convention, biological diversity 'means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic organisms and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems'.

Subsequently Article 6 of the Treaty establishing the European Union makes clear the link between environmental protection and sustainable development: 'Environmental protection requirements must be integrated into the definition and implementation of the Community policies and activities ... in particular with a view to promoting sustainable development'. In fisheries this has been pursued through two parallel but closely interrelated developments: the preparation of a *Biodiversity Action Plan for Fisheries* (COM 2001, 164 Vol IV) published in 2001 and an *Action Plan for the integration of environmental protection requirements into the Common Fisheries Policy*, due to be finalised in 2003 (see Chapters 4 and 5).

Implementing such action plans in the case of fisheries is potentially complicated. Fisheries is one of a very small number of policy areas where the EC has 'exclusive competence'. Member states are not at liberty to establish their own management regimes nor enter into separate international agreements in relation to fisheries. The EC's competence extends throughout the combined area of the member states' 200 mile zones. However, a temporary derogation in respect of access to inshore waters by non-coastal state vessels (renewed for a second time in 2002) creates a situation in which coastal states can assume limited responsibility for management and impose additional regulations for the purpose of stock conservation, providing these apply to stocks exclusive to inshore waters and to the coastal state's own fishing boats. As distinctions are made between access rights in the 0-6 nm and 6-12 nm limits, there are in effect three distinct management zones: (i) an inner zone (0-6 nm) where access rights are reserved solely for the coastal state's fishing vessels and where the coastal state, therefore, has considerable scope for independent management action; (ii) an intermediate 6-12 nm zone where access restrictions are required to take account of historic fishing rights held by other member states and where, since January 2003, the coastal state may take non-discriminatory measures for the conservation and management of fishery

resources applicable to all vessels fishing within the zone, after consultation with the Commission and the member states concerned; and (iii) the outer zone from 12-200 nm where the EC has exclusive competence.

By contrast, in other areas of marine management - environmental, navigation, exploitation of seabed resources (hydrocarbons, aggregates) *inter alia* - the EC does not have exclusive competence. As a result, European policies expressed in the form of Directives are subject to a degree of discrimination on the part of the member state in their interpretation and implementation.

Issues of environmental integration in fisheries management policies are of considerable relevance for Scotland and for its extensive inshore zones in particular. The greatly indented and fragmented Scottish coastline makes it one of the longest in Europe and the fact that the baseline used to define the 6 nm and 12 nm limits not only encloses the sealochs and inner firths but also treats the Minch as territorial waters creates a very substantial area of inshore waters (c 35,000 square miles), much larger than any other part of the UK and certainly one of the largest in the EC.

Although, hitherto, Scottish fisheries have been largely dominated in both volume and value of landings by the offshore sector, inshore fisheries - and especially shellfish fisheries - have a strong regional and local importance in terms of employment and contribution to gross domestic product (GDP) (see Chapter 2). Inshore waters are now coming under increasing pressure as a result of the relocation of fishing effort following the recent severe reductions in fishing opportunities for whitefish species in the North Sea and to the west of Scotland, traditionally the focus of the offshore sector. There can scarcely have been a more crucial time for the management of inshore fisheries in Scotland, even without the complications of environmental integration. The waters off Scotland's coasts in general offer a high quality, relatively undisturbed marine environment, supporting considerable diversity of habitats and species, but threats to the future integrity and productivity of the ecosystems from fishing, aquaculture and a number of other coastal and marine activities have been identified (see Chapter 3).

Whereas a good deal of progress has already been made in defining the broad objectives of integrated fisheries management, identifying key issues in both generic and specific terms and outlining the basic policy approaches (see Chapter 4), the full extent of the implications of environmental integration are perhaps less clearly understood (Chapter 5). What also remains in doubt is the ability of existing legislation, organisational structures and regulatory systems to facilitate the effective implementation of environmental protection. Accordingly, the aims of this report are (i) to evaluate current inshore management systems in Scotland in relation to the integration of environmental protection requirements - this requires a rigorous assessment of the institutional arrangements for management - and (ii) where elements of the present system are found to be inadequate or inappropriate for the task in hand, to make recommendations as to how the situation might be improved.

There are several cognate reviews being undertaken in relation to aspects of management in UK waters - most notably the JNCC-led Irish Sea pilot project as part of DEFRA's ongoing review of marine nature conservation and, in Scotland, the Sustainable Scottish Marine Environment Initiative sponsored by SEERAD together with a strategic review of inshore fisheries being conducted by the Sea Fisheries Division of SEERAD and the Scottish Inshore Fisheries Advisory Group (SIFAG). The existence of these initiatives requires us to steer a

well defined course focusing on the interface between inshore fisheries management and marine environmental management in Scottish inshore waters. There will be times, however, when the report appears to depart from this narrow course, especially when reviewing current institutional arrangements (Chapters 6 and 7), when it is necessary to examine aspects of Scottish inshore fisheries management *per se* in order to present the issues of environmental integration more cogently.

The content of the report is based largely on a desk study, reviewing the existing literature, policy statements and legislative arrangements on the basis of which we were able to develop a preliminary assessment of the current situation, its strengths, weaknesses and opportunities for improvement. Subsequently, our assessment was tested through in-depth interviews with a number of key organisations involved in the inshore fishing industry and in marine wildlife conservation. These interviews also provided considerable additional information and specific regional perspectives which greatly informed our conclusions and recommendations (Chapters 7-9). Finally, it should be acknowledged that a number of steering group meetings - involving the sponsors of the project (RSPB Scotland, SNH), representatives from SFF and the Scottish Executive's Sea Fisheries Division and the authors of the report - held at key stages in the development of the project offered a valuable opportunity for constructive dialogue.

Chapter 2

Inshore Fisheries in Scotland

2.1 Scottish fisheries: a temporal context

Scotland's fishing related industries constitute an important and distinctive sector of the national economy. Landings by Scottish based vessels in 2000 amounted to 521000 tonnes valued at £330 million, roughly equivalent to 0.5% of Scotland's GDP; the harvesting sector employs around 6900 persons out of a total labour force of 2.4 million (0.3%) (Scottish Executive, 2001). But it is at the regional and local levels that the industry makes its most significant contributions to the economy (see 2.4 below).

Table 2.1: Landings by Scottish vessels and employment, 1996-2000

	Year					% change
	1996	1997	1998	1999	2000	1996-2000
Landings into UK ports						
Volume (000t)	434	407.7	380.6	352.3	314	-27.6
Value (000£)	302.6	282	292.5	281.5	259.8	-14.1
Employment	8084	8194	7771	7330	6902	-14.6

(Source: Scottish Fisheries Statistics, 2000)

Recent trends point to marine fisheries as a declining sector of the Scottish economy (Table 2.1), reflecting in part the deteriorating condition of key whitefish stocks and the increasingly stringent control measures applied to offshore fishing activity. Whitefish stocks in the adjacent North Sea (ICES Area IV) and West of Scotland (Area VI) have been under pressure from overexploitation for the last few decades and several key species are now considered by scientists to be outside safe biological limits. A considerable degree of instability in the level of annual Total Allowable Catches (TACs) has tended to mask the significant long term decline in stocks and undermined attempts to manage the stocks in a consistent and comprehensive way. This culminated in a controversial decision in 2000 to implement cod recovery plans for both the North Sea and West of Scotland, initially involving severe reductions in TACs (Table 2.2), seasonally closed areas to protect spawning stocks and subsequently proposals for effort limitation (days at sea). A revised cod recovery plan based mainly on effort limitations but abandoning seasonally closed areas is due to be introduced in 2003.

Apart from *Nephrops*, shellfish stocks are not subject to detailed stock assessments and management under the Common Fisheries Policy (CFP). As a result, rather less is known about the state of shellfish stocks though there is some concern that increasing effort (number of boats, types of gears and extension of fishing time) may place some of these largely inshore resources at risk of overexploitation.

2.2 Inshore fisheries: definition, structure and economic returns

This report is concerned with inshore fisheries but the distinction between inshore and offshore fisheries is becoming increasingly blurred especially in structural terms. The traditional structural distinction between 10m and under vessels, classified as inshore boats, and those above 10m has become meaningless, with new constructions often designed to squeeze high fishing capacity and operating range, within the ≤ 10 m specification especially

for fishing *Nephrops* and scallops. Nonetheless, a size based classification remains a useful shorthand measure for estimating the relative importance of inshore and offshore sectors at a district level (see Table 2.5).

The alternative way of defining inshore fisheries – and the one used throughout the majority of this report – is a geographical one based on the 6 and 12nm limits. In Scotland, because the baseline from which these limits are calculated encloses the sea lochs and inter-island waters including the Minch (*Territorial Waters Order 1964*), the inshore waters embrace a very extensive area. However, this extended definition of Scottish inshore waters further complicates the distinction between the inshore and offshore sectors as areas like the Minch are as much ‘offshore’ in terms of fishing activities as they are ‘inshore’. This in turn makes for difficulty in the implementation of local inshore management regimes in certain Scottish waters due to the established presence of offshore (or deep water) fishing vessels.

Table 2.2: TACs, quotas and landings of principal species (tonnes)

		North Sea			West of Scotland			Total catch
		EC TAC	UK quota ¹	% uptake	EC TAC	UK quota ¹	% uptake	(Scottish boats)
Cod	1996	116900	54951	95.2	13000	6640	95.7	42194
	1997	104450	48770	94.1	14000	7210	83.6	38024
	1998	125200	58385	91.4	11000	5676	84.3	40900
	1999	119890	55660	59.9	11800	5960	59.0	26567
	2000	73610	34149	80.7	7480	3530	75.0	23668
Haddock	1996	87400	67830	101.1	22900	17970	78.5	82285
	1997	108000	64241	100.3	20000	15760	78.8	76103
	1998	85050	66000	96.3	25700	20414	79.4	76751
	1999	69680	57088	98.1	19000	14705	90.2	66416
	2000	60620	53056	74.1	19000	15002	57.6	46300
Whiting	1996	55100	29060	92.1	10000	6445	84.2	30005
	1997	61400	32390	76.3	13000	8380	62.3	27379
	1998	50475	27432	71.4	9000	5805	63.0	20770
	1999	38100	24415	79.8	6300	4060	81.5	20659
	2000	25690	19470	97.3	4300	2875	84.2	19674

¹ after quota swaps

(Source: Scottish Fisheries Statistics, 2000)

Notwithstanding the reservations concerning the structural definition of inshore fisheries based on vessel size, Tables 2.3 and 2.4 reveal a remarkably strong set of associations between $\leq 12\text{m}$ boats, the use of largely passive fishing gears and a heavy dependence on the shellfish sector. 95% of boats under 12m deploy mainly shellfish fishing gears and 82% are, in effect, classified as creel boats. Moreover, 75% of the landing value from boats $\leq 12\text{m}$ is derived from shellfish. Overall, 9% of the total value of landings in Scotland from all forms of fishing is attributable to the $\leq 12\text{m}$ sector, though this could be subject to a considerable underestimate. Within the shellfish sector, important distinctions should be recognised: *Nephrops* and scallops, though of significance to the small boat sector, are essentially large boat species; only crab, lobster and whelk are truly inshore fisheries.

Table 2.3: Active boats by main fishing method, 2000

		Vessel size (m)				All boats
		< 8	8-10	10-12	Total inshore	
Demersal:	single trawl	4	13	6	23	300
	seine net	0	1	1	2	68
	lines	25	10	0	35	39
	gillnet	9	11	2	22	32
	beam trawl	0	1	0	1	15
	other	3	1	0	4	4
	Total	41	37	9	87	550
Pelagic:	Total	0	0	0	0	38
Shellfish:	creel	1016	388	97	1501	1529
	nephrops trawl	3	88	70	161	314
	mech. dredge	3	12	17	32	106
	suction dredge	0	0	2	2	2
	hand raking	26	6	39	39	39
	shrimp trawl	0	2	0	2	2
	Total	1048	496	193	1737	1992
All methods	1089	533	202	1824	2580	

(Source: Scottish Fisheries Statistics, 2000)

Table 2.4: Landings by value (£000) from inshore fleet 2000

	> 8m	8-10m	10-12m	Total < 12m	> 12m	Total	< 12m as % total
Total	7963	10711	10964	29638	300024	329662	9.0
- demersal	15	249	219	483	173460	173943	0.3
- pelagic	60	83	1	144	67844	67988	0.2
shellfish	7888	10379	10744	29011	58720	87731	33.1
of which:							
crabs	887	1759	1518	4164	3565	7729	53.9
lobster	1772	1245	751	3768	661	4429	85.1
<i>Nephrops</i>	973	5475	6365	12813	36535	49348	26.0
Scallops (incl. queens)	397	565	911	1873	15492	17365	10.8
Velvet crabs	2340	1040	479	3859	156	4015	96.1
Whelks	79	81	17	177	113	290	61.0
Other	1440	214	703	2357	1748	4105	57.4

(Source: Scottish Fisheries Statistics, 2000)

Table 2.5: Economic returns from selected fishing activities in the UK, 2000 - 2001

			Potters and creelers		Under 10m (Scotland)	
	Nephrops trawl	Scallop	over 12m	10-12m	static	mobile
Vessel length (m)	15.2	18.3	16.4	11.1	8.7	9.5
Engine kW	174	283	197	110	77	93
VCUs	164	267	179	94	63	81
Crew size	3 - 4	5	5	3	2 - 3	2
Vessel age	28	21	23	19	20	12
Days at sea	225	215	221	230	236	178
Trips/year	75	43	194	230	216	178
Distance to grounds (nm)	10 - 15	40	25	15	7	13
Earnings/vessel	£ 151,609	277,705	215,923	102,099	47,059	68,353
Expenses	£ 116,599	214,224	164,841	82,253	35,971	68,791
Profit	£ 30,526	63,481	51,082	19,846	11,088	-438
Crew earnings/man	£ 11,049	14,611	15,118	13,250	10,312	12,881
Earnings / VCU	918	963	1,080	1,157	742	735
' / days at sea	672	1,288	978	442	198	385
' / man day	218	257	196	147	106	165
Return on capital (%)	38	31	1	19	43	2

(Source: Seafish (2002) : 2001 Economic Survey of the UK Fishing Fleet)

Economic returns from fishing activities in Scottish waters (Watson and Martin, 2002) reveal considerable variations between different classes of fishing vessel (Table 2.5) though care must be exercised in the interpretation of the findings due to small sample size. Gross earnings from the larger vessels (>15m) are not surprisingly significantly greater than those from vessels under 10m, though the average remuneration of the crew varies across a much narrower range (£10,300 to £15,000). Despite a reduction in the number of vessels now operating in Scottish waters, returns to the fishing industry have been falling quite significantly and returns on investment appear in some instances to be alarmingly low. Even those sectors targeting high value shellfish species, where stocks are considered to be comparatively robust and in relatively good condition, cannot be guaranteed to reward fishing effort with high returns. Decreased turnover, due to declining catches and a lack of firmness in quayside prices, together with rising operating costs, are the main reasons though some sectors face increasing restrictions including tighter *Nephrops* quotas and the closure of certain scallop grounds because of the risk of amnesic shellfish poisoning (ASP). Most sectors of the industry, both offshore and inshore, now face problems of recruiting and retaining suitable crew members on account of the unsocial working hours, uncertain wages and generally low incomes.

2.3 Regional pattern

Regionally, there are two strongly contrasting 'faces' to the Scottish fishing industry, together with a number of 'local' anomalies which do not fit – either geographically or structurally - this simple typology (see Table 2.6).

The *North East Coast* from Buckie to Aberdeen contains the major concentration of large scale, offshore fishing capacity based on a relatively small number of large ports (Aberdeen, Peterhead, Fraserburgh, Banff and Buckie) which together are responsible for the major share of Scottish landings by volume and value, derived principally from whitefish pressure stocks.

Fraserburgh, with its greater emphasis on pelagic fisheries and more recently *Nephrops*, provides an exception to the regional pattern. The area also contains the greatest concentration of mainly full time fishing employment to be found anywhere in the UK and a substantial share of processing capacity and employment.

By contrast, the *West Coast* – stretching from Campbeltown in the south to Ullapool in the north and including the inner and outer Hebrides – is characterised by inshore fishing activity. 85% of the area's registered vessels are under 12m in length and the vast majority are in individual ownership or family based partnerships; 75% of all landings by value are accounted for by shellfish. The harvesting sector, dependent on a relatively low volume of landings of high unit value, is dispersed among a large number of small ports. A significant proportion of the active fishermen (24%) are engaged only part time in the fishing sector, including a small number of crofter-fishermen.

The anomalies include (a) the northern isles where, for example, *Shetland* is the second largest centre of fishing activity in Scotland and one of the most important centres for pelagic fisheries, sharing with the North East Coast a strong involvement in demersal fisheries but with a much higher level of part time employment; by contrast, the neighbouring *Orkney Islands* attach a much lower level of importance to fishing and in terms of sectoral involvement and employment structure are much closer to the West Coast model;

(b) the *North Mainland Coast* from Lochinver to Wick which, though geographically part of the West Highland region, has a profile of landings and employment much closer to that of the North East Coast; and

(c) the detached districts of *Pittenweem*, closer in profile to the West Coast, and *Eyemouth*, closer to the North East Coast model, on the east coast of Scotland, and *Ayr* in south west Scotland which in terms of fleet structure and employment is more akin to the North East Coast but in sectoral involvement ranks as one of Scotland's major shellfish (*Nephrops* and scallops) districts.

Although not part of the remit of this report, it is important to note the economic and social significance of fish farming to the national and regional economies. It is difficult to achieve an accurate and comprehensive account of production from Scottish aquaculture, though the Federation of Scottish Aquaculture Producers (2000) indicates a first hand sales value of over £300 million. Rather more accessible are estimates of the employment arising: *circa* 2000 in fish farming and a further 360 in shellfish farming (Scottish Executive, 2001) though some estimates of total employment arising from aquaculture put the figure as high as 7000 (Federation of Scottish Aquaculture Producers, 2002). The vast majority of these jobs are located along the shores of the Highlands and Islands of western and northern Scotland.

2.4 Fisheries dependent areas

Estimates of economic dependency on fisheries are derived from the Regional Socio-Economic Studies carried out for the European Commission published in 1999 but based on data from 1996. The Scottish study (Scottish Agricultural College, 1999) identified a total of 22 Travel To Work Areas in which fisheries based employment (harvesting, processing and aquaculture) accounted for more than 1% of the area's total active workforce (Table 2.7). Excluding aquaculture there were two areas where fishing based employment accounted for

Table 2.6: Statistical profile of Scottish fishing districts

	Vessel size (m)				%			
	< 12	12 - 24	> 24	Total	< 12	12 - 24	> 24	Total
North East (Buckie - Aberdeen)	238	198	175	611	39	32	29	100
West Coast (Campbeltown - Ullapool/Stornoway)	824	144	4	972	85	15	0	100
North Coast (Kinlochbervie - Wick)	145	31	4	180	81	17	2	100
Orkney	157	17	9	183	86	9	5	100
Shetland	194	21	27	242	80	9	11	100
Other: Eyemouth	83	29	3	115	72	25	3	100
Pittenweem	97	18	3	118	82	15	3	100
Ayr	88	48	25	161	55	30	15	100
Total (Scotland)	1824	506	250	2580	71	19	10	100
	Landings £000				%			
	Demersal	Pelagic	Shellfish	Total	Demersal	Pelagic	Shellfish	Total
North East (Buckie - Aberdeen)	92.9	7.8	22.6	123.3	75	6	19	100
West Coast (Campbeltown - Ullapool/Stornoway)	12.1	0.8	38.4	51.4	24	1	75	100
North Coast (Kinlochbervie - Wick)	38.5	0	8.8	47.4	81	0	19	100
Orkney	0.3	0	4	4.3	7	0	93	100
Shetland	12.2	6.8	1.6	20.6	59	6	19	100
Other: Eyemouth	2.4	0	3.2	5.6	43	0	57	100
Pittenweem	0	0	2.2	2.2	3	0	97	100
Ayr	1.5	0	5.2	6.7	22	0	78	100
Total (Scotland)	159.9	15.6	86	261.4	61	6	33	100
	Employment				%			
	Regular	P/time	Crofting	Total	Regular	P/time	Crofting	Total
North East (Buckie - Aberdeen)	2215	259	0	2474	90	10	0	100
West Coast (Campbeltown - Ullapool/Stornoway)	1318	360	48	1726	76	21	3	100
North Coast (Kinlochbervie - Wick)	89	5	0	94	95	5	0	100
Orkney	286	90	0	376	76	24	0	100
Shetland	372	265	0	637	58	42	0	100
Other: Eyemouth	274	15	0	289	95	5	0	100
Pittenweem	127	37	0	164	77	23	0	100
Ayr	719	161	0	880	82	18	0	100
Total (Scotland)	5564	1260	48	6902	81	18	1	100

(Source: Scottish Fisheries Statistics, 2000)

over 10% (Fraserburgh and Peterhead), both on the North East Coast, and a further ten areas where fishing based jobs accounted for 5 – 10% of local employment. Most of these were situated on the West Coast or in the western and northern isles, where the fisheries dependent areas were typically remoter rural areas characterised by a small pluri-active workforce.

According to the Regional Socio-Economic Study for Scotland, the populations considered to be most at risk from a further reduction in fishing opportunities were those located in small coastal communities and subject to the concentration of fishing activity in the larger ports of North East Scotland. The remoter island communities were additionally disadvantaged by

higher transport costs in gaining access to distant urban markets, thus partly offsetting the high unit values attributable to inshore fishing activity on the West Coast.

Table 2.7: Scotland: Fisheries Dependent Areas, 1996

		Employment (%)				Value added (%)			
		(a) Catching	(b) Catching + Processing	(c) Aquaculture	(d) Total	(a)	(b)	(c)	(d)
North East:	Keith and Buckie	4.1	8.2	---	8.3	7	9.4	---	9.4
	Elgin and Forres	0.7	0.7	---	0.7	0.8	0.8	---	0.8
	Banff	2.6	3	---	3	3.3	3.5	---	3.5
	Fraserburgh	7.1	20.5	---	20.5	12.8	18.8	---	18.8
	Peterhead	4.8	12.5	---	12.5	7.8	12.7	---	12.7
West Coast:	Western Isles	6.2	8	3	11	3	4.3	3.5	7.8
	Ullapool	4.6	6.1	3.4	9.5	2	3.3	5.7	9
	Skye	5.9	6.7	7.4	14.1	2.4	2.9	11.8	14.6
	Oban	2.4	2.8	2.3	5.1	3.9	4.3	4.1	8.4
	Lochaber	2.3	3.4	1.7	5.2	2.5	3.1	2.8	5.9
	Campeltown	5.1	7.4	1.2	8.6	4.5	6.5	0.8	7.3
North Coast:	Sutherland SW	8.8	8.8	4.2	13	11.3	11.3	8	19.3
	Sutherland NW	5.5	5.5	12	17.5	3.5	3.5	20	23.6
	Thurso	1.7	1.7	---	1.7	0.5	0.5	---	0.5
	Wick	2.7	2.7	---	2.7	1.4	1.4	---	1.4
Orkney	4.3	5.3	1	6.4	4.2	5.1	0.8	5.8	
Shetland	4.1	8.2	3.8	12	4.2	6.4	4.8	11.2	
Other:	Arbroath	0.5	1.1	---	1.1	0.3	0.5	---	0.5
	St. Andrews	1.2	1.2	---	1.2	0.9	0	---	0.9
	Berwickshire	3.5	9.9	---	9.9	1.6	3.5	---	3.5
	Girvan	2.2	2.2	---	2.2	0.4	0.4	---	0.4
	Kirkcudbright	2.4	2.5	0.1	2.6	0.6	0.6	0.1	0.7
Scotland (total)		0.3	0.7	0.1	0.9				

(Source: CEC, 2001)

The management of inshore fisheries in Scotland therefore needs to find a reasonable balance between the key economic, social and cultural objectives relating to the fisheries sector and the close linkages between the sustainable development of the inshore sector and the viability of the coastal settlement pattern and local community structures especially on the West Coast, on the one hand, and the biological and ecological objectives of healthy fish stocks and well integrated, productive natural ecosystems, on the other. This will be no easy task. Crucial perhaps is the need to bridge the gap between the short term pain brought on by severely reduced fishing opportunities and the anticipated but by no means assured long term gain of more abundant commercial fish stocks.

Chapter 3

Scotland's Marine Environment

3.1 Introduction

Apart from JNCC's Coastal Directories published in the mid 1990s there is no detailed, recent comprehensive assessment of environmental quality dealing with Scottish waters. The only documents of relevance are the *OSPAR Quality Status Reports, 2000* for the Greater North Sea and the Celtic Seas but their usefulness in the present context is limited by the fact that the area covered by the two reports encircles the whole of the British Isles. Scottish waters do not form a recognised entity within either study and detailed information relating specifically to Scottish waters is, therefore, virtually non-existent. Moreover, there is no separate treatment of inshore waters.

Nonetheless, it is safe to conclude that in general the waters around the northern parts of the British Isles enjoy the benefits of relatively undisturbed marine ecosystems despite the evidence of depleted commercial fish stocks. By comparison with areas like the Irish Sea basin and the central and southern parts of the North Sea which have much more developed coastlines (high population densities, heavy industry, discharges from rivers draining large, highly urbanised and industrialised catchments) and a longer history of exploitation and contamination of the marine environment, the waters around Scotland are comparatively unpolluted and their ecosystems in a more favourable conservation condition. The only major exceptions are the upper reaches of the Clyde and Forth estuaries.

3.2 Description

Broad distinctions can be drawn between the physiographic characteristics, levels of human exploitation and marine ecology (priority habitats) of the western and eastern coasts of Scotland. The *west coast* is, in general, more exposed, highly accidented, fragmented and indented, with the rocky erosional coastline interspersed with locally sheltered areas formed by glacially deepened fiords or sea lochs. The presence of deep waters close inshore, both off the exposed coasts and in some sea lochs, gives the lie to the conventional image of inshore waters as having a gently shelving seabed and shallow seas. Off the coast, the seabed is frequently formed of bare rock or thin, variable gravels and sandy deposits. The sparse population is distributed in a network of small, often remote and isolated, coastal settlements with few large urban centres, except for the Clyde estuary and along the south west coast.

By contrast *eastern Scotland* has a generally lower, smoother and shallower depositional coastline, characterised by broad embayments (Firths) rather than narrow inlets. Here the archetypal, gently sloping seabed is floored with muds, fine sands or the coarser sands and gravels found mainly off the north coast. The coastline is much more developed with higher overall population densities, more frequent urban settlements, a fertile agricultural hinterland and much easier communications. In short, most of the coastal plains of eastern Scotland are effectively part of lowland Britain.

The seas around Scotland are rich in natural resources, not only in terms of commercial fish stocks – where the North Sea is regarded as one of the world's most productive fishing areas – but also in terms of energy resources – with developed offshore oil and gas reserves and abundant future potential for renewable energies in the form of wind and tidal power generation. The abundant wildlife resources include huge seabird colonies, winter feeding grounds for migrating wildfowl and waders, important populations of resident grey and

common seals, bottlenosed dolphins and migrating cetaceans, and a rich variety of marine habitats supporting complex communities of flora and fauna.

3.3 Threats to Scotland's marine environment

Coastal ecosystems and coastal communities based on fishing, mariculture, tourism and wildlife are especially vulnerable to oil and chemical spills as exemplified by the sinking of the oil tanker Braer off Shetland in 1993. But natural circumstances rather than manmade disasters are responsible for current threats to the west coast scallop fisheries caused by the upwelling of nutrient rich waters stimulating the growth of toxin producing algae and the incidence of Paralytic and more commonly Amnesic Shellfish Poisoning (PSP and ASP).

However, the two OSPAR reports point to a significant improvement in the previously low environmental status of some marine waters around the British Isles – notably in the southern North Sea and the Irish Sea – due largely to improvements in pollution control and water quality management over the last 25 to 30 years. But they also identify some continuing or new threats to environmental quality, marine ecosystems and wildlife. In relation to the Greater North Sea, the report finds that

‘... the intensive – sometimes conflicting – use of the North Sea causes a number of problems in relation to a healthy ecosystem and sustainable use. The ecosystems continue to suffer from a number of old problems, sometimes showing some signs of amelioration, but new problems have also arisen. The effects of hazardous substances, eutrophication, and the direct as well as indirect impacts of fisheries comprise the most important issues.’
(OSPAR Commission, 2000(a): xi)

And, in similar vein, the Celtic Seas report concludes that

‘... generally the waters off the west coasts of Ireland and Scotland are relatively unimpacted by contamination arising from within the region. ...Ecosystem effects due to pollution are, for the most part, confined to urbanised estuaries [including the upper Clyde]...Certain other human activities are having an appreciable impact on the marine and coastal environment. Most notably fishing where recent exploitation rates for some species in some areas have resulted in stock sizes that are considered to be below Safe Biological Limits and where the impact on target species is often unclear or clearly detrimental’ (OSPAR Commission, 2000(b):110)

In both OSPAR reports, fishing – and its interactions with the marine ecosystems – is identified as among the first order threats where impacts are considered widespread, ecologically important and fully justifying the development and implementation of an ecosystem based approach to management. Specifically concerns are expressed over (i) the direct effects of high fishing pressure on populations of target and non-target (bycatch) species; (ii) the indirect effects of damage to benthic habitats and communities especially in shallow waters due to the use of towed gears; and (iii) the long term effects on population and community structures and on the functional integrity of the ecosystems from sustained high levels of fishing activity. It is these three levels of effect that are the focus for ‘environmental integration’.

Mariculture which has expanded greatly on the Scottish west coast since the 1970s with no fewer than 432 sites on the Malin Sea coast (OSPAR Commission, 2000(b): 28) also contributes to the degradation of benthic communities in inshore waters as a result of deposition of organic matter, use of chemicals in the treatment of pests and diseases and local

incidence of eutrophication. Concern is also expressed over the risk of genetic disturbances as a result of genetically modified escapees from the fish farms interbreeding with wild salmon stocks already at risk from overexploitation in the past.

3.4 Actions to protect the marine environment : an overview

Analysis of the marine Biodiversity Action Plans (BAPs) recently drawn up for the UK shows that three (out of ten) broad habitat types, 8 (out of 19) priority habitat action plans and 6 (out of 29) priority species action plans have relevance for Scottish inshore waters where fishing activity (excluding aquaculture) is identified as a contributing factor to the need for protection (see Fig. 3.1). Two examples of action plans relevant to Scottish inshore waters are summarised in Boxes 3.1 and 3.2. In both cases it is clear that while the habitat or species is considered to be at risk from inadequately regulated fishing activity – the use of mobile bottom gears in the case of maerl beds and the risk of incidental capture in driftnet or pelagic trawl fisheries in the case of small cetaceans – fishing is by no means the only source of threat.

Nonetheless, action to protect vulnerable habitats and species has been limited. No Marine Nature Reserves have been established in Scottish waters under the terms of the *Wildlife and Countryside Act 1981*, and only one voluntary marine nature reserve has been set up (St. Abb's Head on the Berwickshire coast). A total of 29 non-statutory Marine Consultation Areas (MCAs) have been identified covering almost 112,000ha, almost exclusively on Scotland's west coast and in Shetland, though such designations establish no restrictions and only require that SNH be informed of any proposals for development (e.g. marine fish farms).

To date, therefore, the only measure taken specifically to protect marine wildlife in Scottish inshore waters is the identification of over 30 candidate or proposed Special Areas of Conservation (SACs) under the EC

Habitats Directive embracing some 560,000ha (see Table 3.1). Again there is a strong geographical bias towards the west coast, though by far the largest SAC is that for the Moray Firth (151,342ha) in north east Scotland. In fact, SACs are chosen not because their own features are under threat but because the Natura 2000 network of which they are a part aims to provide protection for a representative selection of areas which host habitats and species listed in the Directive's Annex I and II. Management plans are being drawn up through consultations with the principal stakeholder interests to ensure the future protection of the sites (see 6.6 below). Although at present implementation of the plans rests largely on voluntary codes of practice, it is possible that statutory regulation of activities within the boundaries of the SACs, may eventually be the norm.

Similarly the much earlier Birds Directive requires Member States to designate Special Protection Areas (SPAs) to protect internationally important populations of birds. Although to date no SPAs have been designated in marine waters, coastal sites (sea cliffs, intertidal areas) afford protection to seabirds, waders and wildfowl. Some sites, like the Solway Firth SPA, overlap important areas of shellfish beds.

Table 3.1: Candidate and Proposed Marine SACs

Original sites (23)	Area (ha)	Date	Designation
Berwickshire Coast	10,169	2001	Grey seal; large shallow inlets; sandflats; reefs; sand banks; submerged sea caves
Dornoch Firth	8,701	2001	Estuary; mud/sandflats; reefs; sandbanks; common seal; otter
Faray and Holm of Faray	786	1998	Grey seal
Firth of Lorn	20,975	1999	Reefs
Lochs Duich, Long, Alsh	2,381	1999	Reefs
Loch Maddy	2,320	2001	Lagoons; large shallow inlets; reefs; mud/sand flats; sandbanks
Loch Roag Lagoons	44	1996	Lagoons
Loch of Stenness	792	1996	Lagoons
Loch Sunart Woodlands	10,247	1996	Lagoons; otter
Moine Mhor	1,150	2001	Mudflats; otter
Monach Islands	3,647	2000	Grey seal
Moray Firth	151,342	2001	Bottle nosed dolphin; sandbanks
Mousa	531	2000	Common seal
North Rona	629	2000	Grey seal; reefs; submerged sea caves
Obain L. Euphoirt	349	1996	Lagoons
Papa Stour	2,077	1996	Reefs; submerged sea caves
St. Kilda	3,694	1996	Reefs; submerged sea caves
Sanday	10,972	2000	Common seal; mud/sandflats; reefs; sandbanks
Solway Firth	30,709	2001	Estuary; mud/sandflats; sandbanks; reefs
Sound of Arisaig	4,557	1996	Sandbanks
South Uist Machair	3,433	2000	Lagoons; otter
The Vadills	62	1996	Lagoons
Yell Sound	1,541	2000	Otter; common seal
Total: candidate SACs	541,024		

New sites (10)	Area (ha)	Date	Designation
Ascrib, Islay & L. Dunvegan	2,585	2001	Common seal
Isle of May	357	2001	Grey seal; reefs
Lismore	n.a.	n.a.	Common seal
Loch Creran	1,226	2001	Reefs
Loch Laxford	1,221	2001	Large shallow inlet; reefs; otter
Loch Moidart	1,757	2001	Mudflats; sandflats; otter
Sound of Barra	5,279	n.a.	Common seal; sandbanks
South East Islay Skerries	1,498	2001	Common seal
Sullom Voe	3	2001	Large shallow inlet; reefs
Treshnish Islands	1,963	2001	Grey seal
Total: Proposed SACs	18,585		
Total: All SACs	559,609		

(Source: SNH, 2002)

Other initiatives aimed at the sustainable development of the coasts and seas around Scotland include informal voluntary partnerships including the Firths Partnership (covering the Moray, Forth, Clyde and Solway Firths) based largely on the principles of integrated coastal zone management (ICZM).

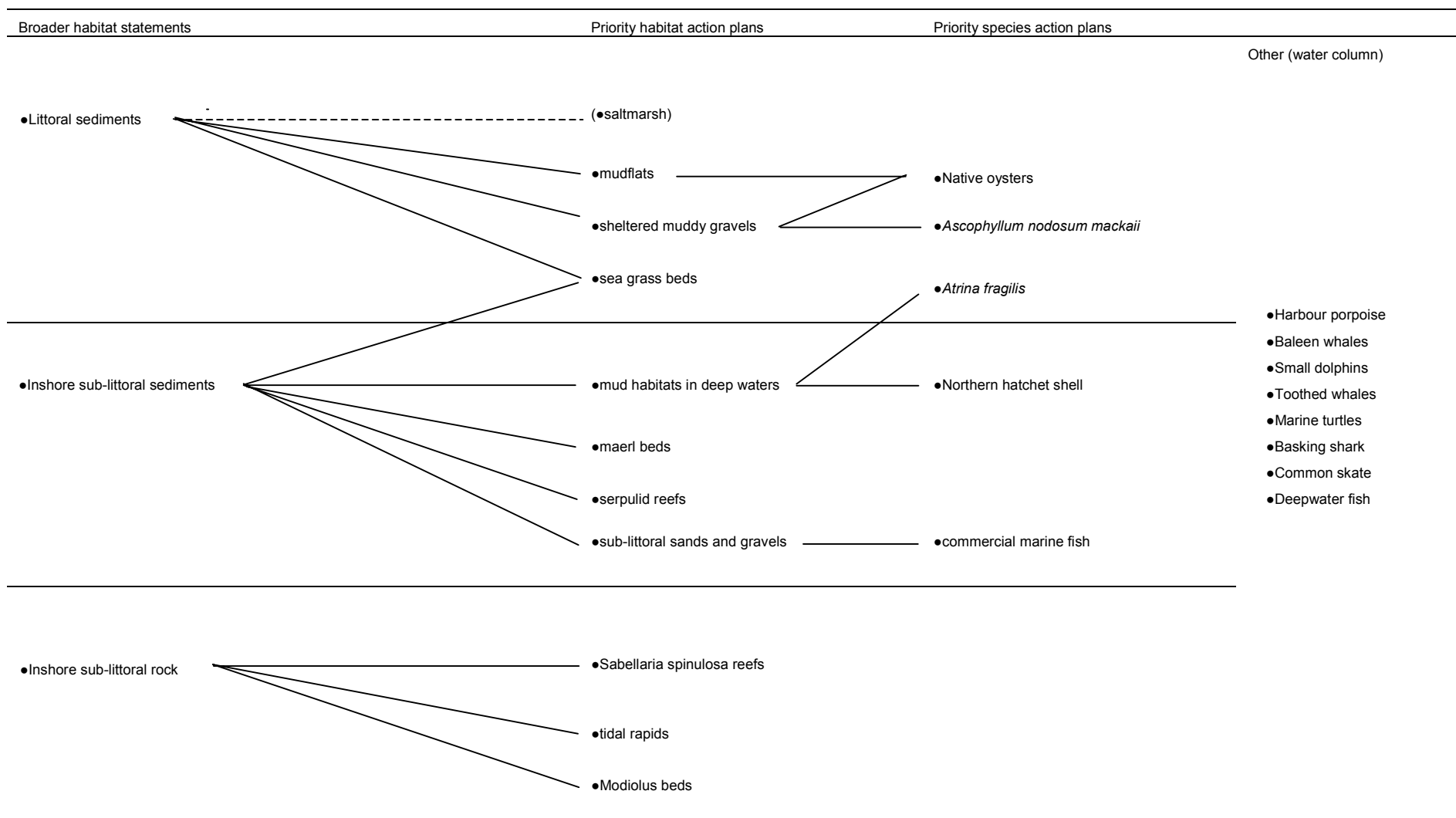


Fig. 3.1 BAPs: Linkages between broad habitat statements, HAPs and SAPs in inshore waters where fishing activity is a factor (based on UK Biodiversity Group, 1999)

Box 3.1 Habitat Action Plan: Maerl Beds

<u>Current status</u>	<ul style="list-style-type: none"> ● a slow growing calcified red seaweed forming extensive and deep deposits on seabed; especially well developed around Scottish islands and sea loch narrows subject to tidal flows; forms habitat for wide variety of plants & animals; fragile - at risk of physical damage
<u>Threats</u>	<ul style="list-style-type: none"> ● wide ranging commercial use as soil conditioner, animal feed additive, drinking water filter and pharmaceutical and cosmetic products; licensed commercial dredging in Wyre Sound (Orkney); ● mobile fishing gears, esp. scallop dredging identified as having a major impact in Clyde; ● damage from eutrophication and smothering by waste products from finfish farms; ● construction works impeding movement of water essential for dispersing fine sediments
<u>Protected status</u>	<p>despite intrinsic value and functional significance in providing essential habitat for community of plants and animals, legal status if patchy, viz.</p> <ul style="list-style-type: none"> ● not protected under Wildlife and Countryside Act, 1981 ● covered indirectly by four habitat types listed in Annex I of EC Habitats Directive, 1992; two of the three maerl species are listed in Annex V but <i>Lithothamnion glaciale</i> (important in Scottish beds) not listed; three Scottish SACs contain maerl beds (Sound of Arisaig, Loch Maddy, The Vadills) ● EC Water Framework Directive (and transposed national legislation) provides protection from discharges at sea and physical damage
<u>Action Plan</u>	'to maintain extent, variety and quality of maerl beds and associated plant and animal communities ... subject to best available information'
■ Proposed action	<ul style="list-style-type: none"> ● inclusion of maerl beds in Habitats Directive Annex 1 and addition of <i>Lithothamnion glaciale</i> in Annex V ● ensure fishing activity takes account of potential impacts on maerl beds (avoidance/limited operation) ● presumption against granting new extraction licences
■ Site management	<ul style="list-style-type: none"> ● renegotiation of existing extraction licences ● provision for maintenance of extent and health of maerl bed communities in SAC management plans by 2005 ● establish planning conditions for aquaculture and other operations (incl. construction) re risk of damage to maerl beds ● take account of conservation requirements for maerl beds in CZM plans ● ensure fishing operations do not adversely affect conservation interests within designated sites
■ Research/monitoring	<ul style="list-style-type: none"> ● complete survey of maerl bed sites; monitor recovery of beds at sites affected by construction work; establish monitoring programme (2005)
■ Communication	<ul style="list-style-type: none"> ● provide information to planners, users and general public highlighting importance of maerl beds as a feature of sea lochs ● provide information for relevant SACs placing emphasis on local features of interest and generating sense of ownership of resource
<u>SAC Management Plan</u>	Sound of Arisaig SAC (see 6.6 and Box 6.1)

Box 3.2 Grouped Species Action Plan : Small Dolphins

● covers six small dolphin species occurring regularly in UK waters: (i) Bottlenose dolphin, locally frequent near shore in NE Scotland (resident population in Moray Firth); (ii) Risso's dolphin with major population occurring around the Hebrides; (iii) White beaked dolphin, widespread and common in Scottish waters; (iv) Atlantic whitesided dolphin, widely distributed offshore, esp. around Hebrides, Northern Isles and in North Sea; (v) Common dolphin, abundant and widely distributed mainly in deeper waters off the Inner Hebrides; and (vi) Striped dolphin, rare in Scottish waters

Threats

- ecosystem changes resulting from overexploitation of commercial fish stocks, affecting energy budgets, reproduction and survival for all species
- bycatches of dolphin in various commercial fisheries (esp. pelagic trawl fisheries)
- boating activities (commercial and recreational) including physical damage from collisions and auditory damage
- contaminants, esp. organochlorines, likely to impact on reproductive potential and immune systems

Protected status

despite difficulties in assessing current population size, distribution and trends, small dolphins are comprehensively protected under existing environmental legislation, viz.

- protected under Wildlife and Countryside Act, 1981;
- listed in Annex IV of Habitats Directive; Annex II provides for establishment of SAC to protect Bottlenose dolphin in Moray Firth;
- trade in dolphins prohibited under EC Council Regulation 338/97;
- protected under Bonn Convention, and subject to detailed conservation action under ASCOBANS Agreement, current action includes: banning of fishing for tuna with gillnets; impact assessments re seismic surveys; and guidelines for recreational boating

Action plan

'to maintain current range and abundance ... [and] in longer term to seek to increase range of populations, where appropriate'

■ Policy

- develop code of conduct for dolphin watching (and other) vessels; introduce EIA for oil/gas exploration licences; work towards extending ASCOBANS objectives to all UK waters and enacting legislation to support MPAs

■ Site safeguards

- ensure SAC management schemes recognise need for appropriate measures to protect against habitat modification, disturbance and contamination, including monitoring of potential impacts and regulation of activities
- consider feasibility of establishing MPAs to protect calving, nursery and feeding areas, and by 2004 establish MPAs taking account of likelihood of human activities harmful to cetacean populations in the area
- support continuation of ban on use of large pelagic drift nets

■ Species management

- dependent on international cooperation re legislation, research, monitoring and dissemination of information

■ Advisory action

- review advice on best means to prevent disturbance, avoidance of by-catch; improve seismic survey guidelines based on better understanding of effect on dolphins of underwater sound

■ Research/monitoring

- acoustic/video research on behavioural aspects of bycatch; ecological studies to identify appropriate habitat management; effects of contamination uptake; short and long term effects of underwater sound; effects of climate change; maintain and develop national stranding monitoring schemes; establish independent observer schemes for all relevant fisheries (drift net, pelagic trawl, fixed bottom-set nets)

Communications

- provide illustrative materials for specific regions emphasising value of habitats for promoting dolphin biodiversity

SAC Management Plans

Moray Firth
SAC

Chapter 4

Evolving Policy Frameworks

4.1 Introduction

Environmental integration – involving the harmonisation of policy objectives for the protection of the environment, on the one hand, and the sustainable development of commercial fisheries, on the other – demands rather more than the familiar rhetorics of ‘greater environmental awareness’, ‘due care and attention’ or ‘add-on’ promises to minimise damage to marine habitats and limit by-catches of non-target species. Logically, it requires that sectoral policies should internalise the lessons of maintaining biodiversity and safeguarding the functional integrity of marine ecosystems and so reorientate themselves around an ecosystem based approach. At the same time, the integration process requires that environmental policy should itself pay more attention to the economic, social and cultural needs of human populations both globally and locally. In other words, environmental integration must involve a more holistic and balanced approach to natural resource management. While the practical implications of implementing environmental integration are discussed in greater detail in Chapter 5, the purpose of the present chapter is to review the two main strands of marine policy and to search for evidence of this more holistic approach.

4.2 Marine environmental management

The International context

Today, more than at any time in the past, environmental management is directly influenced by global and regional conventions, treaties and protocols. Many of these date from the 1970s (*Ramsar Convention*, 1971; *CITES*, 1975; *Bonn Convention*, 1979; *Bern Convention*, 1979) and are generic in form, referring to both terrestrial and marine environments. Their implementation in the marine context has been severely constrained by problems relating to the absence of clearly defined property rights, lack of strong scientific evidence and a lack of clarity over the extent of the coastal state’s jurisdiction in regard to the marine environment. Until quite recently, maritime states appeared unwilling to seek a common solution to environmental problems in the high seas.

The *Convention on Biological Diversity*, 1992 provides the main framework for international action by the EC and coastal states in respect of the protection of biological diversity and the exploitation of components of the ecosystem on a sustainable basis. Subsequently, the *Jakarta Mandate*, 1995 gives a focus for international action in relation to biodiversity conservation in marine and coastal areas, including the adoption of the ecosystem based approach, the precautionary principle and the identification of priority areas for action at national and regional levels. Ten years on, the *World Summit on Sustainable Development*, 2002 reaffirmed the broad thrust of the Biodiversity Convention making specific commitments to encourage the adoption of an ecosystem based approach by 2010, put in place representative networks of marine protected areas (MPAs) by 2012 and restore commercial fish stocks to levels capable of providing maximum sustainable yields by 2015. In the North East Atlantic, the *OSPAR Convention* has, through its Biodiversity Strategy (1998), laid the basis for assessing and prioritising species and habitats in need of protection, developing Ecological Quality Objectives (EQOs) and promoting the establishment of a network of Marine Protection Areas (MPAs), while the *ASCOBANS Agreement* (1991), provides for agreement on reducing the incidental bycatch of small cetaceans to sustainable levels.

The European context

At the European and UK levels, policy frameworks for the marine environment are poorly coordinated mainly because of the fragmentation of responsibility between different departments and the lack of any robust, overarching strategy. Only with the publication of the Sixth Environmental Action Programme (2002) has the EC committed itself to developing a strategy for the protection and conservation of the marine environment to counter threats from the loss or degradation of biodiversity and changes to the structure of marine ecosystems, loss of habitat, contamination by dangerous substances and the possible future effects of climate change. Early indications (CEC, 2002) are that the strategy will not go much beyond weaving together strands of existing sectoral policies which relate to environmental protection, even though most of the existing legislation is not designed specifically for the protection of the marine environment.

To date, the most significant European 'legislation' concerning marine environmental protection has been the *Habitats Directive*, 1992 providing for the establishment of a European network of special areas of conservation (SACs) covering both terrestrial and marine areas and the development of management plans to secure the protection of endangered habitats and species. The Habitats Directive places an obligation on member state governments to ensure adequate protection of the target habitats and species through legislation or appropriate administrative arrangements. So far, almost all of the candidate marine sites are located in inshore waters and the list of protected habitats and species, together with the selection of sites, is under continuous review.

In the absence of a more comprehensive approach to marine environmental policy, it has been left largely to meetings of the North Sea Ministerial Council to set the agenda for proactive environmental management in the North Sea, including the adoption of an ecosystem based approach to fisheries management and the setting of targets for arresting the decline in biodiversity.

The UK context

For the UK, DEFRA (2002) has published its *Safeguarding Our Seas: A Strategy for the Conservation and Sustainable Development of the UK Marine Environment*. The report, apart from claiming to put 'an ecosystem based approach at the heart of our strategy to reconcile conservation needs and individual needs' and 'to deliver our vision by pursuing policies that promote sustainable development, integrated management, stakeholder involvement, robust science and the precautionary principle', mainly comprises a review of existing actions and commitments. It does, however, argue that 'better integration requires a review of legislation affecting development in coastal areas with a view to simplification ... and coordination between departments ... [to] work through OSPAR to explore spatial planning in the marine environment ... and the implementation of EC recommendations regarding integrated coastal management'. It has little to say on specific issues relating to the fisheries : environmental protection interface. A *State of Our Seas* report, furnishing an integrated assessment and developing performance indicators, is due in 2004.

Rather more significant, at least in terms of how marine nature conservation may be articulated in the future, is the UK Government led Review of Marine Nature Conservation and its *Interim Report of the Review of Marine Nature Conservation* issued by DETR in 2001. The report is deeply critical of the effectiveness of current legislation, pointing out that (i) below the low water mark (LWM) there is no common framework and no single

designated regulatory body; (ii) management is essentially sectoral and environmental considerations are incidental to the main purpose of the regulation; and (iii) past UK environmental initiatives have had virtually no impact below the LWM. It summarises the present situation as ‘*ad hoc* ... unsystematic, uncoordinated, non-comprehensive ...’ and characterised by ‘... inconsistency in the interpretation of environmental powers and duties ... duplication of powers ... gaps in regulation ... [and] haphazard responses to specific issues or particular stimuli’. Accordingly, the report argues the case for stronger legislation, partnership agreements and a clearer common context.

The *Interim Report* begins looking forward to a more integrated strategy with a balance between species protection, ecosystem conservation and area based measures and to developing a nested approach based on different geographical scales *viz.* the wider seas (broad brush policies re ecosystem health, environmental change, integrated sea use), the regional seas (implementing national policies at a meaningful scale) and the more traditional localised site based protection of habitats and species, which stands in need of rationalisation.

A third strand of UK policy thinking is provided by the UK *Biodiversity Action Plan* – a direct descendent of the Convention on Biological Diversity, 1992 – which commits the government to ‘take a lead and establish a framework’ for action intended to guarantee the successful functioning of ecosystems in the future. The Plan defines goals (‘to conserve and enhance biological diversity’), underlying principles (sustainable use, sound science, precautionarity and participative governance) and identifies specific priority habitats and species in need of protection either because of international obligations or rarity or risk and, in the case of marine habitats, those which are functionally critical for organisms inhabiting wider ecosystems or which are formed of keynote species but host a characteristic community of other species. Priority habitats and species action plans (HAPs; SAPs) identify the current states, principal conservation needs, main lines of conservation action and the responsible agencies with duties to carry forward the plans (see Boxes 3.1 and 3.2 for examples). It is, however, left largely to coordinated action on the part of several different agencies to implement the plans working in partnership. There is some degree of overlap between the site based approach to habitat and species conservation adopted in the Habitats and Birds Directives and the more integrated management planning approach implied in the HAPs and SAPs.

The Scottish context

It has proved rather more difficult to identify a specifically Scottish approach to marine environmental policy. Much is currently subsumed in UK wide policy statements, although the Scottish Executive is understood to be developing its own marine environmental strategy. One relevant document, *Natural Heritage Futures: Coasts and Seas* issued by SNH in 2002, offers a very broad brush statement covering all aspects of coastal and marine management but is lacking in substantive indicators of particular issues and solutions. It identifies two main thrusts of current policy: (i) the development of ICZM through voluntary partnerships like the Firths initiative, and (ii) the establishment of marine protected areas principally through SPAs, SACs and the development of local BAPs, but also alluding to the possibility that Scottish National Parks may include marine areas within their boundaries. *Coasts and Seas* is deliberately non-specific and non-controversial in style and strongly ‘voluntaristic’ in its approach, making little or no reference to new legislation or regulation. Moreover, it largely sets aside the economic and social aspects of environmental management, venturing no detailed comment on the significance of fishing for the sustainability of the characteristic (and highly valued) coastal fishing communities.

Following international and UK commitments to the conservation of biodiversity, the Scottish Biodiversity Forum (2003) has presented its proposals for a strategic approach to biodiversity conservation laying down what it claims to be ‘a clear 25 year vision for biodiversity in Scotland’ and setting out a broad 10-point agenda for action to help achieve its goals of raising awareness of the many benefits of biodiversity and halting biodiversity loss in Scotland. The strategy is perhaps most noteworthy for the emphasis it places on the need to make biodiversity play a more central role in the achievement of sustainable development and thus on the extrinsic value of biodiversity conservation in maintaining the livelihoods of many rural and coastal communities in Scotland. Supporting documents review the state of biodiversity resource and develop potential indicators for mapping progress towards the achievement of the strategy’s aims.

Summary

In summary, progress towards the development of an integrated strategy for the marine environment, the adoption of meaningful policies and their effective implementation at all relevant scales (Europe, UK, Scotland) has been disappointingly slow. In fairness, it has to be acknowledged that the constraints imposed by difficulties in determining ownership of marine resources and responsibility for their management, together with the fluid nature of spatial boundaries in the marine domain, are particularly severe. Policy makers nonetheless seem committed to the traditional approach of designating sites of conservation value, even though the management of such sites in the absence of clearly defined property rights can rarely be prescriptive and must rely very largely on the voluntary approach. Policy makers have not yet confronted – let alone solved – the issue of balancing environmental and socio-economic objectives. Despite an alleged commitment to the ecosystem based approach, little has so far been done to develop the concept in operational terms. As a consequence, integrated environmental policy remains essentially aspirational and conventional sectorally based policies remain in place making largely token gestures to the concept of environmental integration.

However, the recently established Scottish Sustainable Marine Environment initiative, sponsored by the Scottish Executive, is exploring the means of achieving sustainable development of Scotland’s inshore waters and their resources. It will examine the balance between economic, social and environmental objectives for sustainable development and the appropriate combination of site and non-site based approaches, including integrated coastal zone management (ICZM) and marine spatial planning. Its outcomes could provide the basis for a more fully integrated approach.

4.3 Fisheries management

Fisheries management is influenced by a number of international treaties and protocols operating at a global level (UNCLOS) and by decisions taken by regional commissions (North-East Atlantic Fisheries Commission; North Atlantic Salmon Conservation Organisation) principally in relation to high seas fisheries. However, the main driver of fisheries policy and management in European waters today is the Common Fisheries Policy (CFP) which applies throughout the 200 miles fishing zones of all EC member states. Through a derogation in respect of access rights for foreign fishing vessels in the 6 and 12nm zones, member states have certain rights and responsibilities to take additional measures for the conservation of fish stocks in their territorial waters.

The reformed CFP, as embodied in a series of Regulations taking effect from January 1st 2003 together with several Communications issued by the Commission in the years leading up to the reform, signals a profound change in the direction of future policy. However, much will depend on the detailed interpretation of the Regulations and on the implementation of decisions as to whether the rhetoric is translated into practice. On paper the new policy would appear to indicate a much more environmentally integrated approach, as the following statement makes clear:

‘... the Community shall apply the precautionary approach in taking measures designed to protect and conserve living aquatic resources, to provide for their sustainable exploitation and to minimise the impact of fishing activities on marine ecosystems. It shall aim at a progressive implementation of an ecosystem-based approach to fisheries management’ (COM Regulation 2371/2002, Ch 1 Art 2.1)

Much of the revised policy is directed towards the restoration of commercial fish stocks where these have been depleted through undue fishing effort and bringing to an end the condition of ‘sustainable overfishing’ which has characterised management in Europe (and elsewhere) over the past several decades.

The central pillar of the reformed CFP, *Regulation 2371/2002* is essentially a framework document defining the scope of the Policy, setting out the main directions and the broad instruments for their achievement. Key points include

- (a) the provision for a longer term approach to management through multi-annual recovery plans for stocks outside safe biological limits and multi-annual management plans for other stocks (Articles 5, 6);
- (b) the creation of time limited emergency powers for the Commission and individual member states to act where a serious threat to the conservation of the resource or to the ecosystem is posed by fishing (Articles 7,8);
- (c) the extension of powers for member states to adopt non-discriminatory conservation and management measures applying to all vessels fishing within their 12nm zone (Article 9);
- (d) changes in grant aid so as to end assistance for new vessel building by 2004 (Regulation 2369/2002) and to limit the scope for modernization grants for vessels over 5 years old (Article 11); and
- (e) the setting down of outline rules for the establishment of Regional Advisory Councils (Article 31).

The basic principles of the CFP remain unaltered in relation to non-discrimination and relative stability. Moreover, derogations concerning access to the 6 and 12nm zones remain in place subject to review in 2012, though the derogation establishing the Shetland Box is to be reviewed in 2003.

Complementing the basic Regulation are a series of future actions including an Action Plan to integrate environmental protection requirements into the CFP; a strategy for the sustainable development of European aquaculture; and further Action Plans (i) to counter the social, economic and regional consequences of restructuring the EC fishing industry, and (ii) to reduce discards. Unlike the Regulations, these actions will not have the force of law to ensure their implementation.

Several other documents, representing staging posts in the approach to environmental integration and in pursuance of the EC's *Biodiversity Strategy* (COM 1998, 42 final), were issued in the years leading up to the reform of the CFP². Principal among these was the *Communication on Elements of a Strategy for the Integration of Environmental Protection into the Common Fisheries Policy* (COM 2001, 143 final) which seems pivotal in shifting the balance of the Commission's thinking. The Commission is critical of the CFP's performance acknowledging that it

'has traditionally dealt with environmental matters in a reactive way, when they have become a major problem, rather than integrating environmental concerns into all management considerations in a proactive manner' (p5)

and portraying a change in attitude as a necessary first step. The adoption of an ecosystem based approach, the precautionary principle and the notions that preventative action needs to be taken, rectified at source and administered on the polluter pays principle are posited as the fundamental ingredients of effective environmental integration.

There have been no independent, strategic policy statements concerning fisheries management for the UK though the Prime Minister's Strategy Unit is scheduled to present a medium to long term strategy for the UK fishing industry by the end of 2003. Typically, in commenting on fisheries matters in broader policy contexts such as *Safeguarding Our Seas*, DEFRA has stuck religiously to the line of supporting the reform of the CFP.

For Scotland, SEERAD (2001) has produced a *Strategic Framework for the Scottish Fishing Industry* which sets out the aims and objectives for the successful economic operation of the Scottish industry in conjunction with the sustainability of the fish stocks. It reviews the broad context for the Scottish fishing industry in terms of its contribution to the rural economy; global markets; and maintaining a high quality marine environment. Although seeking implementation within three years, the *Strategic Framework* does not purport to be a detailed plan for the future development of the industry in Scotland. It draws on a number of key themes *viz.*

- (a) a sustainable resource base (combining quality scientific advice, improved gear selectivity and bringing regional influences and local knowledge to bear in creating more flexible management measures);
- (b) support for fishing communities through linkage to the small boat, inshore sector;
- (c) economic competitiveness in global markets;
- (d) a focus on quality, thus enhancing Scotland's reputation for high quality fisheries products; and
- (e) an inclusive approach to management, bringing industry representatives into the management process, building bridges between scientists and fishermen, and encouraging dialogue with environmental interests.

SEERAD also announced its intention to set up a strategic review of inshore fisheries in November 2002. A position paper sets out the aims, objectives, methodology and timetable, and expresses the need for a more strategic and proactive approach to replace the current process driven by periodic reviews of prohibitions under the *Inshore Fishing (Scotland) Act*,

² Communication on Fisheries Management and Nature Conservation: COM (1999) 363

Communication on Elements of a Strategy for the Integration of Environmental Protection Requirements into the CFP: COM (2001) 143 final

Communication on a Biodiversity Action Plan for Fisheries: COM (2001) 162 final

Biodiversity Action Plan for Fisheries: COM (2001) 164 Vol IV

Communication Setting out a Community Action Plan to integrate environmental protection requirements into the CFP: COM (2002) 186 final

1984. The review intends to assess existing legislative provisions with a view to making more efficient use of existing measures and of the resources available in the Fisheries Research Service (FRS) and the Scottish Fisheries Protection Agency (SFPA). What is perhaps striking about the review is that it is not frightened of the R(egulation) word and sees better management of inshore fisheries in terms of more effective use of legislation, thus cutting across the emphasis in other mainly environmental management documents on consensual, voluntary agreement rather than regulation.

Chapter 5

Environmental Integration

5.1 Introduction

From the analysis in the previous chapter, it seems reasonable to conclude that strategic thinking on marine environmental policy at both the European and UK/Scotland level has made relatively little headway and that the interpretation of environmental protection requirements is inconsistent and uncoordinated and their implementation is at best patchy. BAPs probably offer the clearest statement as to the key priorities for habitat and species protection in UK and Scottish waters and give a broad indication of the main lines of conservation action required, going beyond (but not leaving behind) the traditional designated site approach. However, as yet, the means of coordinating action between what should be, in many instances, a large number of relevant and responsible bodies – and the means and resources required to implement such action – remains largely undefined.

On the other hand, it does appear that at the European level, fisheries policy now demonstrates a willingness to embrace ideas of environmental integration. Although the concern for the marine environment is not new, the text of the CFP Framework Regulation (2371/2002) gives it much greater emphasis than hitherto. The connections between sustainable fisheries and maintaining a diverse, productive and well integrated ecosystem have long been recognised in theory but sometimes neglected in practice, partly because of a lack of scientific evidence as to the long term tolerance of the marine ecosystem to sustained abuse through overfishing and the cumulative effects of using certain types of fishing gear. Other reasons for the apparent neglect of marine environmental issues in relation to fishing include the fact that the necessary instruments are either lacking or ill adapted to the task of environmental protection. As a result, environmental integration in terms of fisheries policy remains theoretical and lacking in specificity as to what is required.

Thus we are left to ponder precisely what environmental integration entails, exactly how it is to be implemented and just what is the relationship between environmental integration and the ecosystem based approach. Are they simply expressions of the same basic ideal? We need to consider how marine environmental policy and the realigned CFP can complement each other in bringing about environmental protection in practical terms. On this last point, it seems reasonable to suggest that whereas the CFP can be expected to identify some generic problems and solutions, it will be left largely to environmental policy – and more precisely to marine nature conservation interests – to define the specific issues that merit particular attention.

In a policy statement on fisheries and the environment issued in 1997, SNH does precisely that, listing some eight specific policy issues in need of action: (i) the use of existing fisheries legislation to create permanent ‘no take zones’ and to protect marine biodiversity; (ii) industrial fishing for sandeels off Shetland and in the Minch and the introduction of local management measures to protect sensitive marine wildlife; (iii) the best practical policy for seal management to ensure their favourable conservation status whilst not compromising fishing interests; (iv) the basking shark fishery in the Clyde estuary; (v) the use of mechanical/suction dredges for cockle harvesting and the disturbance and loss of food supplies for resident and wintering bird populations; (vi) uncontrolled exploitation of new fisheries (whelks, sea urchins, etc.); (vii) deep-water fisheries; and (viii) recreational fishing and difficulties in controlling associated bait digging along the south west coast. At the time,

SNH's emphasis was more upon statutory regulation than partnership agreements and was viewed in some quarters as confrontational. More recent statements have tended to be less specific in defining an agenda for environmental integration and also seen as more conciliatory.

5.2 Priority actions

The latest Communication on environmental integration (COM 2002 186 final) outlining the basis of a Community Action Plan defines a number of 'priority actions'. These include:

- (a) a reduction in fishing pressure to sustainable levels in order to maintain or rebuild commercial fish stocks and to maintain or achieve favourable conservation status for non-commercial species and habitats;
- (b) an improvement in fishing methods so as to reduce the bycatch of juvenile fish, the incidental capture of non-target species, and the damage caused to marine habitats; and
- (c) improving understanding of marine ecosystems including the monitoring and assessment of commercial fish stocks, other organisms and habitats, and fishing behaviour.

To these we would add a further priority action (d) the improvement of fishing practice in sensitive areas (endangered and/or essential habitats or species) through a combination of controls over fishing intensity, fishing methods and the timing of fishing activities.

Whereas actions (a) and (b) can be accounted for mainly by means of 'global' policies to reduce fishing capacity and fishing effort and to refine the use of technical conservation measures promulgated through the CFP, action (d) the regulation of fishing practice in sensitive areas is likely to be the focus for environmental integration in inshore waters, with responsibility falling essentially on the coastal state. This may involve *inter alia*, the development of local management plans; restrictive licensing arrangements; special rules governing access, gear use, catch limits, etc.; the introduction of seasonal, permanent and emergency closures of fishing grounds; and the establishment of marine protected areas. It is worth noting that, in general, shellfish fisheries in Scotland – a major component of inshore fishing activity – are subject to much less formal regulation than are the demersal and pelagic fisheries.

One can also point to specific fishing activities where a greater level of national regulation is needed both to conserve stocks and minimise the risk of physical damage to the marine environment. In Scotland's inshore waters one such activity stands out: scallop dredging, though it is understood that a Statutory Instrument for the regulation of scallop fishing is to be introduced shortly. Box 5.1 addresses this issue from the perspective of environmental integration, outlining both the environmental concerns and the management options. It outlines the nature of environmental concerns as identified by Gubbay and Knapman (1999) and identifies a range of management options based largely on Hermse (2001) from which an appropriate package of measures can be put together. Certain of these measures are already in place in Scottish waters (e.g. licensing scheme).

5.3 An ecosystem based approach

The successful implementation of environmental integration at all levels goes hand in hand with the elaboration of an ecosystem based approach to fisheries management. A lack of detailed scientific knowledge and understanding of marine ecosystems and how they function is sometimes posited as a reason why at present fisheries management is unable to accommodate an ecosystem based approach. However, we tend to underestimate how much

we already know (or can reasonably infer) about marine ecosystems. Our knowledge will never be complete, but we know enough to be able to initiate appropriate actions. After all, the European Habitats Directive and the UK's Biodiversity Action Plans are both based on sound but incomplete science.

Developing an ecosystem based approach to fisheries management will enhance the effectiveness of environmental protection in the marine domain and may therefore be envisaged as a further 'priority action'. Progressive or incremental development of the approach will require (i) an increase in our understanding of the essential structures and functioning of marine ecosystems; (ii) an improvement in our knowledge of life cycle behaviours and interactions of key commercial and non-commercial species; and (iii) the translation of the enhanced knowledge and understanding into the improved management of commercial fisheries ('parametric management') and a more precise specification of the conservation needs of particular habitats and species.

While EC policy statements offer a somewhat narrow and heavily contextualized view of environmental integration in relation to the working of the CFP, the shift in emphasis towards an ecosystem based approach marks a spectacular advance – and one which has not yet been fully internalized by some of the marine conservation organisations or member state governments. Here there is a need to reassert that the important goal of 'conserving biodiversity' implies safeguarding the functional integrity of the ecosystem, that is maintaining its essential resilience and adaptability in face of both manmade and natural processes, and thereby guaranteeing its productivity. Protecting individual species and habitats may provide a means to this end, though it is not necessarily assured.

At present, therefore, integrated policy development and the ability to make significant progress towards marine nature conservation goals are constrained by a number of factors: (i) the persistence of a sectoral approach to environmental regulation; (ii) the continuing focus on single species (and particular habitats) in both fisheries and nature conservation management; and (iii) the concentration on site based approaches to the conservation of marine habitats and species among many environmental organisations. In the ecosystem based approach, on the other hand, 'the whole (i.e. sustainable marine ecosystems) is greater than the sum of its parts'.

5.4 Institutional reform

Environmental integration is not an 'elastoplast' protecting superficial damage to the environment. Instead, it implies a far reaching shift in the approach to fisheries management. The process of environmental integration needs to be systemic: it cannot be fully and effectively accomplished by simply tweaking existing management systems nor by reconciling environmental objectives with those pursued in other policy areas. It will require several fundamental changes to the institutional arrangements for fisheries management:

- A paradigm shift in 'knowledge management' i.e. research, assessment and policy advice, calling for a generational change in education and training to facilitate multi-disciplinary research and a broadening of scientific stock assessments to give further attention to the longer term impacts of policy decisions on both target and non-target species, their habitats and ecosystems;

Box 5.1: Scallop Fisheries

a. The fishery

Scallop fishing occurs widely in both inshore and offshore waters around Scotland's coasts. In 2000, with landings valued at c.£14 million, scallops are ranked fifth in importance behind *Nephrops*, haddock, cod and monkfish. Regionally, scallop fishing is of particular importance in south west Scotland (from Ayr to Mallaig and the Western Isles) but of less significance in the north west, the northern isles and along the east coast. Most of the activity is based on trips of upto three or four days absence though fishing usually takes place quite close to the home port; some new built vessels are designed to spend longer times at sea, ranging over much greater distances and verging on the concept of 'nomadic vessels'. Until quite recently the market for scallops has remained quite firm and the volume and value of landings has been relatively stable. Locally, however, the sector has been seriously affected by the closure of scallop fishing grounds due to the risk of shellfish poisoning (ASP).

b. Scallop fishing and the marine environment

All mobile gear which make contact with the seabed have the potential to damage the seabed and disturb the structure of benthic communities. By definition, those gears designed to penetrate the substrate (e.g. mechanical or hydraulic dredges for cockles, oysters, mussels, razor shells and scallops) are likely to do the greatest damage causing resuspension (plumes) and redeposition of sediments; significant reductions in the biomass of target and non-target species immediately following the fishing operation, which is likely to be more pronounced and with extended recovery times in areas of diverse community structures and stable conditions. In particular scallop dredging can cause grooving in the surface of gravels and the crushing and smothering of slow growing maerl and associated biota caught or damaged and destroyed; indirect effects may also result as exposed and damaged organisms become more vulnerable to predation. The extent of the environmental damage will depend on the nature of the substrate, the design and weight of the fishing gear and the intensity of the fishing activity. Scallop dredges are designed to penetrate sediments to depths of upto 20 or 30 mm but there are reports of the top 100 mm being disturbed. The speed of the dredges increases with the towing power of the vessel: 6 - 10 2' 6" dredges per side is now normal for commercial vessels and occasionally larger spreads of upto 20 dredges per side may be deployed by the larger scallopers. Even on rocky substrates (e.g. reefs), the use of spring loaded scallop dredges can cause physical damage to the habitat and destruction of softer, more fragile species. Chronic disturbance, resulting from repeated dredging, can lead to the transformation of the benthic community favouring colonisation by more opportunistic short lived species, while long lived fragile fauna (including soft corals, maerls, etc.) are severely depleted causing a loss of biodiversity at the community level.

The UK Biodiversity Action Plans have identified two broad habitat types and six Priority Action Plans where scallop dredging may pose a threat to their conservation status viz:

<u>Broad habitat types</u>	<u>Priority habitat Action Plans</u>	<u>Priority Species Action Plans</u>
<ul style="list-style-type: none"> ● Inshore sublittoral rock ● Inshore sublittoral sediments 	<ul style="list-style-type: none"> <i>Modiolus modiolus</i> beds Seagrass beds Maerl beds Serpulid reefs <i>Sabellaria spinulosa</i> reefs 	<ul style="list-style-type: none"> <i>Atrina fragilis</i>

Under the EC Habitats Directive 1992, a number of Special Areas of Conservation (SACs) have been identified in inshore areas where scallop fishing occurs. SAC management plans will need to address the threats posed by scallop dredging.

(continued)

Box 5.1 (continued)

c. The management of scallop fisheries

Management measures should be designed to (i) improve the sustainability of the stocks; (ii) optimise the economic returns to the fishermen; (iii) avoid conflict with other, mainly static gear, fishing activity in the same area; and (iv) avoid or minimise the risk of damage to the marine ecosystem and its essential habitats.

A range of management options is available and it is likely that an effective management scheme will combine several of the measures listed below:

A. Measures to increase size at first capture

1. *Increase Minimum Landing Size*

- this can be done nationally or regionally, with effect to inshore waters;
- problems of enforcement.

2. *Increase dredge selectivity (gear specification)*

- selectivity is highly variable depending on type of substrate, length and spacing of teeth and diameter of the dredge belly rings;
- increasing selectivity may reduce catches of Queen scallops (smaller in size than the scallop) either as targeted species or bycatch, making some offshore grounds uneconomic to fish and so increasing pressure on inshore grounds.

B. Measures to reduce fishing effort

3. *Closed seasons*

- effective in allowing density of scallops to increase on inshore grounds in summer months and in preventing disturbance during spawning, larval settlement and early juvenile phases; limited benefits for recovery of marine ecosystems;
- longer closed season in inshore waters might force some of the fishing effort offshore and discriminate against those with smaller classes of vessel and limited mobility.

4. *Limited entry licensing schemes*

- provides a firmer basis for management of scallop stocks, capping the number of vessels with scallop licences; regression in the number of licences will occur through natural wastage, decommissioning, etc.

5. *Limit on vessel size (or engine horsepower) within 6 nm limit*

- vessel length probably not a reliable indicator of fishing capacity but could exclude more nomadic elements from incursion into inshore waters.

6. *Spread of dredges (gear specification)*

- restriction on maximum aggregate width of dredge will also have some benefit re damage to the ecosystem (habitat damage, etc.).

7. *Length of fishing time*

- either limiting the length of the fishing day in inshore waters (e.g. 06.00 - 18.00) or introducing a weekend ban, permitting fishing only between 06.00 Mon. and 18.00 Fri.

8. *Total Allowable Catches and individual vessel quotas*

- problems of stock assessment, variability of recruitment etc. and enforcement.

C. Measures to avoid gear conflict/protect vulnerable habitats

9. *Closed areas*

- creating static gear reserves or No Take Zones;
- for purposes of environmental benefit, closed areas would have to be permanent or based on a long term rotational basis;
- closed areas would help in the recovery of scallop stocks (density, size and age structure) as well as other species in the benthic community.

Sources:

Scottish Fisheries Statistics 2000; Watson and Martin (2002); Gubbay and Knapman (1999); Hermse (2001)

- A shift in the burden of proof so that those who wish to prosecute new fisheries (i.e. fishing for new species, fishing for established species in new areas or using new types of gear) must first be able to demonstrate that there is no risk of environmental damage, and where – following rigorous risk assessments – decisions are taken to allow fishing activities which might exert potentially damaging impacts the ability to impose financial sanctions (taxes, resource rentals) on those involved;
- The introduction of market instruments, bringing together catching, processing and retailing sectors in the fish distribution system in planning coordinated marketing schemes to assist the sustainable development of fishing activities, which lay down *inter alia* explicit environmental requirements and reward participants through price premiums;
- The closer integration of the ways in which the present separate organizational structures for fisheries management and marine environmental management work, involving closer liaison within a single department (e.g. SEERAD), between different representative organizations (Scottish Fishermen’s Federation and WWF or RSPB), at different levels of organization (national, regional and local) and between the administration and the stakeholders;
- The provision of a legislative framework which gives meaning to the concept of environmental integration and facilitates the implementation of appropriate regulations so as to ensure that specific requirements for environmental protection are given statutory protection.

5.5 Conclusion

This report does not pretend to encompass all of these requirements: its brief is to focus on the last two – legislation and organizational structure. In Scotland – as elsewhere in Europe – progress towards environmental integration has been slow and hesitant, lacking perhaps a clear understanding of what is required. The task in the following chapters is to outline the current systems for fisheries and marine conservation management, to identify any weaknesses which might constrain the implementation of environmental integration and to bring forward any recommendations as to how the current systems might be improved.

Chapter 6

The Inshore Management System in Scotland

6.1 Introduction

Within the EC responsibility for inshore fisheries management rests largely, though not exclusively, with the member state. Following devolution in 1999, legal responsibility was vested in the Scottish Executive and Scottish Parliament, though previously the Scottish Office had *de facto* responsibility for fisheries within the 0-6 nm zone. In this chapter we aim simply to describe the basic characteristics of the current management system in Scotland - its legal basis, the organisational structures and the system of decision making - together with the main elements of environmental integration as they exist today. Evaluation of the system and an indication of its principal weaknesses is reserved until Chapter 7.

6.2 The legislative basis

All of the principal legislation relating to inshore fisheries in Scotland predates devolution and in some important areas is now some 35 years old. In other words, it predates not only the devolution settlement but also the establishment of the EC's leading role in fisheries policy, the formulation of the CFP and the emergence of what is now widely regarded as a crisis facing the Scottish fishing industry in general. Just as important in the context of the present report, the legislative framework was laid down long before the incorporation of environmental protection within mainstream fisheries policy became an issue. It would not be surprising therefore to find some degree of dislocation and dissonance between the acts governing inshore fishing and the more recent legislation referring to marine environmental conservation.

Table 6.1 sets out the main elements of the present legal framework affecting Scotland's inshore fisheries, distinguishing between core, contingent and peripheral legislation, while Table 6.2 describes the relationships between the new requirements for environmental integration and the core fisheries legislation. Although the following review deals only with the 'core' and 'contingent' elements, it is important to recognise that fisheries and marine conservation legislation form only a part of the total framework; any proposals for the reform of the present legislation through the development of a possible Inshore Waters (Scotland) Act, for example, would need to incorporate a large and growing body of maritime law.

6.3 Core legislation

There is only one piece of primary legislation dealing solely with Scotland's inshore fisheries: the *Inshore Fishing (Scotland) Act* 1984 which grants to the appropriate Minister powers to regulate seafishing in specified areas through orders which may prohibit "(a) all fishing for sea fish; (b) fishing for a specified description of sea fish; (c) fishing by a specified method; (d) fishing from a specified description of fishing boat ... (e) and specify the period during which any prohibition is to apply". Significantly, the original Act imposes no restrictions on the purpose of such prohibitions; it could therefore be used to control certain fishing activity for environmental reasons. It does, however, specify (i) the nature of the legal proceedings which can be taken in the event of contravention of the Act, together with the maximum penalty of £5000 and forfeiture of the catch and/or fishing gear; and (ii) the powers of sea fishing officers within what is now the Scottish Fisheries Protection Agency (SFPA) to board and where necessary detain any vessel thought to be fishing illegally in Scottish inshore waters.

The initial order, implementing the Act, the *Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order* was introduced in 1985 and has since been replaced by a new order in 1989 and supplementary orders in 1994, 1996, 1999 and 2001 under a system of periodic (nominally triennial) review of existing prohibitions and new proposals, though this is not specified within the Act itself. A new supplementary order is expected in 2003. At present there are some 40 prohibitions in force, mainly referring to relatively small areas of the coast and primarily to the banning of mobile gears in specified areas (see Appendix 2). It is worth emphasising that the provisions of the 1984 Act and its attendant orders are limited to negative actions (prohibitions), thus setting the context for a largely reactive form of inshore management (see 7.4 below).

A rather more controversial piece of legislation, at least in its application within Scotland, is the *Sea Fisheries (Shellfish) Act, 1967* which applies throughout Britain. Among its most important provisions are the granting of Several and Regulating Orders which enable the fishing rights in respect of an identified area of the sea to be assigned to an individual or company for the purpose of severing or regulating the public right to fish a molluscan shell fishery. The Act was amended in 1997 to allow for the inclusion of crustacea within the permitted range of shellfish and in 2000 to permit fishermen to use gear which did not interfere with any Several Order fishery in the relevant area.

Until quite recently there has been limited interest in the provision of the Act in Scotland, apart from the granting of a small number of several orders, each covering a few hectares of the inner parts of the coastal zone for the purpose of shellfish cultivation. Recently, however, there has been a surge of interest in Regulating Orders (ROs), which bestow upon the grantees a right of regulating a fishery for any description of shellfish and 'to carry into effect and enforce regulations and restrictions, levy tolls and royalties, deposit or propagate [shellfish]'. The major advantage of an RO is that it permits the grantee to issue licences 'in such numbers and to such persons for such periods ... and at such times, in such a manner and to such an extent as may be determined', thus enabling a limited form of effort limitation to be introduced. Although a RO allows for variation in the number of licences issued in any one season under scientific advice, the normal expectation is that a licence holder will have his licence renewed annually. As a result, effort regulation relies mainly on varying the opening and closing dates, for the fishery and restricting the number of days fishing per week both of which could be implemented through the 1984 Act, but would require new secondary legislation each time these restrictions were varied. Nonetheless, ROs are seen as an important - indeed a unique - means of comprehensive local management of shellfisheries.

To date only one RO has been granted - the Shetland Islands RO 1999 covering an area delimited by the 6 nm limits surrounding the islands together with Fair Isle and including a wide range of both crustacean (crab and lobster) and molluscan (cockles, scallops and whelks) species. Management of the RO is in the hands of the Shetlands Shellfish Management Organisation (SSMO), a limited company with directors drawn from local fishermen, councillors, SNH and the Shetland based North Atlantic Fisheries College (Noble, 2003). A further application has been submitted to the Scottish Executive for the Highlands region, again covering a wide range of species and a very extensive area of coastline and proposals for a board comprising a majority of fishermen, together with local authority councillors, an independent scientist and a representative of SNH. A decision on the

Table 6.1: Inshore Fisheries in Scotland: the Legislative Framework

Peripheral Legislation (regulating activities which may impact on fisheries and the marine environment)	
<p>Coastal development</p> <ul style="list-style-type: none"> ● <i>Town and Country Planning (Scotland) Act, 1997</i> <p>Coastal protection</p> <ul style="list-style-type: none"> ● <i>Flood Protection (Scotland) Act, 1961</i> <p>Shipping</p> <ul style="list-style-type: none"> ● <i>Merchant Shipping Act, 1995</i> ● <i>Merchant Shipping and Maritime Security Act, 1997</i> <p>Marine Aggregates</p> <ul style="list-style-type: none"> ● <i>Coast Protection Act, 1949</i> <p>Hydrocarbons</p> <ul style="list-style-type: none"> ● <i>Petroleum Act, 1998</i> <p>Dumping at sea</p> <ul style="list-style-type: none"> ● <i>Food and Environment Protection Act, 1985</i> <p>Oil pollution</p> <ul style="list-style-type: none"> ● <i>Prevention of Oil Pollution Act, 1971</i> 	<p>Contingent Legislation</p> <ul style="list-style-type: none"> ● <i>Sea Fisheries (Conservation) Act, 1967</i> ● <i>Sea Fisheries (Wildlife Conservation) Act, 1992</i> ● <i>Environment Act, 1995</i> ● <i>National Parks (Scotland) Act, 2000</i> ● <i>Water Environment and Services Act, 2003</i> <p>Forthcoming:</p> <ul style="list-style-type: none"> ● <i>Nature Conservation (Scotland) Act</i> <p>Possible:</p> <ul style="list-style-type: none"> ● <i>Inshore Waters (Scotland) Act</i>
	<p>Core Legislation</p> <ul style="list-style-type: none"> ● <i>Inshore Fisheries (Scotland) Act, 1984</i> ● <i>Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order, 1989</i> ● <i>Sea Fisheries (Shellfish) Act, 1967</i> ● <i>Salmon Act, 1986</i>

Table 6.2: Environmental integration and the legislative framework

Priority Actions	Means of defining areas/species in need of <i>in situ</i> conservation	Enabling legislation	Consequential fisheries legislation
<p>(EC Environmental Integration Action Plan)</p> <p>(a) To reduce fishing pressure to sustainable levels, to maintain or rebuild fish stocks and to maintain or achieve favourable conservation status for non-commercial species and habitats</p> <p>(b) To improve fishing methods so as to reduce bycatch of juvenile fish, incidental capture or non-target species and damage to marine habitats</p> <p>(c) To improve fishing practice in sensitive areas (endangered and/or essential habitats)</p>	<p>European initiatives:</p> <ul style="list-style-type: none"> ● Birds Directive, 1979 establishing SPAs where area supports significant numbers of wild birds and/or habitats necessary for aspects of bird's life cycle ● Habitats Directive, 1992 establishing SACs where a site supports certain rare, endangered or vulnerable plants or animals or outstanding examples of habitats characteristic of the region <p>UK initiatives:</p> <ul style="list-style-type: none"> ● Marine Nature Reserves none in Scottish waters and no future designations likely ● Biodiversity Action Plans integrated conservation action, involving <i>in situ</i> and <i>ex situ</i> measures, for habitats and species in need of protection for reasons of international obligation, rarity, risk or marine habitats which are functionally critical or host a characteristic community <p>Scottish initiative:</p> <ul style="list-style-type: none"> ● Marine National Parks 	<ul style="list-style-type: none"> ● Conservation (Natural Habitats etc.) Regulations, 1994 ● Wildlife and Countryside Act, 1981 (also establishes Nature Conservation Orders) ● Various ● National Parks (Scotland) Act, 2000 	<ul style="list-style-type: none"> ● Inshore Fisheries (Scotland) Act, 1984 powers to regulate fishing activity within 6nm limits for fisheries and (post Environment Act, 1995) environment purposes, principally via ● Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order, 1989 as amended in 1994, 1996 and 1999.

Highlands application is expected later this year. Several other proposals are in the pipeline but at very different stages of development; these include Orkney (scallops), the Western Isles (cockles and razor clams) and the Solway Firth (cockles).

Brief reference must be made to the existing legislation relating to the salmon fisheries and particularly to the *Salmon Act*, 1980 which lays down the basis for their management in both inland and marine waters. Despite the continuing but very limited opportunity for licensed salmon fisheries in Scotland's inshore waters, capture fisheries for salmon are now reduced to very low, almost negligible, levels. Some minor interactions with inshore fisheries and with marine nature conservation do occur: for example, the 'incidental capture' of migrating salmon in the driftnet fishery for mullet, the broader issue of poaching and predation on salmon by seals. It was also noted that SFPA is still required to act in the enforcement of salmon fisheries legislation. Nonetheless, as a consequence of the very minor role played by marine salmon fisheries today it was decided* that the report would exclude further reference to these fisheries except to point out that salmon fisheries legislation will need to be included in any recommendations for a major amendment to inshore waters legislation.

Finally, it is anticipated that a further piece of inshore fisheries legislation will need to be put in place later this year to fill what is a crucial gap in the existing arrangements for inshore management, namely a Statutory Instrument (SI) to implement a national Shellfish Licensing Scheme, first mooted in the mid 1990s. The extent to which this scheme will impact on shellfish management in Scotland, allow for regional variation in the application and how it will interact with licensing provisions under ROs will depend upon the final detailed proposals.

6.4 Contingent legislation

Any review of fisheries legislation must pay attention to what we have termed 'contingent legislation' (see Tables 6.1 and 6.2), that is any Acts or Statutory Instruments which though not dealing directly with Scottish inshore fisheries may have an important bearing on how existing fisheries legislation is interpreted and, therefore, on how fishing activities may be regulated both now and in the future. This, of course, has very real relevance to the issue of environmental integration. As the EC inspired momentum for environmental legislation unfolds, it becomes increasingly likely that inshore fisheries management will have to deal with new and possibly unexpected pressures for regulatory action. In almost all foreseeable cases, this will be channelled through the application of powers granted through primary fisheries legislation.

Already, the responsibilities and powers of those responsible for inshore fisheries have been altered by the *Sea Fisheries (Wildlife Conservation) Act* 1992 requiring the Minister (and others) 'to have regard to the conservation of marine fauna and flora' in discharging their normal functions. More importantly, the *Environment Act* 1995 - through amendments to the 1984 Inshore Act - enables the Minister to make orders under the Act for 'environmental purposes', that is for '... the conservation of flora and fauna, which are dependent on, or associated with, a marine or coastal ... environment'. There is, to date, only limited evidence that the Inshore Act is being used for this new purpose.

* at a project steering committee meeting, 4th April 2003

Probably the most important piece of contingent legislation in terms of its impact on inshore fisheries and their management is the *Conservation (Natural Habitats etc.) Regulation* 1994 which transposes the EC's Habitats Directive into UK law and so enables the establishment of SACs (see 4.2 above and 6.4 below). Of possible future influence is the recent *National Parks (Scotland) Act*, 2000 which makes provision *inter alia* for the creation of marine National Parks. As far as future legislation is concerned the present *Nature Conservation (Scotland) Bill*, which is intended to transform and replace the *Wildlife and Countryside Act* 1981 in relation to conservation management, is unlikely to exert any immediate effect on inshore waters as its terms of reference are confined to the terrestrial environment. However, it is possible that the recommendations of the group appointed to take forward the Sustainable Scottish Marine Environment initiative and due to make its initial report in summer 2003, may give rise to substantial amendments to any future Nature Conservation (Scotland) Act in respect of conservation management in Scotland's marine environment.

Potentially, one of the biggest future challenges could arise from the implementation of the EC's Water Framework Directive part of which has already been transposed into Scottish law through the *Water Environment and Water Services (Scotland) Act* 2003, establishing new management structures. The Directive requires Member States to divide their national territories into river basin districts (RBDs). In the case of Scotland, SEPA has taken the decision to have a single RBD covering all Scottish waters, except for those which form parts of catchments straddling the border with England, and to extend the geographical definition of the RBD to enclose an area of inshore waters out to 3 nm from the baseline. However, each RBD will be further subdivided into several hundred 'water bodies' as the basis for detailed analysis and action.

The aim of the Directive is to achieve 'good ecological status' for all waters by 2015 with monitoring commencing in 2006 and management plans in place by 2009. What seems likely to happen in respect of the inshore zone is the setting of new environmental standards, monitoring of the environmental qualities of the sea bed and renewed concern for the indirect impacts of certain fishing activities on the marine environment. Although it is not the intention of the Directive to extend its scope to cover the regulation of sea fisheries - as this would bring the Directive into conflict with the CFP - it seems inevitable that where failure to attain 'good ecological status' in coastal waters can be attributed to specific fishing practices which interfere with the physical condition of the environment, there will be pressure on existing responsible bodies to intervene to manage fishing activity accordingly. All this is likely to be several years down the line, but it serves to illustrate how future environmental legislation may interact with inshore fisheries management.

6.5 The organisation of inshore fisheries management

The Scottish Executive

Within Scotland responsibility for inshore fisheries management remains firmly located at the centre, that is with the Scottish Executive. To date there have been no moves to decentralise or devolve key management tasks - with the single exception of the granting of a RO in Shetland - and, with the possible exception of further ROs, there are no immediate plans to alter the situation. Thus the Scottish Executive Environmental and Rural Affairs Department (SEERAD) has virtually exclusive control over the regulation of inshore fisheries. As its title implies, SEERAD is a composite department dealing with four closely related policy areas - agriculture, fisheries, rural development and the environment - and for administrative purposes is divided into four main divisions (see Fig. 6.1). With the growing importance

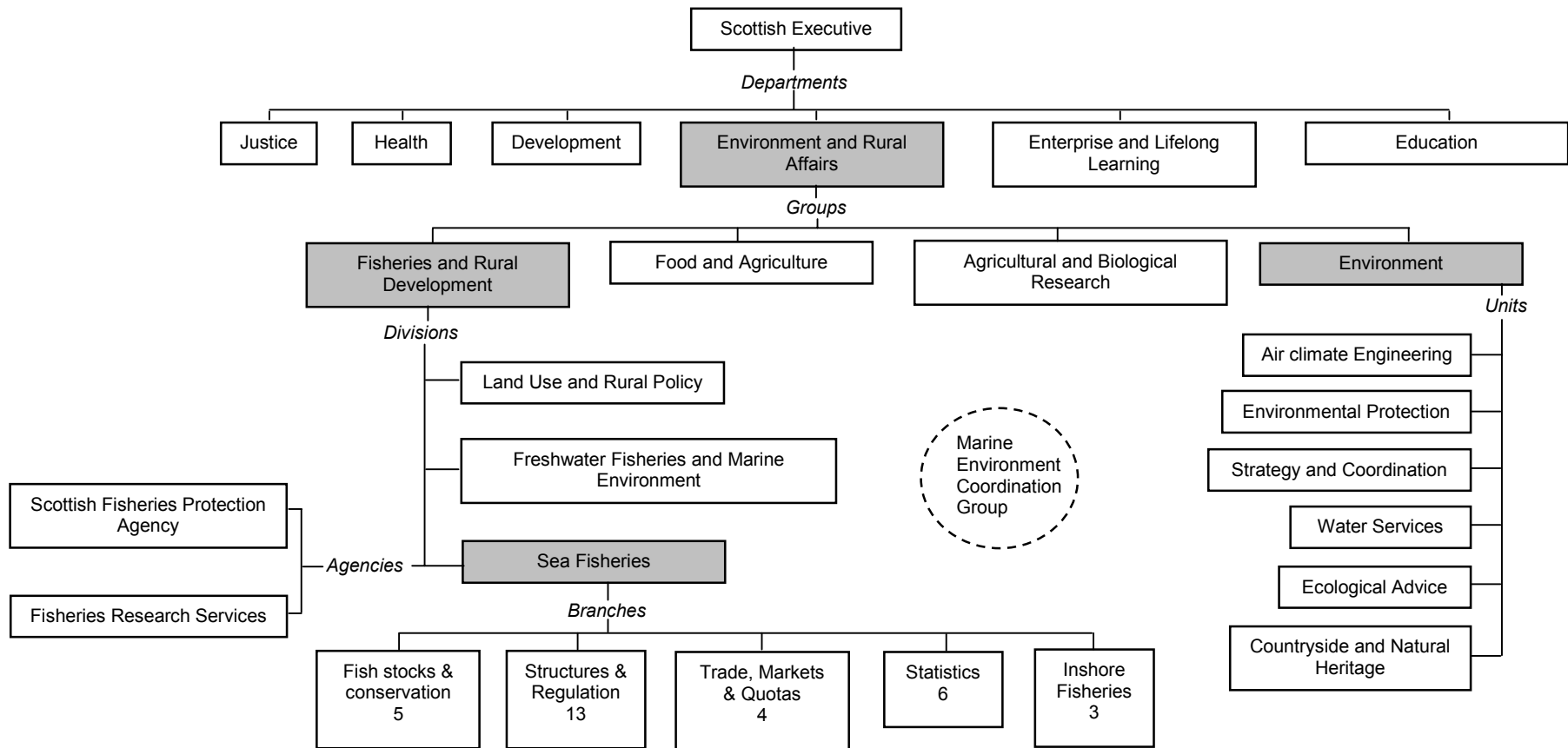


Fig. 6.1 Administration of Fisheries and the Environment

attached to environmental protection as a cross-cutting influence over several policy areas, it is to be expected that the Environment Group within SEERAD would play a strong coordinating role.

Such is the complexity of modern governance, however, and so labyrinthine the structures of contemporary government that the interconnections between cognate policy areas are not always easy to trace on the ground. Apparent disconnections are sometimes more easy to recognise as, for example, the separation of the Marine Environment Protection Team - until recently located within Fisheries and Rural Development - from the Environment Group. Internal structures within government and the administration are constantly changing in the search for more 'joined up' policy making (or integration). Such is the logic behind the recent review of marine environmental responsibilities within the Executive, leading to the formation of an Executive wide Marine Environment Coordination Group, bringing together various teams working on specific policy issues in relation to the marine environment, In particular the creation of a Marine Environment Protection Team within the Environment Group to replace the functions previously discharged from within the Fisheries and Rural Development Group could provide the much needed cross-departmental thinking on marine issues providing it can lay claim to sufficient seniority, influence and resources. Whether this will, in effect, facilitate greater environmental integration within fisheries management remains to be seen.

Following devolution, the discrete nature and growing importance of inshore fishers in Scotland was recognised through two significant administrative developments. First, a separate unit was established within the Sea Fisheries Division of SEERAD to handle inshore fisheries matters: the *Inshore Fisheries Branch* (IFB) was to oversee the workings of the Inshore Act 1984 and the Sea Fisheries (Shellfish) Act 1967, manage the review process associated with the Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order and shape future policy for the inshore sector. It is, however, doubtful whether the staffing of the IFB (two civil servants and two shared administrative assistants) truly reflects the status of the inshore sector or the expanding workload relating to its management.

Scottish Inshore Fisheries Advisory Group

A second development was the decision in 1999 to set up a largely independent group to advise the Scottish Executive on inshore fisheries: the Scottish Inshore Fisheries Advisory Group (SIFAG), whose terms of reference are "[As] part of the overall process of determining and applying policy and legislation relating to sea fishing in inshore waters, to advise Scottish Ministers through SEERAD, on the development of proposals and their implementation". In a recent Memorandum of Understanding between SEERAD and SFF (2002), SEERAD agreed "to involve SIFAG in the development and review of all policy and legislation, whether domestic, UK, European or international, relating wholly or in part to inshore waters". Thus SIFAG occupies a potentially influential role in shaping fisheries policy in Scotland.

The Memorandum also sets out the basis for industry membership of SIFAG. Of the ten seats reserved for the fishing industry, eight are to be allocated 'to fishermen's associations or other representative organisations as shall be nominated from time to time by SFF. SFF shall be bound to ensure that its nominations reflect geographical and sectoral interests across the industry ...' The remaining two seats shall be allocated to 'representative catching sector organisations not in membership of SFF, the substantial part of which operate on the east and west coasts of Scotland respectively'. At present three associations outwith membership of

SFF have representation on SIFAG. Chairmanship of the group meeting on a quarterly, basis, now alternates between the Fisheries Secretary - the senior civil servant with responsibility for overseeing fisheries administration - and the Chief Executive of SFF. Thus, SFF is in a position to exert a controlling influence over SIFAG, though in practice each inshore association represented on the group will advance its own independent views. Currently, non-industry members of SIFAG include representatives of SNH, RSPB Scotland (for Scottish Environment LINK), the Sea Fish Industry Authority, Highlands and Islands Enterprise, the Convention of Scottish Local Authorities (COSLA) and the two Agencies of SEERAD, the Fisheries Research Services and the Scottish Fisheries Protection Agency. Several of these organisations lie outside the Memorandum of Understanding's definition of membership. The last two Agencies also play important roles in management of inshore fisheries.

Fisheries Research Service

The Fisheries Research Service's (FRS) basic responsibility is to advise SEERAD on all scientific matters relating to sea fisheries in Scottish waters. In relation to inshore fisheries its main tasks are to provide routine assessment on specific shellfish stocks (notably *Nephrops*, scallops, lobsters, crabs and bivalve species) and advice on their management; *ad hoc* information and advice on other inshore fishing matters to both government and other bodies, including those concerned with RO and SAC management; and scientific evaluation of proposals for regulation submitted under the triennial review process. The research agenda for FRS is set largely by SEERAD as its principal customer, including annual monitoring and assessment, short term research projects into particular species, stocks or issues; it also includes contract research undertaken for 'private' clients (e.g. razor clams on behalf of the Western Isles Council and the substantial baseline stock assessment report prepared in connection with Highland RO) or as part of EC funded projects. Partly as a consequence of the expanding interest in local management initiatives where scientific assessments form an integral part of the proposals, the involvement of FRS in inshore fisheries has grown quite rapidly in recent years. Because several of these projects require a balancing of evidence between the fishing and environmental interests, FRS frequently finds itself as 'piggy in the middle'.

Scottish Fisheries Protection Agency

Responsibility for the enforcement of European, UK and domestic regulations within all Scottish waters rests with the Scottish Fisheries Protection Agency (SFPA) which has at its disposal four fisheries protection vessels - of which one is dedicated to inshore work and a second divides its commitments on a 2:1 basis in favour of inshore protection - and two Cessna aircraft, together with shore based fisheries officers distributed among some 18 district offices around the coast. The Agency sees its remit as having the dual function of enforcement and providing advice to fishermen in relation to vessel registration, licence transfers, interpretation of regulations etc, but not with regard to regulations developed under a RO. This may be about to change as a result of the coalition parties' Partnership for Scotland agreement to re-examine the issue of enforcement powers in relation to ROs. Otherwise, in inshore waters, the Agency's principal tasks refer to the provisions of the Inshore Act and specific prohibitions under the associated Order.

Although inshore waters form a highly complex geographical environment in which to operate, the role of SFPA is undoubtedly assisted in its task by a considerable level of informal policing through peer pressure to comply with regulations introduced for the benefit of the local fishing community as a whole. In specific instances, however, district officers

may be called upon to mediate informally in disputes between different gear groups. SFPA's increasing workload, as a function of the growing number of prohibition orders, has not been matched by a proportional increase in resources. Questions arise as to the deterrence value of present arrangements in which (a) the intricate geography of Scotland's coastline reduces the chance of detection and detention; (b) the complexity of certain technical conservation measures may make it difficult to present incontrovertible evidence of an infraction; and (c) the level of sanctions meted out in the sheriff's courts often bear little relationship to the severity of the infraction.

6.6 The organisation roles in the implementation of legislation

All four organisations - SEERAD, SIFAG, FRS and SFPA - are directly involved in the triennial review process. Initiating this process is a letter from SEERAD addressed principally to fishermen's associations and relevant local authorities, and also to a number of individuals, inviting them to submit any new proposals for consideration under the Inshore Fishing Scotland Act 1984. After the submission date has lapsed, the proposals are put out to expert consultation internally within SEERAD and externally to organisations like FRS, SFPA and SNH, before calling on SIFAG for its comments. Essentially three criteria will define the chances of a proposal's acceptance: its soundness on scientific grounds (FRS), its enforceability in terms of the ease of interpretation and collection of evidence (SFPA), and its lack of contentiousness in relation to the range of fishing interests in the area affected (SIFAG). As usually only one failure is sufficient to halt the progress of a particular initiative, it is quite likely that several proposals will fall at the consultation phase. SEERAD's recommendations, together with SIFAG's responses, are finally submitted to the Minister for approval. At best the whole process will take up to eighteen months to complete and sometimes a good deal longer.

In the case of applications for ROs, although the final decision making procedure is considerably simpler involving only consultations within the Executive, the length of time which elapses between the initial idea and its adoption is likely to be much greater. The framing of the Shetland Order was begun in 1995 and approval finally given in 1999 (Noble, 2003). Much of the time is taken up in local negotiations and, in the case of the draft Highlands Order undertaking detailed stock assessments, developing the management and business plans etc. In addition where there are outstanding objections to a draft Order which cannot be dismissed as 'frivolous' the legislation indicates that a Public Inquiry should be established.

6.7 The organisation of marine environmental management

With no statutory Marine Nature Reserve in Scottish waters, site based marine nature conservation in Scotland currently relies on two European initiatives - the Birds and Habitats Directives - to provide the impetus for action. At present there are some 35 candidate and proposed Special Areas of Conservation (SACs) in Scottish inshore waters (see Table 3.1) at different stages of development in terms of their management, together with a number of Special Protection Areas (SPAs) covering intertidal areas. Apart from designation of such sites, it is the legal responsibility of the member states to ensure that 'favourable condition' of the site is maintained, where necessary by the introduction of appropriate legislation. Within Scotland responsibility for the designation of marine SACs and SPAs falls to SEERAD with the statutory agency, SNH, providing appropriate scientific advice on site selection and conservation requirements. As no separate legal instruments are available specifically to deal with *in situ* habitat and species protection, this means that existing legislation, for example the Inshore Fishing (Scotland) Act, would be used for this purpose.

Developing a management scheme for an SAC is not a specified requirement under the Habitats Directive nor does the management scheme constitute a statutory instrument. But in most instances it is likely to provide the basis for management action and assist the agencies in fulfilling their statutory responsibilities to ensure that favourable condition is maintained. It requires the bringing together of several diverse and potentially conflicting interests, sensitive handling of key issues to remove possible misconceptions and suspicion as to the motives and possible outcomes, and the development of an enduring sense of partnership through direct involvement in strategy building and a shared ownership of the decisions. So far this challenge has met with varying levels of success. In some cases partnership building was inhibited by the exclusion of the fishing industry from consultations over the initial site selections which were made on scientific grounds. Subsequently, there was a genuine attempt to bring the fishing industry as fully as possible into the consultation process. But in some instances, progress has been disrupted by decisions made at the insistence of the EC, following the so called moderation process, to add new conservation features to the schedule of individual SACs and so necessitate a further round of negotiations.

The *Sound of Arisaig SAC* is widely acknowledged as an outstanding example of good practice in terms of the development of its management scheme. The SAC covers a relatively small area (4577 ha), incorporating the outer parts of Lochs Ailort and Moidart, most of Loch Ceann Traigh and the adjoining coastal waters, in which a single feature of interest - sandbanks, in this instance partly made up of maerl, slightly covered by seawater at all times - forms the prime focus for conservation action.

Its management strategy, published in 2000, was put together by a management forum comprising not only the 'relevant authorities' but also representatives of the local community and the major stakeholders, with the Highland Council acting as the lead authority. Based on scientific assessments of the site characteristics and an evaluation of the current economic activities within the designated area, the strategy aims to balance conservation objectives (maintaining the natural environment and ecological processes and the extent, diversity and species richness of the sandbanks and their associated communities, notably the sub-tidal maerl beds) with the need to maintain and develop the economic and social integrity of the area. There is a presumption in favour of sustainable use of resources, the promotion and development of local businesses which can benefit from SAC designation and agreement between local stakeholders and the statutory authorities to work together in implementing the management strategy). A total of 14 activities in the area have been assessed in terms of the risks they pose to maintaining a 'favourable condition' and the strategy provides a fairly clear cut set of actions required to ensure that 'favourable condition' is maintained (Anon, 2000. In the case of fishing, the assessment and proposed actions are summarised in Box 6.1.

Success in formulating the management strategy has been achieved through a voluntary agreement based on a concept of local integrity guaranteed through the breadth of membership of the management forum. While the 'relevant authorities' have no option but to adopt the strategy because of their statutory obligations, it remains a voluntary agreement in the eyes of the local stakeholders. Significantly, the fishing industry is opposed to its 'confirmation' through statutory regulation as this would threaten the spirit and integrity of the voluntary process. They recognise, however, that if the agreement fails, it will be necessary to formalise key elements of the strategy in legislative action.

Box 6.1: The Sound of Arisaig SAC : Management Strategy : Proposed Actions		
Activity	Assessment	Action
Creel fishing for <i>Nephrops</i> , velvet crab)	A well established fishery; maerl is sensitive to damage from intensive creeling but not thought to pose any risk at current levels of effort	No management action required from statutory authorities of voluntary agreement.
Shellfish harvesting by diving (scallops; razorfish)	Well established within SAC with most harvesting occurring at less than 35 m depth; features of interest not thought at risk.	Encourage commercial divers to help build a database to assist monitoring.
Suction/hydraulic dredging (scallops)	Has occurred in past though only to a limited extent; causes significant disturbance of seated sediments and likely to damage or destroy features of interest (maerl beds) in sea lochs.	No activity permitted in waters less than 20m, together with a buffer zone from 20-35m to avoid smothering features of interest by suspended sediments.
Benthic dredging (scallops)	Little if any dredging occurs in less than 20 m or in highly sensitive sea loch locations; maerl is easily damaged by scallop dredges and is slow to recover.	
Benthic trawling (<i>Nephrops</i>)	No trawling is thought to occur in highly sensitive sea loch areas; well established in waters deeper than 30 m; maerl beds susceptible to damage from <i>Nephrops</i> trawls.	
Finfish farming	Salmon farming well established in parts of SAC; maerl may be damaged though effects of finfish farming, though tend to be localised and mainly associated with water quality and effects of cage mooring.	Farms to be assessed when consents to discharge or site lease renewals are applied for; base line surveys to be developed by SNH with SEPA.
Shellfish farming	Several leases granted for shellfish farming within designated area (some remain undeveloped) intensive activity can affect features of interest though smothering of seabed.	Continued use of existing leases is acceptable and some new activity may be possible. Authorities to review leases when applications are made for renewal.

6.8 Voluntary management schemes

The voluntary approach has for many years been the preferred route for resolving local management issues in Scotland. It was strongly endorsed in the 1990s in a Scottish Office discussion paper on *Scotland's Coasts* (1996) and again at the start of the 21st century, in a similar context, in SNH's *Natural Heritage Futures : Coasts and Seas* (2002). It is an inevitable outgrowth of the reactive management style hitherto adopted in relation to inshore fisheries and the consequent dependence on locally generated proposals to act as a catalyst for action. Indeed, prior voluntary agreement at the local level becomes a prerequisite for any successful application for statutory action, whether it be for a new prohibition order or a RO. Voluntary agreements should lie at the heart of SAC management plans whether or not they are subsequently confirmed through regulation. But the strength of such agreements also lies in the natural reluctance on the part of local fishermen to resort to statutory regulation as a first option to resolve conflicts or enforce discipline on the fishing community.

Two somewhat different examples of good practice can be cited. In the first example - the *Shetland sandeel fishery* - voluntary agreement arises from the failure of a bureaucratic 3-year management plan imposed on the fishery by the Scottish Office which 'satisfied neither the environment lobby nor the fishermen' (Dunn and Goodlad, 2000). The problem arose following the reopening of the sandeel fishery in 1995. The summer season fishery (April-September) takes place close inshore in the vicinity of some of the islands' major seabird colonies at a time of year when sandeels form the principal source of food for the breeding

seabirds. Previously in the 1980s, at a time of falling catch levels, population declines in arctic terns, kittiwakes and puffins had been noted. With the phasing out of the unsuccessful Scottish Office management plan, discussions were started in 1998 involving the RSPB, SNH and the Shetland fishermen with the aim of developing a consensus based local management scheme. Agreement was reached on a 7000 t quota (subject to annual review) to be fished only by boats under 20 m with a mid-season closure (June-July) to coincide with the period when seabirds were feeding their young on the nest. The local Producers' Organisation undertook to oversee implementation of the scheme. Described as 'the first UK example of a proactive, wildlife sensitive fisheries regime', the scheme had succeeded in finding a locally agreed solution based on mutual recognition and acceptance of the different interests of fishermen and conservationists (Dunn and Goodlad, 2000).

By contrast, the second example - the *Loch Torridon* initiative - arises initially from the solution to a long standing dispute between mobile and static gear fishermen, which eventually paves the way for the implementation of an environmentally sustainable management plan for the local *Nephrops* fishery. Loch Torridon had faced a long history of abortive attempts to resolve a conflict which had followed the rescinding of the general ban on mobile gears within the old 3-mile limits. It was brought to a successful conclusion through the personal intervention of the secretaries of the two local associations - Highlands and Islands, representing the creel fishermen's interests, and Mallaig and North West, representing the trawlermen - who met 'to draw lines on the map' and so designate creel only, trawl only and mixed gear fishing zones, readily accepted by the local fishermen and endorsed by SEERAD in an order signed in 2001 which guaranteed the agreement a lifetime of at least five years.

Box 6.2: The Loch Torridon Management Plan : Conservation Code

All boats fishing in the creel only area are requested to follow the guidelines below

1. Maximum of 2 x 800 prawn creels for 2 or more man boats
2. Maximum of 2 x 400 prawn creels for 1 man boat
3. Maximum of 2 x 400 or 2 x 200 crab/lobster pots for 2 or 1 man boats
4. Escape gaps/panels to be fitted to all prawn creels by end June 2003.
5. Maximum number of days fished (creels hauled) per year to be 200
6. All berried prawns to be returned to the sea
7. Only 2 sets of gear to be fished (2 x prawn or 2 x crab or 1 x prawn plus 1 x crab at a time
8. Only 1 set of gear to be hauled each day.

The second phase of the Torridon initiative was the development of a management plan for the creel only fishing area linked to accreditation by the Marine Stewardship Council in January 2003 through its Environmental Award for Sustainable Fisheries. The accreditation laid down four conditions: (i) to establish management objectives and performance indicators; (ii) to finalise the management plan by October 2003; (iii) to set up a management group to oversee the management plan; and (iv) to prepare contracts between the management group and all participating fishermen. The Torridon initiative had already developed a code of conduct (see Box 6.2) for the conservation of local *Nephrops* stocks which will be built into the management plan and form the basis of the contract between the fishermen and the management group. In effect, the scheme is largely supervised by

Shieldaig Exports, a company set up in 1996 to market the local creel fishermen's catches in live conditions to the Barcelona market. The economic benefits of the initiative can be summarised in the fact that it has secured the future - at least in the short term - for 14-16 creel boats fishing all year round and the employment of some three full time and five part time employees in Shieldaig Exports. Though a 'drop in the ocean' nationally, this is of considerable significance to the communities bordering Loch Torridon.

6.9 Conclusions

The turn of the century may be seen to mark a time of significant change for the management of inshore waters in Scotland. Devolution creates the opportunity to invest time, energy and thought into developing a distinctive approach to inshore fisheries management. The imperative of 'environmental integration' can provide a catalyst for change; so too can the confusions surrounding the role of ROs in establishing a regional framework for shellfish management. However, to overcome the inertia built into the present reactive approach to management will need concerted action and strong political will on the part of the fishing industry, administration and Scottish parliament. There are, moreover, a number of constraining features which characterise the present institutional framework, which require urgent attention. These are identified in the following chapter.

Chapter 7: Institutional Barriers to Integrated Management

7.1 Introduction

Despite the progress made in recent years and the undoubted commitment of most, if not all, of the leading actors to develop more effective systems of inshore fisheries management at both national and local levels, there are several constraints built into the present system which are likely to inhibit prospects of taking things beyond the scope of fisheries management *per se* and into the deeper and uncharted waters of integrated management. Integrated management has come to mean many different things. In the particular context of fisheries management its meaning can vary from the one extreme of holistic management which seeks to balance a wide range of objectives (see, for example, Box 8.2) to the much simpler concept of ensuring the integration of environmental protection requirements in the development of fisheries management. It is in this latter, more modest sense that we use the term here.

All of these constraints relate to particular aspects of the 'institutional framework' - a phrase which in its simplest terms refers to 'the way we do things' and includes, *inter alia*, the legal basis, organisational structures and the interactions between different groups, the input of science and other forms of knowledge, the underlying political philosophies which direct policy... In a sense, none of the existing elements which make up the institutional framework is ideally suited to the purpose of an integrated management system for inshore fisheries - nor ever likely to be. In the real world, things are certain to be at least slightly out of kilter: management systems will normally be struggling to catch up with the latest developments in science and technology; the reform of some organisations will tend to lag behind others; there will always be arguments as to the best ways to handle given situations. As perfection is, therefore, an unattainable state, the questions that need to be answered include: is the present 'way of doing things' sufficiently robust and flexible to cope effectively not only with the demands of the present but also with the challenges of the future? or are there fundamental areas where change is urgently needed in order to meet those challenges with greater confidence? and what precisely are the costs and benefits of 'doing things' differently?

In this chapter we attempt to expose what we believe are the main weaknesses in the present system. We were confronted in our discussions with the fishing industry and the conservation interests with a good deal of unanimity on particular aspects but also with a great diversity of opinions on others - the latter making for some difficulty in reaching a balanced perspective³. It is perhaps worth recalling that the present system of inshore fisheries management, is in fact, comparatively new - though the legislation through which it operates is a good deal older - and in a state of flux, as should be clear from the previous chapter. All of the major actors involved are on a steep learning curve and having to undergo a process of adjustment as the system settles in and as new objectives for inshore fisheries management emerge. We are, therefore, looking at a management system in transition.

In identifying the barriers to effective integrated management (Chapter 7) and in outlining any possible solutions (Chapter 8) or making recommendations for specific action (Chapter 9), great care needs to be taken to understand the complex and somewhat ambivalent nature of inshore fisheries and their management. Inshore fisheries comprise an uncoordinated - or, at best, poorly coordinated - aggregation of the diverse interests of some several hundred

³ It is important to recognise that the interviews with fishing industry representatives, conservation officers and others in no way constitute a sample survey but rather reflect the opinions of a few individuals engaged in the policy process.

small scale, generally localised, fishing enterprises distributed throughout the length of the Scottish coast. They exploit a common and publicly 'owned' resource base, in which definition of individual harvesting or property rights is poorly developed, for purposes of private gain. Yet the inshore industry so described is almost exclusively 'managed' by central government and subject to legally binding interventions to restrict fishing activity. To make matters more complicated, inshore fisheries are subject to further interventions by government departments acting on behalf of the public interest in the protection of the marine environment and the conservation of threatened habitats and endangered marine wildlife. The dilemmas posed by the confrontation of public and private sector interests lie at the heart of many of the issues relating to fisheries management.

We divide our critical review of the management system into five main headings: the legal framework; the principal actors; the scope of inshore management; Regulating Orders; and attitudinal barriers, real and perceived. Consideration of two key issues - the need for a definitive strategy and for a comprehensive regional framework for management - are deferred until the following chapter.

7.2 The legal basis for inshore fisheries management

In attempting to assess the adequacy of existing primary legislation for the purpose of integrated inshore management a series of simple tests was devised and the results are set out in Table 7.1. It seems reasonable to conclude on the basis of these tests that the dedicated inshore legislation (*Inshore Fishing (Scotland) Act, 1984*) is generally sufficient for the purpose of inshore fisheries management - a view which broadly concurs with those expressed by the inshore industry, where it is said to work well for those willing to search for the most appropriate regulatory measures. Some concerns were expressed with regard to the negative image of inshore fisheries management presented by the emphasis on prohibition and a need for more proactive measures to control fishing effort (see 7.4 below). Criticism was also directed towards the use made of the Act: its spatially uneven application, the slowness of the triennial review procedures applied to the Orders and the need for the introduction of time-limited emergency actions to close, or in other ways restrict, a fishery on grounds of fisheries or environmental conservation, in line with the provisions of the revised CFP (COM Regulation 2371/2002 Article 8).

Much stronger and conflicting opinions were voiced in relation to the *Sea Fisheries (Shellfish) Act, 1967*. There was little disagreement over the Act's efficacy with regard to shellfish management in inshore waters but questions were raised as to whether the provisions of the Act for the establishment of Regulating Orders were being abused in the current application in Scotland (see 7.5 below).

As to the suitability of existing primary legislation for the purpose of environmental integration, it is perhaps wisest to reserve opinion for lack of circumstantial evidence. In the case of the *Inshore Fishing (Scotland) Act, 1984*, it is worth recalling that the Act has been specifically amended in the light of the *Environment Act, 1995* to enable the Minister to make Orders for 'environmental purposes', while the earlier *Sea Fisheries (Wildlife Conservation) Act, 1992* placed an obligation on all those with responsibility for fisheries management to have regard to the conservation of marine flora and fauna while discharging their normal duties. Whether these provisions go far enough to ensure effective environmental integration remains to be seen.

There is also a need to keep a watchful eye on the growing stream of 'contingent legislation' which impacts directly or indirectly on the use of marine living resources and their habitats so as to assess their implications for inshore fisheries management and any consequential need to amend any of the fisheries Acts.

In general, however, there are few grounds for a major overhaul of existing fisheries legislation at this stage, though a case might be made for a simple, overarching Marine or Inshore Waters Act which gives much clearer direction as to the incorporation of the now widely endorsed principles of sustainable development, precautionarity and environmental integration. The problem is one of timing: whether it is better to act sooner in the hope of imposing some greater discipline on the way the marine environment is being used and managed, or later when the present momentum for radical change has subsided. There is never an ideal time for such action, no matter how much it may be needed.

7.3 The leading actors

The inshore fisheries policy community is currently undergoing a major expansion, partly in pursuit of 'good governance' and the possible devolvement of management responsibilities. Each of the principals is, in one way or another, new to the task and thus undergoing rapid adjustment. Nonetheless the interviews exposed some fundamental weaknesses which could inhibit the development of the policy process.

SEERAD

Post devolution SEERAD is recognised as the centre of decision making for inshore fisheries in Scotland. The Scottish Office's previous reluctance to devolve management responsibilities has not yet been entirely dissipated and the newly established Inshore Fisheries Branch is seen as essentially reactive in style providing little stimulus or direction to the development of inshore fisheries management. In this it is partly a prisoner of a disappointing Strategic Framework for the Scottish Fishing Industry drawn up by SEERAD's Fisheries Division in 2001 (see 4.3 above) which lacked clear objectives and a working timetable, both essential ingredients of a strategy document, and largely ignored the importance and special role of Scotland's inshore fisheries. Some of its sterner critics perceive a crucial gap between SEERAD's willingness to accept its legislative authority and its reluctance to develop a distinctive style of integrated management for inshore waters. This *laissez faire* approach to management has given rise to a patchwork quilt of prohibitions rather than a clear blueprint for inshore fisheries management in the 21st century.

The strongest criticism of SEERAD's Inshore Fisheries Branch was reserved for its apparent unwillingness to engage in the SAC management process. While this may simply be a function of the under resourcing of the Inshore Fisheries Branch, it is unlikely to be the whole story. In developing SAC management schemes, the dialogue with other relevant departments of the Executive was regarded as very much easier and SEERAD is seen as needing to discharge its role as the sole competent authority with regard to fisheries much more actively and to demonstrate greater engagement with locally agreed management schemes. The weak level of involvement of SEERAD is seen as being uncondusive to inspiring confidence in the SAC management process and its outcomes.

While lines of communication with the inshore industry appear to have improved greatly since the setting up of the Inshore Fisheries Branch and relations are currently described as good, there is a clear need to invest in more active networking within the triangle of key

Table 7.1 The suitability of the Inshore Act 1984 for integrated inshore management : seven tests

The test	The assessment
1. Is the existing legislation fit for the purpose of environmental integration?	There are no restrictions as to the purpose of prohibition set out in the Act and no obvious constraints on its use for purposes of environmental integration; however, the Act has not yet been sufficiently tested.
2. Does the legislation allow for action to be taken on a proactive, precautionary basis and for the accommodation of the ecosystem based approach?	By inference, 'yes': there is no indication in the Act that proposals must be based on affirmative science. However, where a proposal is made on a precautionary basis and where the industry is divided over its adoption the outcome is likely to be decided on scientific or economic arguments with a tendency to accept the <i>status quo</i> . No evidence re ecosystem based approach.
3. Are the procedures involved efficient and effective?	Potentially, 'yes': full, thorough and appropriate consultation with expert opinion though at present no special weighting is given to environmental conservation advice; need for a clear statement of criteria on which to judge a proposal (see Appendix 3).
4. Does the system permit a swift response to proposals for action?	No: the problem lies with the administrative process of the triennial review rather than with the process of the review. There are alternative mechanisms for taking emergency action (Conservation Orders) requiring only the authorisation of the Minister.
5. Can proposals for action be initiated by a range of stakeholders, including conservation organisations?	In theory proposals can be initiated by any responsible body or individual; problems lie in bringing together sufficient evidence and in obtaining appropriate advice; in practice almost all proposals originate from the fishing industry.
6. Are the outputs capable of effective enforcement, monitoring and assessment?	<p>(a) enforcement: in theory, 'yes' - the legal basis for inspection and prosecution is built into the Act but the complex geography of inshore waters, coupled with level of resource available to SFPA means that <i>de facto</i> enforcement may be problematic: unwilling to proceed with a proposal where advice from SFPA indicates potential problems of enforcability.</p> <p>(b) monitoring and assessment is weak: in theory an Order requires regular monitoring and assessment but the absence of any benchmarks and the failure to collect scientific data means that assessment is based mainly on the opinions of local fishermen.</p>
7. Is the system 'resource adequate' i.e. does it make proper, efficient and effective use of available resources?	Difficult to assess in the absence of proper monitoring: all prohibitions will make some additional demands on the agencies - whether these are proportional to the potential or realised benefits of the proposal is currently a matter of judgement rather than scientific assessment.

interests involved in environmental integration, namely SEERAD, the fishing industry and the conservation interests. The problem may, in part, lie closer to home: in limited discussions across the divisions within SEERAD, it was difficult to identify any regular channels of communication, common projects or working towards an agreed strategy for

marine environmental integration. The outcomes of the SSME initiative may offer some prospect of improvement in this situation. Much of what one might consider the central business of SEERAD currently appears to be compartmentalised within specific divisions (or sub-divisions) or delegated to particular agencies.

The Inshore Fisheries Branch is acutely aware of some of its current failings - its reactive rather than proactive style and the consequent *ad hoc* approach to inshore fisheries management. It sees the issues which confront inshore fisheries management today as being too complex and too urgent to be dealt with adequately by a review process which insists on judging proposals on a case by case basis with no clear guidelines or overarching strategy to guide the decision making. And, in particular, it is unsure of its *modus operandi* in dealing with shared areas of competence like environmental integration.

The Fishing Industry

There are problems, both nationally and locally, concerning the representation of inshore fishing interests. It is an industry in which fission comes more easily than fusion. Not only are there significant variations in fishing activities, aspirations and behaviours between the inshore and offshore sectors, but within each sector there are areas of disagreement between static and mobile gear groups and difference of opinion between one local area and another. Under such circumstances, consensus building across the industry – or even within the inshore sector – is immensely difficult if not impossible, except where a common enemy provides the catalyst. This seemingly inherent condition creates a formidable challenge when it comes to constructing so-called representative organisations and places the industry at a considerable disadvantage in negotiations with other more coherent bodies. Moreover, it goes some way to explaining why so little progress has been made in developing a more progressive inshore management regime for Scotland.

Nationally, the Scottish Fishermen's Federation (SFF), which was born of a need to articulate a unified voice in discussions with government, has successfully positioned itself in the public perception as representing all Scottish fishing interests and accordingly has gained the ear of the Scottish Executive and political leaders alike. In reality, although the SFF is open to all associations which wish to join, it is the victim of the fissive tendency. As a result, there are significant areas of Scotland - notably in the north west, including the Western Isles, where SFF can claim little interest or influence and where inshore interests are more accurately represented by the Federation of Highlands and Islands Fishermen and its four constituent associations. Even in the south west, the position of SFF has sometimes appeared rather tenuous with the main regional associations (Clyde and Mallaig) uncertain as to their continuing affiliation.

The reason for this schism is the sense among many inshore - and especially static gear - fishermen that SFF is too much influenced by the once dominant whitefish offshore interests based mainly in the north east to be able to promote the interests of the inshore sector in a sufficiently vigorous and unqualified manner. Part of the problem lies with the inshore sector. In contrast to the pelagic and whitefish sectors' propensity to unite around a consensus view, the inshore industry often has difficulty in consolidating its position, preferring instead to articulate several distinctive, regionally determined views on particular issues. Nevertheless, the perception persists within the inshore sector of dominant interests driving the agenda of SFF. This problem does not go unrecognised by the Federation itself but there is still a reluctance to redistribute the power base within the organisation. Fishermen's associations in Scotland are much stronger and more influential in Scotland than

in England and Wales. Each FA tends to have its own key constituency and controlling interest which exerts a strong influence over its agenda. Characterised to a degree by independence and a sense of rivalry, their actions are largely moderated by the political acumen and tactical skills of the individual chief executives or secretaries. Nonetheless the huge resources of knowledge, experience and expertise are not yet sufficiently harnessed in the interests of Scotland's inshore fishing industry as a whole.

Locally, the lack of a single, coherent view can leave the inshore industry bereft of strong and effective representation in external negotiations. In a number of instances, SAC project leaders have commented on the difficulty in identifying appropriate local fishing industry leaders for membership of the management group, especially where the regional association does not fully reflect local interests. A paradoxical situation thus arises wherein SEERAD has its own very influential agency (SNH) to represent the public interest in matters of wildlife conservation but no parallel agency to represent the public interest in sustaining a viable inshore fishing industry. The industry must therefore rely on its limited resources and its somewhat fragmented organisation.

Paradoxically, where community based action is needed to resolve local conflicts and protect local resources from overexploitation, the divisions between competing user groups can be reconciled by external mediation, as the Torrion initiative (see 6.5 above) demonstrates.

SIFAG

The Scottish Inshore Fisheries Advisory Group (SIFAG) was recently set up by SEERAD, at the suggestion of some key players within Scotland's inshore fishing industry, to provide an immediately accessible source of advice on inshore management. According to all those interviewed - including members and non-members alike - SIFAG is currently struggling to establish its identity and come to terms with its original purpose of providing well-founded, balanced advice on the future development of inshore fisheries management, but the reasons given for its inability to hit the ground running vary quite markedly. It is difficult to escape the conclusion that the main reason for its relative failure to date lies in the fact that its structure reflects the longstanding dispute over the representation of inshore interests outlined above, and the inability of SIFAG members to put aside the particular sectoral or regional interests of the organisations they represent in developing an agreed, coherent and collective view for taking forward the interests of the inshore sector as a whole. The mistake lay in appointing members as representatives of particular organisations rather than as individuals with extensive knowledge and understanding of inshore fisheries drawn from around Scotland's coast. There are some anomalies of membership - for example the Scottish Pelagic Fishermen's Association and, to a lesser extent, the Scottish White Fish Producers Association, which does include a number of inshore vessels in its membership, - on an expert group which *de facto* deals almost exclusively with shellfish management. There are doubts, too, as to whether SIFAG as presently constituted should be sitting in judgement over specific locally generated proposals for inshore management.

For some, SIFAG has grown 'too large and cumbersome' and its discussions are 'erudite and discursive rather than practical and focused'. Indeed, it appears that all members of SIFAG share a sense of frustration that little progress is being made. SIFAG is beginning to reform itself and to take more control of its own business with SEERAD setting the agenda in collaboration with SFF, alternating chairmen from SEERAD and SFF and a schedule of 'strategic' and 'thematic' meetings. Moreover, it is also beginning to tackle the key issue of a strategic view of inshore fisheries. But it remains unclear as to how far it can progress under

conditions where individual association views tend to prevail over a collective view of the inshore sector's interests.

Clearly the industry and associated stakeholders are not yet getting the best out of SIFAG. An industry voice is clearly needed within the policy community. The Inshore Fisheries Branch should benefit from its advice and the inshore industry should profit from having a group close to the centre of decision making which can provide effective liaison between local management groups and help to promote responsible local management initiatives within a strategic framework for the industry's development. But these remain aspirations rather than concrete achievements.

It is unlikely that SEERAD would wish to alter the structure of SIFAG at this stage. The best hope is for an emerging consensus within SIFAG as to its true purpose and for a refocusing of its discussions on a strategic view of the industry's needs. Alternatively, SIFAG could be seen as an interim development in a more profound restructuring of Scottish inshore fisheries management (see Chapter 8).

Scottish Natural Heritage

Scottish Natural Heritage (SNH) is the newest partner in the evolving policy community and is likely to assume an increasingly influential role with the growing emphasis on environmental integration. Relations between SNH and the fishing industry are still somewhat tentative. On an individual basis SNH has recovered some of the early lost ground when the failure of good communications tended to place SNH in opposition to the industry on a number of issues. For many in the industry, SNH still has a schizophrenic persona, wanting to work alongside the industry in cooperative projects and at the same time to ban certain fishing activities. Indeed, the perception, rightly or wrongly, of a doctrinaire stance taken by SNH over the issue of seal management and its involvement in the designation of SACs specifically for the protection of seal populations remains a continuing source of friction for grass roots opinion in the industry.

In general, however, leaders of the inshore industry claim to have no problems with SNH and that they share common concerns for issues of biodiversity and a desire to see a flourishing ecosystem, though there may be significant differences in how they interpret these two phrases. More importantly, there is a widespread recognition that the industry will have to coexist with conservation interests both now and even more so in the future. A somewhat more sceptical view portrays SNH as a good ally but a bad enemy. Experience has taught the industry that it is better to have SNH involved as a partner in a management proposal from the outset - and, therefore, to share ownership of the decisions - than for SNH to be introduced into the equation at a later stage or brought in as a 'consultant armed with objections on conceptual or idealistic grounds which bear little or no relation to the situation on the ground'.

Where problems may occur is at the local level where SNH representatives, trained almost inevitably in the biological sciences, may not have a sufficiently strong grounding in fisheries legislation and management nor a sympathetic appreciation of the vicissitudes that commonly beset inshore fisheries as a means of livelihood. At the local level, relations between marine nature conservation interests and the fishing industry commonly occur on an *ad hoc* basis, often around a specific contested situation, rather than on the basis of regular contact and shared information. There is some evidence to suggest that in certain instances where SNH has taken on the role of lead agency in developing an SAC management scheme, they have

tended to engage with the local fishing industry too late in the proceedings to establish a positive and creative relationship. Specifically in areas like the Moray Firth, relationships with the industry have been knocked back by the need to renegotiate the management scheme as a consequence of the EC's moderation exercise leading to the inclusion of new conservation features in the schedule of an SAC.

Local Authorities

Local authorities are largely left outside the loop of inshore fisheries management, though they do have a seat on SIFAG dedicated to COSLA and have been instrumental in helping to progress RO applications in particular instances. Although not all local authorities are proactive in the support of their inshore industries, in a number of cases they have proved strong and influential allies to local inshore groups seeking to secure what they see as their best interests. Politically aware of the importance of inshore fisheries in maintaining the sustainable development of fishing dependent areas, they usually work with FAs and regional enterprise boards to raise the profile of the industry and provide essential infrastructure for a modern, competitive inshore sector. However, support for ROs - notably in the case of the Shetland Islands and the Highlands - has placed them in opposition to some established representative organisations who accuse the local authorities of usurping their roles.

In those cases where the position exists, a fisheries development officer can play a valuable role not only in liaising with different levels of government and helping to co-fund particular projects but also as a facilitator for new initiatives in the early stages of development or as a mediator in areas of dispute. The potential contribution of the local authorities is perhaps not yet fully utilised - and in some cases scarcely recognised - in the present local and national management set up.

7.4 The management system

The prevailing view of the existing management system is that implementation of the Inshore Fishing Act lacks imagination, the decision making system is too slow and the outcomes are uncoordinated and arbitrary. The result is a highly fragmented 'patchwork quilt' of inshore regulation which leaves some areas of the coast quite heavily regulated and other areas where there is little or no restriction on fishing activity. This may, in fact, reflect the geographical patterning of the need for active management but it is just as likely to demonstrate both the determination of certain areas to protect their fishing opportunities from internal overexploitation and incursions by nomadic vessels and the commitment and skill of particular industry leaders to see local initiatives translated, where appropriate, into statutory action.

Concern over the length of time taken to complete the triennial review process, involving unnecessary delays not connected with the consultation process, featured strongly in the interviews, together with a lack of transparency and a belief that SEERAD tends to hide behind arguments of 'insufficient science' and 'unenforcability' in order to reject certain proposals which local fishermen with their wealth of knowledge and experience feel instinctively are necessary to achieve local sustainability.

There are also several gaps in the range of management measures available through the 1984 Act. Indeed, the Act has been used very largely to resolve gear conflicts though local access agreements rather than to conserve inshore fish stocks. This is not to suggest that conflict resolution is not an important aspect of inshore management; conflict can be destructive and stand in the way of progress towards a more sustainably managed fishery (Watson *et al*,

2003). There is very little evidence so far that the Act is being used in a precautionary manner to protect the marine environment, except perhaps in the prohibition of suction dredging for cockles. But the principal deficiency in the regulatory system is the inability to manage fishing effort. There are no specific provisions within the Act, though restrictions on fishing effort can be applied indirectly through weekend fishing bans as in the Clyde or through prohibitions on the use of more efficient types of fishing gear as with proposals to ban the use of parlour pots in the *Nephrops* fishery in the Western Isles. However, the principal statutory mechanism for effort control - restrictive licensing - is not yet widely available, providing a major reason for the enthusiasm for ROs in certain quarters. The long awaited Shellfish Licensing Scheme, scheduled for introduction late in 2003, will ensure that the number of vessels participating in a range of mainly crustacean fisheries is capped, but the decision not to proceed with proposals for a regressive limitation on the number of creels per vessel - largely on grounds of alleged difficulty with enforcement - means that the opportunity to control fishing effort in the shellfish sector will be ignored.

Whether the apparent lack of urgency over inshore fisheries management reflects the under resourcing of the Inshore Fisheries Branch or, as many suspect, a deliberate strategy of delay is a moot point. However, bearing in mind that environmental integration will inevitably seek to ensure a much more coherent, comprehensive and timely approach to the management of inshore waters in pursuit of stronger environmental protection, reform of the system along more proactive lines cannot be long delayed.

Two factors underlie the present reactive, uncoordinated and incomplete system of inshore fisheries management in Scotland: the lack of an agreed strategy for the sustainable development of inshore fisheries and the absence of a comprehensive regional framework for inshore fisheries management. Without a clear vision of what Scotland's inshore fisheries should look like in say 10 or 15 years time and how they will contribute to the economic and social well being of the country's coastal regions and communities, it is difficult to make reasoned judgements on the suitability or otherwise of specific proposals for action. Likewise, in attempting to fulfil a national strategy for inshore fisheries, it will be necessary to disaggregate the strategy into regional management plans which play to the strengths of particular areas and seek to achieve an optimal balance between resource exploitation and environmental conservation. This forms the central theme for Chapter 8.

7.5 Regulating Orders

No issue so divides opinion on matters relating to inshore fisheries management as that which surrounds the introduction of ROs in Scotland. Arguments as to whether ROs provide an appropriate basis for local management or not illustrate in part the price being paid for a *laissez faire* approach to inshore management in the past, the lack of a definitive strategy for management and the absence of appropriate regional structures.

Historically, the Scottish Office had set itself against the introduction of statutory local management organisations along the lines of Sea Fisheries Committees in England and Wales, following the recommendations of the Cameron Report (1970) and subsequently influenced by SFF's wish not to see access to the extensive inshore fishing grounds like the Minch closed to the more mobile sectors of the Scottish fleet. To date ROs are being used with the tacit approval of SEERAD as a surrogate form of local management organisation. For those who promote ROs it is the realisation of a long held ambition to see local control over inshore waters and a strengthening of the entitlement of local fishermen.

While most sections of the industry now recognise the need for greater regionalisation of decision making in respect of inshore fisheries, there is strong opposition among the more mobile sectors of the industry to what they see as privatised management agreements embracing a wide range of species or covering relatively large areas. Such 'agreements' are based essentially on the exclusion of non-local interests and confer long term benefits on the members of the private consortium in terms of access and harvesting. The initial purpose of ROs in providing a system of management to conserve shellfish stocks becomes forgotten in these arguments. But concern is also expressed by the critics of ROs in Scotland over the promotion of schemes which allow a small number of active shellfish fishermen to exercise a controlling interest on the board of an organisation tasked with the management of what has previously been considered a public resource.

On the other hand, supporters of ROs point to what they see as the advantages in delivering greater stakeholder participation in the management of shellfish resources and in a potentially more integrated approach to inshore fisheries. While the application process requires the creation of independent companies, their boards comprise an overall majority of industry members, together with representatives from other relevant interests, including statutory agencies and local authorities. Moreover, the fisheries minister is required to approve all measures introduced under a RO and any which are discriminatory in nature are unlikely to receive ministerial consent.

Rather surprisingly, in view of the advantages that ROs now appear to offer, no ROs had been granted in Scotland prior to 1999. South of the border some 9 ROs had been established for the management of molluscan shellfish only: the largest of these covering areas of 116,000 and 68,865 ha in the Thames Estuary and the Wash respectively. In virtually all other cases very much smaller areas were incorporated within the ROs, rarely more than 5,000 ha in extent. Although there may be sound reasons for treating the waters around the Shetland Islands as a single, discrete area for the management of shellfish stocks, the proposed Highlands Order currently lodged with SEERAD, stretching from Lochaber to Nairn, covering a coastline 'longer than that for the whole of France' and enclosing an area of 1.37 million hectares is at first sight less convincing – even though the proposed Order divides the total area into seven geographically distinct management sub-districts. Critics may argue that the motive behind the proposal may be linked rather more closely to the idea of gaining control over access rights than the conservation of vulnerable shellfish stocks. The decision to opt for one large Order, rather than several smaller, more closely defined Orders, is predicated quite reasonably, on the basis of comparative management costs.

Setting aside questions as to whether ROs should be used as a surrogate for local management organisations, two outstanding issues are likely to provide a stern challenge to their efficacy as appropriate management instruments in Scotland: funding and enforcement. South of the border ROs usually come under SFCs as the responsible organisation. The administration costs associated with ROs are, therefore, at least in part subsumed in the general running costs of the SFCs and so funded, in effect, by the constituent local authorities. Likewise, the enforcement of management measures is undertaken by the SFCs' own seagoing and shore based fisheries officers. Neither of these advantages is available to RO management organisations in Scotland. It is highly unlikely that anything approaching the full management costs can be recovered through licensing fees - an independent source of finance available under the *Sea Fisheries (Shellfish) Act, 1967* - which leaves a dangerous shortfall in funding with very few alternative sources available, other than central or local government.

At present the policing and enforcement of ROs lies outside the remit of the SFPA and there are good grounds for arguing that a publicly funded agency should not be given responsibility for enforcing regulations intended to benefit a private organisation. In any case, the SFPA is already over committed and under resourced in its task of policing statutory regulations introduced under European and national law. Should the rules be changed as a result of the new coalition government's commitment to extend the SFPA's remit to include ROs, the Agency's ability to offer more than a token presence in these inshore waters under existing levels of funding is very seriously in doubt.

Without action on the part of SEERAD to remedy these situations, the efficacy of ROs in respect of the conservation of shellfish stocks in inshore waters - and possibly the very future of the ROs themselves - is under threat. The failure of the RO management approach in Scotland, for all its faults, would deal a serious blow to the confidence of the inshore sector.

While some may question the use of ROs to bring shellfish management under exclusive local control, others welcome the signals they send out as to the willingness of the Scottish Executive to devolve management responsibility to locally based organisations. Some even see ROs as offering 'exciting prospects' with respect to marine nature conservation, though in truth the limited evidence available suggests that they are essentially neutral in terms of their environmental protection potential.

The relevance of ROs to environmental integration depends on the interaction of three factors: (i) the range of shellfish species included in the Order - where the range is small and the choice of species limited to one or two fairly minor components of the local shellfish industry, the relevance to environmental integration will be slight; conversely, where the range is larger and the species include those whose exploitation is known to impose a potential threat to sensitive habitats, or to the food budgets of non-commercial species, including birds, the possibilities are much greater; (ii) the decision to build environmental considerations into the management plan, including provision for environmental monitoring; and (iii) the commitment of the management organisation to take seriously the obligations laid upon it by the *Sea Fisheries (Wildlife Conservation) Act, 1992*. With regard to the last two points SEERAD can, of course, exert its influence by ensuring that environmental concerns are fully addressed in the management plans before the proposal is accepted. There is some evidence to suggest that environmental obligations are not always fully appreciated by some directly involved in developing and managing ROs. Indeed, the Shetland RO made little or no provision for environmental protection. On the other hand, the Highlands and Solway Firth proposals both include conservation objectives and management measures to protect sensitive habitats for marine wildlife. Where ROs overlap with SACs, as they are likely to do in a number of instances, there is every chance that the interactions between the management aspirations of the two very different types of designated area will result in much stronger environmental integration.

7.6 Environmental integration: attitudinal barriers, real or perceived

Possibly the most elusive aspect of our enquiries concerned the existence or otherwise of dichotomised opinions or attitudinal barriers to the further integration of environmental protection measures into inshore fisheries management. There is quite clearly - and not unexpectedly - a wide range of opinion as to the motivation, aspiration and behaviour of individuals and organisations associated with the 'other side'. But, more worryingly, there is

a duplicity of attitudes which may be relatively easy to explain but rather more difficult to understand.

According to almost all those whom we interviewed, there was a stated belief that relations between the fishing industry and marine nature conservation interests had greatly improved in recent years and a feeling that the two sides shared many of the same long term goals in relation to sustainable fishing opportunities in a healthy marine ecosystem, coupled with a sense that this overlap in objectives was not always fully appreciated on either side. The industry and conservation interests have already demonstrated a willingness to work together in an atmosphere of growing trust to achieve their common ends. Among the industry representatives we encountered no overt expressions of hostility, rejection or suspicion towards the actions or ambitions of those who represented the conservation interests, though distinctions were drawn between 'responsible' organisations with whom they had dealings on a regular basis and 'irresponsible' organisations which they chose largely to ignore.

Certain leading NGOs, including the RSPB and WWF, have invested considerable time and energy in developing their relationships with the industry and attempting to build a common agenda. They have met with some success, notably at the local level. However many fishermen remain suspicious of those who would seek to influence the shape of future management initiatives but have, in their view, little or nothing to lose. As a result, they are reluctant to admit them as equal stakeholders in national or international consultations, though not necessarily unwilling to accept them as partners in local negotiations. There was some criticism of the 'opportunistic behaviour' of some NGOs who claimed an alternative expertise and wanted to set their own agendas for fisheries management. But neither the fishing industry nor the marine environmental interests was willing to concede that the other side was capable of exerting undue influence in policy debates on the management of the marine environment. While the former was described as 'sometimes loud, strident and desperate' and the latter as 'vocal, articulate and persistent', neither side was thought to carry 'real political clout' in the wider scheme of things.

In contrast to the generally considered and conciliatory positions reflected in the interviews, there is the perverse influence of the media and the all too frequent portrayal of a confrontational situation fed by extravagant claims on the part of the conservationists and by hard line comments from some industry leaders - sometimes, but not always, taken out of context. Often these comments appear to be directed at their own constituencies for political reasons rather than making a contribution to the public debate. Within the environmental lobby there are more radical voices, unwilling to negotiate with the industry in trying to establish a compromise solution; by definition, these 'rogue elements', who may or may not influence public opinion, are unlikely to have much direct involvement in the formal policy process.

Part of the reason for the potential polarisation of attitudes in matters relating to the fishing industry and the marine environment is that marine science allows no universal truths: scientific uncertainty, reliance on the balance of probability and inevitable conjecture set the scene for undisciplined debate. Against a background of dissonant views, uncertain science and continuing severe hardship for some sections of the Scottish fishing industry, there is a recognition that the two sides could, in the future, experience greater difficulty in coming to terms with the need to compromise in developing a secure basis for environmental integration and 'responsible fishing'.

Chapter 8

The Challenge of Integrated Management

8.1 Introduction

Broadly there are two alternative ways of confronting the challenge posed by environmental integration. The first is to tinker at the edges of the present system, leaving it basically unchanged but addressing some of the institutional constraints identified in the previous chapter. The other is to develop an agenda for a more radical change of the existing institutional framework. In this chapter we pursue the latter course but first it is incumbent on us to explain why we think radical reform may be necessary at this particular juncture. The answer lies in the fact that inshore fisheries management will need to face up to some major challenges as the early part of the 21st century unfolds. These include (i) increasing pressure on inshore fisheries as fishing opportunities elsewhere are curtailed; (ii) the pursuit of good governance, involving the 'hollowing out of the state' and devolving some management competencies to responsible user groups; and (iii) renewed pressure from some NGOs for more draconian action to protect the marine environment.

In order to respond positively to these challenges, there is an urgent need for:

- a clear, definitive and distinctive view of where integrated management policies should be heading, i.e. a strategy for inshore waters;
- a regional framework within which a national strategy can be implemented in such a way that it maximises the potentials of local areas without the overall pattern becoming fragmented and uncoordinated;
- a system of decision making wherein the use of statutory powers reserved to the Executive do not undermine the integrity of local voluntary agreements; and
- an 'investment programme' in support of a well integrated system of management which ensures sustainable inshore fisheries in healthy marine ecosystems.

What we offer in this chapter are some suggestions for reforming inshore management - one possible vision of a more appropriate institutional framework.

8.2 Environmental integration

All elements of the policy community (administrators, scientists, fishing industry, environmental interest groups) are at present struggling to get to grips with the concept of environmental integration. Like many other phrases which have recently entered the vocabulary of fisheries management, it lacks a concrete formulation of what it means, how it can be applied and what are its likely outcomes. It is this very uncertainty that engenders suspicion - if not open opposition - to the project of environmental integration on the part of the fishing industry and fears among NGOs that it offers yet another soft route to appeasement of environmental interests.

What is now being demanded by the EC is that concern for environmental protection be systematically incorporated into fisheries policy rather than added as an appendix to standing arrangements. Integration thus requires more than a statement of intent concerning a willingness to consult over issues of environmental conservation when there are, in fact, no guarantees that the end result will truly benefit the environment. Environmental concerns will need to permeate the basic thinking with regards to fisheries management, become part of the scientific assessment methodologies through an incremental adoption of an ecosystem based approach and be the acid test for the legitimacy of policy decisions. While this may

reorient the underlying doctrines of fisheries management, it will add little to the armoury of implementation. It is hard to see how the range of policy measures can be extended to give environmental integration a sharper cutting edge - with one exception, the introduction of 'no take zones' (NTZs). There is a view shared by some scientists (see, for example, Roberts *et al.* 2003) and some but certainly not all NGOs (see English Nature, forthcoming) that the present generation of marine protected areas (MPAs), principally in the form of SACs and SPAs, can do little to assist the recovery of marine ecosystems. They are too small to afford protection to any but the least mobile of species and they fail to impose sufficiently stringent restrictions on the very fishing activities which over the years, have depleted populations of commercial and non-commercial species alike.

The present approach to environmental protection is seen as too static and too dependent on *in situ* preservation of specific areas of habitat or sub-populations of endangered species. It does not take sufficient account of the need to 'restore' damaged marine ecosystems and maintain their essential functional integrity, productivity and diversity. What is missing is a strategic marine environmental policy through which to implement more wide ranging and effective conservation measures.

Seen in the context of recent international commitments (OSPAR, Bergen Declaration, Biodiversity Convention) to establish 'coherent networks' of MPAs within the next few years, the idea of environmental integration takes on a more substantial meaning. Until now, designated conservation sites in the marine environment have formed parts of an inert network where the level of environmental protection, constrained by presumptions in favour of existing activities, has been quite weak. The intention of recent international agreements is to move beyond this situation and develop a mutually sustaining and interactive network of sites which will guarantee added value in conservation terms and so facilitate the underlying objectives of restoring and maintaining the functional integrity of marine ecosystems.

It is clear that some NGOs will use this opportunity to reinvigorate their campaigns for much more extensive and more strongly protectionist MPAs following the example of the St George's Bank closure in the north west Atlantic. What they will be looking for are large scale (20-40% of the seas) permanent NTZs, effectively closing significant areas to any form of fishing activity, in the not unreasonable belief that this approach is most likely to restore the ecosystems and reinvigorate commercial fish stocks. Little consideration is given to the economic and social costs involved.

In facing such challenges those responsible for inshore fisheries management must be in a position to demonstrate that they are in command of a robust, far reaching and long term strategy for inshore waters which guarantees sustainable low impact fisheries in a diverse, well functioning and productive ecosystem. This is a task for fisheries managers and responsible conservation organisations working in partnership, deploying a balanced menu of management measures throughout the inshore waters and a sensitive zoning of activities in some of the ecologically more critical areas (see Box 8.1). In this, the actions set out in the UK marine BAPs (see, for example, Boxes 3.1 and 3.2) or in outline proposals for the management of the Scottish scallop fisheries (Box 5.1) offer useful guidelines for the development of integrated management.

8.3 A strategy for inshore waters

Underlying most of the criticisms of the existing system of inshore fisheries management, articulated in the previous chapter was a constant complaint that it lacked a clear sense of

direction. Developing a strategy for inshore waters is therefore an essential basis for taking the development of inshore fisheries forward and a vital framework for engaging effectively with the challenge of environmental integration. The Scottish people - and especially those living at the coast - need to decide what kind of future they wish to see for inshore waters, and the government must demonstrate how it will develop their full potential and avoid the intervening constraints caused by the diversity of public and private interests.

Developing a strategy involves three distinct stages. Initially, the process needs to be informed by a clear, coherent and imaginative *vision* of the desired future for inshore fisheries in, say, 2015 or 2020. Otherwise the strategy will run the risk of perpetuating a 'surprise free', unambitious future i.e. one that projects the future as simply a logical extension of today's position. Therefore the vision should not be unduly influenced by the present situation nor the prevailing trends. The vision statement will need to assert the future and enduring potential of inshore waters and identify how these may be developed in the best interests of those most directly dependent upon them and of the Scottish nation as a whole, indicating where the fishing industry fits within the broader spectrum of uses and how environmental integration can best be accommodated (e.g. Marine National Parks or other forms of MPAs). Critically, it will need to make 'political' judgements as to whether access to inshore waters should in principle remain open or be reserved for exclusive - or preferential - use by local fishing interests and indicate how issues of equity might be resolved. This is a task for an independent think tank and not confined to those with experience in the management of inshore waters; it is probably not a task for SIFAG whose individual and collective long term vision is likely to be hampered by a prior commitment to protect the shorter term vested interests of the groups they represent.

In the second phase, the vision will be translated into a more substantial *strategy* for the future development of Scottish inshore waters. This will involve:

- elaborating objectives for inshore fisheries management – biological, economic, social, cultural, environmental and administrative (see Box 8.2) - all framed by the guiding principle of sustainable development, in which sustainability is not confined solely to issues of stock regeneration or marine ecosystems but includes product quality, markets, relative production costs, social reproduction of the inshore fishing unit - all of which are important in ensuring the viability of the individual enterprise, coastal community and fishing industry;
- identifying an appropriate structure for decision making in terms of the composition of the policy community and the nature of the policy process (see 8.4 below);
- defining the approach to specific issues like fisheries dependent areas, priority areas for environmental conservation and collaboration with other users of inshore waters, especially recreational activities and tourism;
- outlining the nature of the targets to be set for achieving the strategy and describing the monitoring systems to be put in place and the key indicators of progress.

These are tasks best suited to a broader range of expert opinion including marine science, fishing and fishing related industries, national and local administrations, enterprise boards, environmental agencies and interest groups *inter alia*, guided by an independent chairperson.

Box 8.1 What environmental integration means in practice

- Four priority actions (5.2)
 1. reduce fishing pressure to sustainable levels
 2. improve selectivity of fishing methods
 3. raise understanding of marine ecosystems and improve monitoring and assessment
 4. regulate fishing practice in sensitive areas.
- Adoption of ecosystem based approach to fisheries management (5.3)

This will require:

 - a) improved understanding of essential structures and functioning of ecosystems.
 - b) greater knowledge of life cycle behaviours and interactions of key species
 - c) development of parametric management and more precise specification of conservation needs of particular habitats and species.
- Institutional reform (5.4)
 - (i) paradigm shift in knowledge management
 - (ii) shift in the burden of proof
 - (iii) introduction of market instruments laying down specific environmental requirements
 - (iv) closer liaison between fishing industry and conservation organisations at all levels
 - (v) provision of appropriate legislative framework.
- rigorous assessment of all proposals for regulation under the *Inshore Fishing* (Scotland) Act, 1984 for compliance with the principles of sustainable development, the precautionary approach and environmental integration.
- specific requirements for *Regulating Orders* (ROs) to include environmental assessments, conservation objectives and supporting measures (including monitoring and assessment) in their submissions (7.5);
- introduction of *Strategic Environmental Assessments* (SEAs) and/or *Environmental Impact Assessments* (EIAs) in all future proposals to develop new fisheries or introduce new fishing practices;
- implementation of *UK marine Biodiversity Action Plans* (BAPs) as a matter of urgency (3.4)
- creation of *regional inshore management committees* to oversee effective and coherent regulation of inshore fisheries in relation to stock conservation, access rights and environmental conservation (8.4);
- drafting of *regional inshore management plans* giving particular consideration to the zonation of fishing and other activities in environmentally sensitive areas (8.4);
- development of a comprehensive package of *financial measures* (incentives and penalties) to encourage the adoption of environmentally responsible fishing practices (8.6).

Finally, the strategy should be used to fashion a rolling programme of three or five year *management plans* which will involve the implementation of action plans to tackle specific local issues and also give sharper definition to targets at the regional and local levels. According to the line of argument pursued in the following section, management plans will be the responsibility of regional management organisations.

Box 8.2 Objectives for inshore fisheries management

- biological objectives: to secure the sustainability of present and future commercial stocks through the implementation of the precautionary approach;
- economic objectives: to promote the sustainable development of commercial fisheries as a viable sector of the economy in which individual enterprises can entertain reasonable expectations of profitability without recourse to persistent or undue use of subsidies;
- social objectives: to provide a basis for the sustainable development of fishing communities and fisheries dependent areas through the maintenance of adequate and appropriate levels of job opportunities, providing incomes close to the average for the region;
- cultural objectives: to protect the norms and cultural values associated with artisanal fisheries which serve to reinforce the ethos of sustainability;
- ecological objectives: to ensure the sustainability of sound and healthy marine ecosystems capable of maintaining their essential structures, functions, productivity and diversity within the prevailing environmental conditions; and
- administrative objectives: to achieve a proactive, cost effective and stable system of management capable of buffering the ecosystems, fish stocks and fishing populations, as far as is reasonable, against unexpected fluctuations in the natural and economic environments.

Source: Symes, 2002.

8.4 Management structures

One of the most crucial questions that the strategy must resolve is whether there is a need to change the present organisational structure of inshore management. The balance of opinion among those we interviewed was in favour of a more regionalised structure. Those who favoured the *status quo* were concerned at the likely costs of regionalisation to the local fishing industry, recognising perhaps that at present management imposes virtually no costs on the industry. We believe that such concerns are misplaced, especially if the role of enforcement remains with SFPA and the costs of enforcement continue to be borne by the Executive. But there are more pressing reasons that lead us to the conclusion that structural change is needed.

In its detailed implementation, inshore fisheries management is essentially a local issue. As the present system clearly demonstrates, local fishermen are best placed to identify the problems and design the solutions at the local scale. However, these need to be set in the broader contexts of development at the regional scale and the policy framework established by the national strategy. Although the structures will need to respond rapidly to local needs, a regional framework would offer a more appropriate scale not only for decision making on shellfish stock conservation, equitable access agreements and environmental protection, - thus helping to reduce the potential incoherence of piecemeal restrictions - but also for considering proposals linked to infrastructural development, market planning etc.

Moreover, the principles of good governance suggest that wherever practicable decision making should be devolved to responsible organisations located as close as possible to the

level at which the decisions will apply. In terms of devolved management, the creation of SIFAG was a tentative step in the right direction, providing the central administration with a source of industry based advice. But it did not go far enough. By bringing together a wealth of local knowledge and experience and providing access to national expertise in fisheries science, marine ecology and nature conservation, regional management organisations should be able to maximise the opportunities for sound, cost effective advice and action.

While the theoretical case for a regional management structure can be made with comparative ease, the more difficult task is to translate the theory into practice - deciding on how many regional committees, how they should be constituted, the breadth of their remit, the nature of the linkages between the regions and the central administration and whether they should be advisory in function or have executive powers and responsibilities. We do not see it as part of the terms of this report to provide detailed answers to these questions: this is a task for the strategy process outlined at 8.3 above. But we do offer some comments as a reflection of the findings from our enquiries:

How many regional organisations? Deciding on the number and the geographical boundaries of the management regions is bound to be problematic. In England and Wales, a recent review of inshore fisheries management (Symes, 2002) concluded that the present 12 Sea Fisheries Committees was too many for cost effective management, recommending that they should be reduced to six. The Scottish coastline is very much more complex and thus more challenging when it comes to defining natural ecological areas or functional regions. Nonetheless, we feel it prudent to suggest a figure of eight regions as the number which should afford the best balance between satisfying the need for regional identity and the more pragmatic issues of available human resources, efficient administration and management costs. Some of the eight regions will readily identify themselves - the outlying island groups, for example - but the drawing of boundaries on the mainland coast is certain to be more troublesome.

What should be the remit of the management organisations? Although the prime task of the committees will be to ensure effective and coherent regulation of inshore fisheries in relation to stock conservation and access rights, we believe that they can and should have a much broader function of providing a platform for developing a more comprehensive regional strategy for inshore waters, including environmental conservation, market planning, infrastructural development, training etc. It also seems logical to broaden the definition of inshore fisheries to include mariculture. Marine aquaculture is increasingly seen as a particular concern for both inshore fisheries and environmental protection; this concern could grow if, as a result of constraints on its future development in shallow coastal waters, fish farming is forced into deeper waters and cause increased interference with established inshore fisheries.

Should the regional organisations be advisory or have executive powers? This is a crucial political decision. On balance we would favour granting the management committees some limited executive powers and responsibilities in respect of the regulation of local fisheries in order to prevent them becoming mere talking shops. They should be granted responsibility for framing local byelaws concerned with stock conservation, access rights and environmental integration, subject to guidelines laid down by SEERAD and the confirmation of proposed byelaws by the Minister. Otherwise their roles will be (i) to develop local management plans in line with the national strategy; and (ii) to act as first points of consultation for national and local administrations over issues relating to the use and

management of inshore fisheries including, for example, development proposals concerning mariculture, maritime recreational activities, renewable energy, environment conservation etc.

How should membership of the regional committees be constituted? Here the issues are first balancing comprehensive representation of all relevant areas and sectoral interests with the need to contain the size of the committee and, secondly, ensuring a sensible internal balance between fishing and other interests. The actual range of stakeholders will depend largely on decisions over the remit of the committees - but a minimum list would include the inshore fishing industry, shellfish processing and selling organisations, environmental agencies, local councils and enterprise boards, together with an independent chairperson. Whether members of the committee should be Ministerial appointments or representatives chosen directly by the responsible stakeholders organisation is yet another difficult decision to be laid at the door of the strategy group. The committees should also have direct access to nominated members of the FRS and SFPA for purposes of advice on stock assessment and enforcement respectively.

How should the regional organisations be staffed and who should fund them? Staffing levels and issues of funding will again depend largely on prior decisions concerning the functions of the committees. If they are purely advisory in function, then the staffing requirements will be minimal - an administrative secretary, possibly on part time secondment from one of the local authorities. If, on the other hand, they were to assume a stronger executive function - but exclude scientific assessment and enforcement responsibilities - the staffing loads would be proportionately higher but still unlikely to exceed two or three persons employed full time. The annual management costs for each regional organisation would be unlikely to exceed £150,000, in which case it would not be difficult to devise a funding formula by which the Executive and the relevant coastal local authorities jointly meet the costs.

What should be the relationship between the regional organisations and the central administration? In addition to suggesting the setting up of a network of regional organisations, we would also recommend the appointment of a National Inshore Advisory Committee, more broadly constituted than the present SIFAG (and with less emphasis on the representation of particular organisations). The responsibilities of the national committee would be to advise the Minister and SEERAD on all matters relating to the use and management of inshore waters and to act as the primary channel of communication between the regional committees and the central administration. In building up their respective advisory capacities, requests for information and advice should flow freely in both directions. But in matters of statutory regulation, byelaw and Regulating or Several Order applications should be submitted directly by the relevant regional organisation to SEERAD.

8.5 A voluntary or statutory approach to inshore management?

One issue which inshore management will need to keep in mind is the relationship between a statutory approach to regulation, involving new legislative measures and a more focused, proactive use of the existing legislation, on the one hand, and voluntary partnership agreements often resulting in codes of good practice, on the other. Today, the general ethos tends to support a switch from statutory regulation to a system based on consensus reached through informal 'participative governance'. The two approaches are not incompatible, but it is important to know what can and cannot be achieved through the two approaches. Neither should be followed as dogma. Indeed the most likely scenario is a 'mixed economy' of regulation, voluntary agreements and incentive based management schemes (see 8.6 below).

Broadly based partnership agreements have not featured to any extent in this report. This is partly because their relevance to inshore fisheries management remains tangential. Reference has, however, been made to the success of more narrowly based agreements (see 6.4 and 6.5). Broad partnership agreements, like those associated with the Firths initiative, tend to have a much wider remit and span a very diverse range of user groups brought together to discuss issues of mutual interest and to search for common ground. They come much closer in style to integrated coastal zone management (ICZM). Too wide a basis of stakeholder representation makes both communication and the reconciling of differences much more difficult, and the failure to accommodate particular points of view can lead to fission within the partnership. On the other hand, exclusion can provoke non-compliance or even subversive action (Dengebol, 2001). Their aim, nonetheless, is to build consensus, identify common principles, aims and objectives, and to formulate agreed codes of good practice. Rarely will they develop to the extent of laying down enforceable rules of behaviour.

Although we found evidence of successful voluntary agreements, structured on the basis of one to one negotiations, and considerable support for the voluntary approach, we were constantly reminded of the threats stemming not so much from the maverick behaviour of local fishermen refusing to abide by the agreement but rather from 'outsiders' who are neither signatories to nor long term beneficiaries of the agreement. Often it is necessary to translate voluntary agreements into statutory regulation simply to discipline the 'outsiders'. This does not signal the failure of the agreement nor challenge the integrity of those who formulated it, but it is a logical extension of the management process. Effective regulation is, in any case, based on a broad consensus of the need for regulation in the first place and agreement over the details of its implementation.

It is of the utmost importance not to damage the growing self-confidence of the inshore industry in its ability to develop solutions to particular local issues - either through 'own initiative' or partnership agreements - by precipitate action in converting such voluntary agreements into statutory regulation.

8.6 Investing in environmental integration

It is relevant to explore, at least in outline, two distinct but interrelated practical issues relating to the implementation of environmental integration: who should fund the process? and is there a role for financial instruments in progressing environmental integration?

Funding environmental integration. While government will habitually insist that there is little or no additional money available to fund new developments in fisheries management, environmental integration is bound to involve extra costs. These could be significant in the event of decisions to implement large scale permanent NTZs which could profoundly alter the distribution of inshore fishing opportunities and involve the 'buying out' of fishing interests. There is, however, a more general need to bridge the gap between short term displacement costs and the anticipated long term benefits of putting commercial fisheries on a sound, sustainable footing. Three broad categories of cost can be identified:

- *costs to the fishing industry* in the form of lost revenues as a result of restrictions on fishing activity or increased costs of fishing due to the modification of fishing gears etc.; where the loss of revenue or increased costs are seen to discriminate against particular groups of fishermen, there is a case to be made for compensation - though defining the boundaries for qualification may be contentious and divisive;
- increased *costs of management*, including science, administration and enforcement which in Scotland fall very largely on the central administration, but as these are

funded mainly through tax revenues it is the general public which ultimately picks up the bill;

- while the above take the form of direct economic costs, there could be additional *indirect social costs* to communities and fisheries dependent regions which may be seriously disadvantaged through job losses brought about by enforced changes in fishing practice - additional funding may be needed for community or regional regeneration schemes.

Although there is growing support for the view that the fishing industry should be making a significant contribution to transaction costs relating to fisheries management, there is an equally plausible argument that where society is the major beneficiary - as with measures to secure the quality of the environment - the State is the more appropriate funding agency.

Financing environmentally responsible inshore fisheries. Enforced regulation often causes resentment among fishermen and may reduce their willingness to comply with certain rules. The use of financial incentives linked to statutory or voluntary management schemes could 'sugar the pill' and ease the burden of compliance and so prove a persuasive means of bringing about required changes in attitude and fishing practice. According to Newcombe *et al* (2000) 'positive financial incentives for environmental purposes ... could play a modest but key role in moving the fisheries sector along a more sustainable path ... [they] can improve rather than distort market efficiency and correct market failure by taking into account the environmental costs and benefits that were previously 'external' to market decisions'.

On the other hand, a basic premise of sustainable development is the eventual removal of all subsidies. If an industry, or a particular segment of the industry is receiving long term financial support from public funds in whatever form, it cannot be said to be sustainable. Is there, in this broader context, a case to be made for financial incentives to help secure specific goals in the name of environmental integration? We believe the answer is 'yes' for they are likely to take the form of 'transitional payments' or 'start up' grants and can therefore be viewed as investing in a sustainable future. Financial incentives are most appropriate in circumstances where the aim is to bring about a win : win situation for the fishing industry and the marine environment but where there may be a significant time lag between the initial outlay and the recouping of tangible benefits by the investor. They are therefore well suited to circumstances where the main barriers to the adoption of the new 'low impact' technology are the initial capital and training costs. Such 'adjustment payments' - where the fishermen are being paid to adapt their system of fishing rather than being compensated for loss of earnings - will normally be one off grants.

In the past, environmental damage attributable to fishing activity has usually been regarded as an 'externality'. The cost of such damage is not borne by those fishing enterprises which are directly responsible but by the public at large through reductions in environmental quality or by future generations of fishermen through depleted fish stocks. There is, therefore, little incentive on the part of individual fishermen to moderate their behaviour especially where it would mean a reduction in current income. Financial incentives are intended to persuade fishermen to make environmentally responsible decisions rather than relying on the force of law to compel such action. Their effect is to alter 'market signals' either by increasing the cost of damaging practices through the imposition of environmental taxes based on the polluter pays principle or by improving the returns on environmentally sensitive behaviour.

Incentives may be offered to individual fishing enterprises to stimulate new environmentally sustainable behaviour or to encourage the continued use of low impact activities in environmentally sensitive areas. Alternatively they may be provided to support collective management projects. Formerly, community projects were supported by the now defunct PESCA programme. Today the EC's FIG schemes make provision for joint funding (EC, member state, applicant) of projects to develop sustainable, environmentally integrated inshore fishers; *viz.*:

- small scale inshore fishing, including the introduction of techniques to make fishing more selective and improvements to the production chain, resulting in increased added value;
- the protection and development of aquatic resources (MPAs, artificial reefs etc.);
- group projects, promoted by fishermen's associations, producer groups or other responsible organisations, aimed at developing common tools for the rational management of resources; under this heading FIG can part finance feasibility studies, pilot projects, demonstration projects, together with training, technical assistance and experience sharing (European Commission, 2002).

From time to time, suggestions have been made for the transposition of ideas underlying the now well established, voluntary 'agri-environmental schemes' (Environmentally Sensitive Areas; Rural Stewardship Scheme) to fisheries. Under the agricultural schemes, participating farmers receive regular payments for maintaining or introducing environmentally sustainable farming practices under a ten year management agreement. Such schemes might be adapted to suit the management needs of designated sites like, for example, SACs. But there are problems associated with defining basic property or use rights in multiple use situations and the fact that improving the marine environment requires action on the part of all - not just some - fishermen. Moreover, the longevity of such schemes smacks of subsidisation not adjustment payments.

8.7 Changing the law?

Finally, we need to return albeit briefly to the legislative framework for Scottish inshore fisheries. In Chapter 6 we concluded that there was little immediate evidence of the need to rewrite the basic inshore fisheries legislation, namely the *Inshore Fishing (Scotland) Act 1984*, largely on the grounds that it appeared to work adequately for the purposes of regulating inshore fisheries *per se*. However, its relevance for environmental integration has not yet been sufficiently tested to be able to pass any judgement. We did, on the other hand, note the increasing pressures and constraints on inshore fisheries management brought about by the growing body of 'contingent legislation' especially in relation to environment protection. The scope for managing inshore fisheries could be greatly altered if, for example, the current Nature Conservation (Scotland) Bill were to be amended to allow for the establishment of MPAs in Scottish waters. We believe there is a case to be made for an overarching Inshore Waters Act, setting out the priorities and principles for the management of all activities within inshore waters, which would provide a firm basis for the interpretation of existing legislation and give a clear sense of direction for any proposed legislation in the future.

However, in one respect, the central argument contained in this chapter - the setting up of devolved regional management organisations, with limited powers to regulate inshore fisheries (see 8.4 above) - does alter the situation. New legislation would be required to establish such organisations, determine their remit and define their constitution and powers.

In itself, this would not materially affect the continuing validity of the *Inshore Fishing (Scotland) Act, 1984* and its attendant order. But it could provide the catalyst for a more thorough appraisal of existing legislation in the light of its recently extended purpose in relation to environmental protection.

Chapter 9

Conclusions and Recommendations

Throughout Europe, inshore fisheries management is at a cross roads, facing increasing pressures on the use of space and the exploitation of resources in inshore waters in general and the challenge of environmental integration in particular. Scotland is no exception. The freedom of action in respect of inshore fisheries management is being progressively altered by the growth of contingent legislation linked mainly to concerted efforts to reinforce environmental measures whether they refer to water quality, marine nature conservation or some other aspect. There is no escaping the inevitability of environmental integration; the question is not whether to do it but how to do it. But this should be seen as providing a challenge and an opportunity rather than as posing a threat.

In the very near future decisions will have to be made about the future direction of inshore fisheries management - its style, organisational structures, policy process, funding and legislative framework. Whether, on the one hand, to accept the existing system as adequate for the present and foreseeable future and therefore seek only to repair any apparent defects, or, on the other hand, to seize the opportunity to build a new system more in keeping with modern concepts and governance and, more to the point, better placed to manage the challenge of environmental integration. It will be clear from the foregoing assessment that we favour the alternative approach though we can also appreciate that there may be many reasons why - as in the past - this challenge is not taken up. We would simply reiterate that there may be no more opportune time for a fundamental reform of the system.

There is a sense in which from time to time we may appear to have strayed from our specific terms of reference relating to the implications of environmental integration into a more general critique of integrated fisheries management. This was both inevitable and essential. We needed to understand how the present system works in relation to the more limited objectives before we could assess its likely efficacy in coping with the added complications of environmental integration. Our view is that the present system clearly does satisfy the purposes of inshore fisheries regulation: that is not the same as saying that the system does not need improving to break with the image of reactive management, extend the range of tools available and streamline the policy process. We are much less certain that an improved version of the present system will be sufficient to cope with the pressures of environmental integration either in accommodating the demands for the establishment of interactive networks of MPAs covering both inshore and offshore waters, or in ensuring that environmental protection is injected into the bloodstream of inshore management. This is one reason - but not the only reason - why in 8.4 above we suggested the creation of regional inshore committees and a more broadly constituted national inshore advisory committee. Both would have inshore fisheries management at the heart of their business but be set in the wider context of integrated management.

We have arranged our recommendations to reflect both options for reform of the system. Those grouped under A, B and C apply to either course of action; those under D refer only to the more far reaching option involving institutional change.

A Legislation

1. While there are currently no strong grounds for recommending any major alterations to the 1984 Act, if only because the relevance of the Act to environmental integration has not yet been tested fully, we do **recommend** that serious consideration be given to

establishing a framework **Inshore Waters Act** which would give clearer direction to the interpretation of existing acts in matters relating to the implementation of the precautionary principle, an ecosystem based approach and environmental integration *inter alia* and provide a framework for any future acts.

2. We also **recommend** that the growing number of **contingent acts** which impinge directly or indirectly on the use of marine living resources and their habitats be kept under constant review by the Inshore Fisheries Branch and the Marine Environment Protection Unit of SEERAD, in order to assess their implications for inshore fisheries management and any consequential need to amend specific fisheries legislation.

B. Organisational structures

3. We **recommend** that the staffing of the **Inshore Fisheries Branch** be reviewed in relation to the increasing scale and scope of the workload in relation to the regulation of inshore fisheries but taking particular account of the need to interact more effectively with SAC management teams.
4. In the light of the developing scope of inshore fisheries management, we **recommend** that the size, structure and functions of **SIFAG** be kept under review, notwithstanding the Memorandum of Agreement between SEERAD and SFF (November 2002).
5. While recognising that relations and communications between SEERAD and the inshore fishing industry are generally on a very sound footing we **recommend** that action be taken (i) to improve **external networking** with the principal actors involved in environmental integration namely SEERAD, the fishing industry and the conservation interests, and (ii) to ensure effective **internal communication** within SEERAD on matters involving the Fisheries Division and other relevant environmental areas of SEERAD responsibilities.
6. In acknowledging that relations between SNH and the fishing industry have improved greatly at the national and local levels, there is still a need to make sure that local officers in SNH are kept fully informed of developments concerning the fishing industry nationally and locally and that the industry is informed at the very earliest stage of any proposals for marine nature conservation action. In order to improve communications, we **recommend** that **regular meetings** (4 x year) take place between local and regional officers of SNH and representatives of the local and/or regional inshore fishing industry.

C. The management system

7. We **recommend** that the **triennial review process** for prohibitions made under the *Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order* be formally replaced by a system which recognises the need for proposals to be made by responsible bodies as and when the need for regulation arises.
8. We further **recommend** that consideration be given to the means of streamlining the **consultation and administrative process** for proposals introduced under the order so as to reduce the time normally taken to reach a decision on a particular proposal to a maximum of twelve months.
9. We **recommend** that all orders be **monitored and assessed** over a period not exceeding five years before being reviewed by SEERAD; in certain circumstances a shorter review period may be determined by SEERAD.
10. For the purposes of improving the efficiency and transparency of the review process we **recommend** that **criteria for assessing proposals** for statutory regulation should be drawn up and published for the guidance of local fishing and environmental interests (see Appendix 3).

11. In line with the provisions of the revised CFP, we **recommend** that urgent consideration be given to the development of specific mechanisms for **time limited emergency action** to close or in other ways restrict a fishery on grounds of fish stock or environmental conservation.
12. In the light of recent developments we **recommend** that the guidelines for the establishment of **Regulating Orders** be revisited (i) to see whether existing or proposed schemes are in line with the spirit and purpose of the 1967 Act, (ii) to consider a role for local authorities with a view to creating some form of public : private partnership which might legitimise (a) the incorporation of ROs within SFPA's enforcement remit and (b) the use of public monies to support the establishment and operating costs of ROs; and (iii) to build in requirements for environmental assessments and a statement of environmental objectives within the management plans.
13. We also **recommend** that consideration be given to filling the gaps in the **current range of management actions** that can be deployed where necessary to manage inshore fisheries on a more sustainable basis *viz* licensing, effort reduction.

D. Institutional change

14. While the existing institutional framework may be reasonably well suited to its present purpose of inshore fisheries management, there are grounds for considering the feasibility of a more fundamental reform of the framework. We therefore **recommend** that the terms of reference for the ongoing review of inshore fisheries management be extended to take account of the fact that an imaginative **long term vision** for Scotland's inshore waters, a **strategy** for the management of those waters and the development of a rolling programme of 3 - 5 year **management plans** at the regional level are all needed to take inshore fisheries management forward and to cope with the demands of environmental integration.
15. Accordingly, we also **recommend** that consideration be given to establishing a number of **regional inshore management committees** with limited powers to regulate fisheries within the 12 nm zone and with a more general remit to implement the national strategy through plans specifically drawn up to take account of the region's particular potentials and implementing local strategies for environmental integration.
16. We also **recommend** the setting up of a **national inshore advisory committee** to advise the Ministers through SEERAD on all matters relating to the management of inshore waters; and
17. we **recommend** that one of its first tasks be to work out **financial plans** for the development of integrated management including the provision of financial incentives to the fishing industry to accelerate the processes of environmental integration.
18. In the event of any decision being taken to regionalise inshore fisheries management, it will be necessary to enact new legislation to establish the regional committees; in which case we would finally **recommend** that the opportunity be taken to review **all areas of inshore fisheries legislation**.

At present there are several ongoing lines of enquiry into the future of marine environmental and/or fisheries management in Scotland which are likely to impact in some way on inshore fisheries and their management. These include the SSME study, the elaboration of the applications of the Water Framework Directive, the Royal Society of Edinburgh's inquiry into the Scottish fishing industry and the Scottish Executive's own review of inshore fisheries management. There is also the Prime Ministers 'task force' charged with defining a medium

term strategy for the UK fishing industry. In establishing its own individual 'route map' each inquiry will contribute to the congestion of ideas as to the future of inshore fisheries. What in the end will be needed is careful 'traffic management' to maximise the benefits of the findings from all the reports to ensure effective integrated management of Scotland's inshore waters. It will be important to ensure that the resulting proliferation of recommendations from these investigations – and any anticipated fallout from other more broadly constructed projects (e.g. ICZM) – are not allowed to slow down or divert the course of environmental integration in fisheries management. By acting swiftly but wisely it should be possible to bring forward the expected reciprocal benefits of sustainable inshore fisheries and productive, well integrated marine ecosystems.

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APPENDIX 1

List of Consultees

Clyde Fishermen's Association:	Patrick Stewart, Secretary
Fife Fishermen's Association:	William Hughes, Secretary
Fisheries Research Services:	Nick Bailey, Ian Tuck
Highlands Council:	George Hamilton, Fisheries Development Manager Peter Tevendale, Project Officer, Sound of Arisaig SAC
Highland and Islands Fishermen's Association:	Peter Davidson, Secretary
Mallaig and North West Fishermen's Association:	Hugh Allen, Secretary
Royal Society for the Protection of Birds:	Darren Kindleysides, Marine Policy Officer
Sea Fish Industry Authority:	Jim Watson, Fisheries Economics Manager
Scottish Executive Environment and Rural Affairs Department:	Gabriella Pieraccini, Inshore Fisheries Branch Ricky Verrall, Marine Environment Unit Peter Irvine, Protected Areas Team
Scottish Fisheries Protection Agency:	Alistair Stewart, Controller Coastal Operations
Scottish Fishermen's Federation:	Ian Duncan
Scottish Natural Heritage:	David Donnan, Head of Marine Policy Ben Leyshon, Moray Firth SAC Project Officer Karen Hall, John Uttley, Shetland Office
Shetland Fishermen's Association:	Hansen Black, Secretary
Shetland Islands Council, Environment Dept:	Austin Taylor
Shetland Shellfish Management Organisation:	Ian Napier, Chairman
Shieldaig Exports:	Karen Starr, Manager
Western Isles Council:	Ian MacLeod, Fisheries Development Officer
Western Isles Fishermen's Association:	Duncan MacInnes, Secretary

APPENDIX 2

Inshore Fishing (Scotland) Act 1984 Sea Fisheries Prohibitions

PROHIBITIONS UNDER THE INSHORE ACT (beginning at south west, anticlockwise to south east)	INTENDED EFFECT	MOBILE GEAR						STATIC GEAR	
		ALL YEAR	SEASONAL	WEEKEND	CERTAIN GEAR	EXCLUSIONS	VESSEL LENGTH	ALL YEAR	SEASONAL
Ban on fishing for cockles by vehicle in Scottish inshore waters	To protect cockle stocks.								
Ban on fishing for cockles in the Solway Firth	To protect cockle stocks.								
Ban on fishing for shrimp by certain beam trawls and otter trawls in the Solway Firth	To protect shrimp stocks.								
Ban (Mar-Aug) on mobile gear boats in Luce Bay.	To protect plaice and other juvenile fish stocks. Sea angling and MoD interests also taken into account.								
Ban on mobile gear boats (except those dredging for mussels and oysters) in Loch Ryan.	To prevent conflict with sea anglers and in consideration of navigational issues in the Loch.								
Ban (Feb-Apr) on mobile gear boats in Ballantrae Bank.	To protect fish spawning grounds.								
Ban on mobile gear boats in the Gare Loch.	To prevent interaction with RN boats.								
Ban (weekend) on mobile gear boats in Firth of Clyde.	As a conservation measure but has also served to prevent gear conflict at weekends.								
Ban on boats over 70ft fishing in Firth of Clyde (except those fishing for pelagic species).	To protect nephrops stocks in particular.								
Ban on suction dredging in Loch Sween.	To protect seabed habitats and shellfish stocks.								
Ban (Oct-Mar) on mobile gear boats, and ban on suction dredging, and ban on demersal trawlers over 12m, and ban on fishing with more than a single trawl in the southern Inner Sound and Lochs Carron, Kishorn, Duich, Alsh and Hourn;	To complement a comparative analysis of prawn trawl/creel fisheries in the area and to ease gear conflict.								

PROHIBITIONS UNDER THE INSHORE ACT (beginning at south west, anticlockwise to south east)	INTENDED EFFECT	MOBILE GEAR						STATIC GEAR	
		ALL YEAR	SEASONAL	WEEKEND	CERTAIN GEAR	EXCLUSIONS	VESSEL LENGTH	ALL YEAR	SEASONAL
Ban on mobile gear boats in Broad Bay.	To protect juvenile fish stocks.								
Ban on mobile gear boats in Loch Roag.	To protect fish stocks.								
Ban on suction dredging between Gallan Head and Aird Barvas.	To protect seabed habitats and shellfish stocks.								
Ban (Dec-Mar) on creel fishing around Flannan Isles.	To protect shellfish stocks.								
Ban (July-Sept) on creel fishing from Bragar to Dell.	To protect shellfish stocks.								
Ban on mobile gear boats in Thurso and Dunnet Bays.	To protect juvenile fish stocks and prevent gear conflict.								
Ban on mobile gear boats in Sinclair Bay.	To protect juvenile fish stocks.								
Ban (May-Sept) on mobile gear boats from the Berry to Costa Head.	To protect fish stocks and prevent gear conflict.								
Ban on mobile gear (except those dredging for mussels), and ban on suction dredging, in the Dornoch Firth.	To protect fish stocks.								
Ban on mobile gear boats (except those dredging for cockles and mussels) and ban on suction dredging in the Cromarty Firth.	To protect juvenile herring stocks.								
Ban on mobile gear boats (except those dredging for cockles & mussels) and ban on suction dredging in the Inverness Firth.	To protect juvenile herring stocks.								
Ban (Oct-Mar) on mobile gear boats from Aberdeen to Mons Craig.	To protect juvenile herring stocks.								
Ban on mobile gear boats between Mons Craig and Doolie Ness.	To prevent gear conflict.								
Ban on mobile gear boats within 0.5 mile, and ban (Oct-Mar) on mobile gear boats within 1 mile between Doolie Ness and Lang Craig	To prevent gear conflict.								
Ban on mobile gear boats between Lang Craig and Arbroath.	To prevent gear conflict								
Ban on mobile gear boats in St Andrews Bay.	To protect fish stocks.								
Ban on boats over 55ft fishing in Firth of Forth (except those fishing for pelagic species)	To protect nephrops stocks								
Ban on mobile gear boats in St Abbs/Eyemouth area.	To prevent gear conflict.								

Source: SEERAD 2003

APPENDIX 3

Criteria for the introduction of proposals for action under the Inshore Fisheries (Scotland) Act, 1984

1. Is consistent with the aims of environmental integration in that it contributes to the achievement of sustainable fisheries in a healthy marine ecosystem.
2. Lies within the remit of the 1984 Act, as amended.
3. Cannot be achieved by any other more appropriate action.
4. Is a proportionate response to the problem identified.
5. Maintains a fair and reasonable balance between the interests of fishermen and marine nature conservation.
6. Meets the criteria for sound marine nature conservation as laid down in the EC Habitats Directive, UK Marine Biodiversity Plan, etc.
7. Does not seriously impair the long term economic viability of local fishing activities.
8. Does not act to prejudice the development of any other economic activities within the area.
9. Has been the subject of proper consultation between all relevant stakeholders in the local area.
10. Has the support of a significant majority of fishing interests within the local area.
11. Is deemed reasonable on scientific grounds either in terms of existing scientific evidence or on the basis of the precautionary approach.
12. Is capable of being effectively enforced, monitored and assessed.