

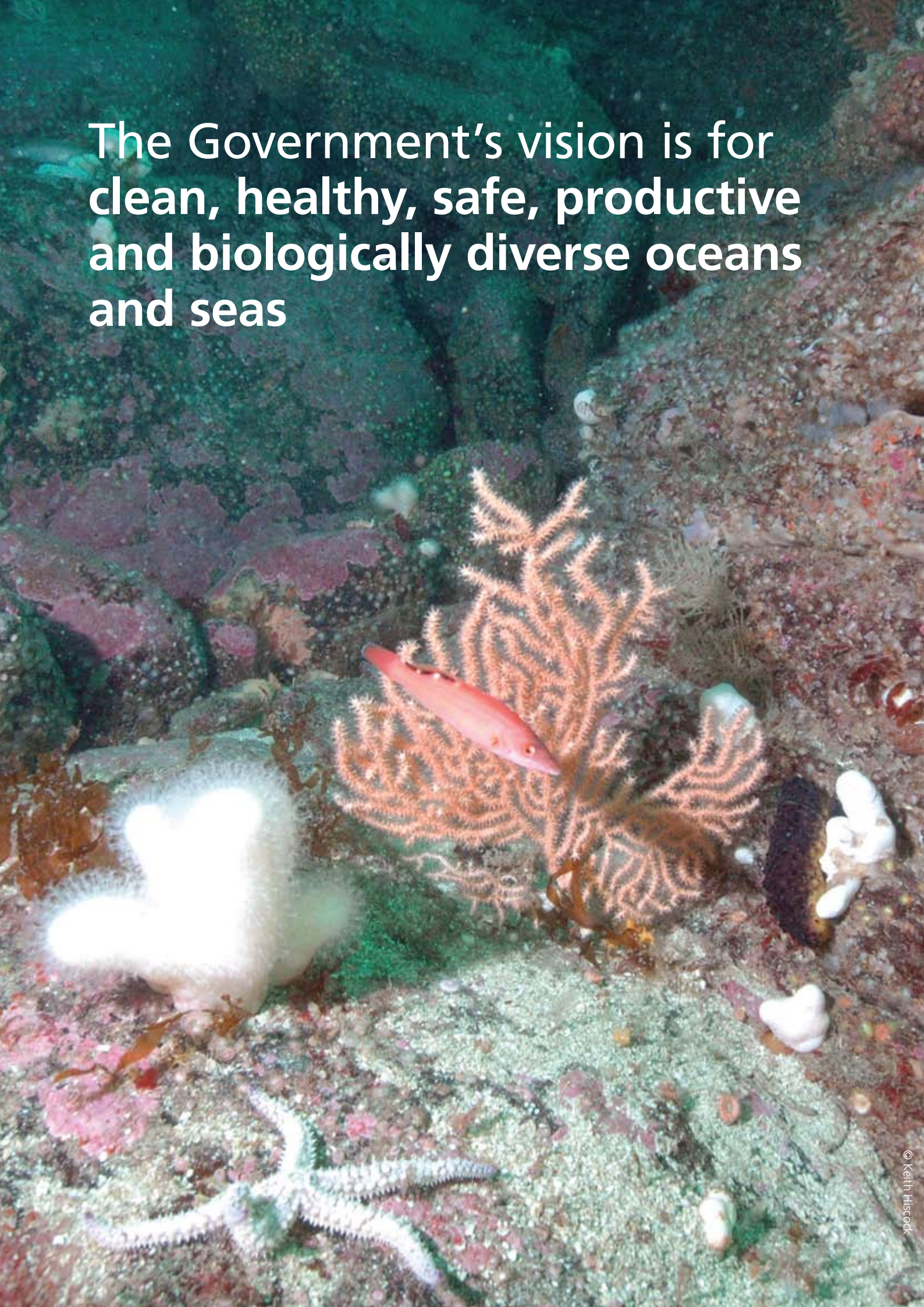
# Defra's marine research programme



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The Government's vision is for clean, healthy, safe, productive and biologically diverse oceans and seas





# Introduction

Defra requires evidence<sup>1</sup> to support sound decisions when developing, shaping and evaluating policy. Research forms an important part of the evidence base, together with monitoring, and economic and statistical analysis. Our publication 'Defra's role in marine science'<sup>2</sup> explains why we need marine science; the scope of our marine science programme (which includes research and also monitoring and advice); how we work with others both internationally and nationally; who are the UK key players in marine science; and the future challenges. Defra's annual spend on marine research is approximately £11m and the Marine and Fisheries Science Unit is responsible for commissioning, monitoring and evaluating research projects on behalf of the policy customers.

Defra completed a major review of its marine research in early 2009 and has adopted a new marine research programme structure, which covers marine environment, marine biodiversity and marine fisheries<sup>3</sup>. The new programme allows us to focus much of our research efforts on understanding the impact that pressures (such as pollutants, construction, emergency oil spills) have on the state of the marine environment, assessing whether the impact is of significance, and evaluating alternative management strategies. It also integrates our sustainable marine fisheries research with our wider marine research. The marine fisheries research assists managers in restoring and maintaining healthy fish stocks; adopting an ecosystem-based approach to fisheries management; and promoting and supporting a profitable and sustainable fishing industry.

The structure of the marine research programme has been shaped by our key policy drivers, and is now organised into four themes. We have also improved our research commissioning process and access to marine knowledge from our research.

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1. Evidence is defined as reliable and accurate information that Defra can use to support sound decisions in developing, shaping, and evaluating policy.
  2. *Defra's role in marine science*, see: [www.defra.gov.uk/marine/pdf/science/defra-role.pdf](http://www.defra.gov.uk/marine/pdf/science/defra-role.pdf)
  3. Defra's Marine Environment Research Programme Review: Stage III report is at [www.defra.gov.uk/marine/science/index.htm](http://www.defra.gov.uk/marine/science/index.htm)

# Thinking behind the structure of the programme

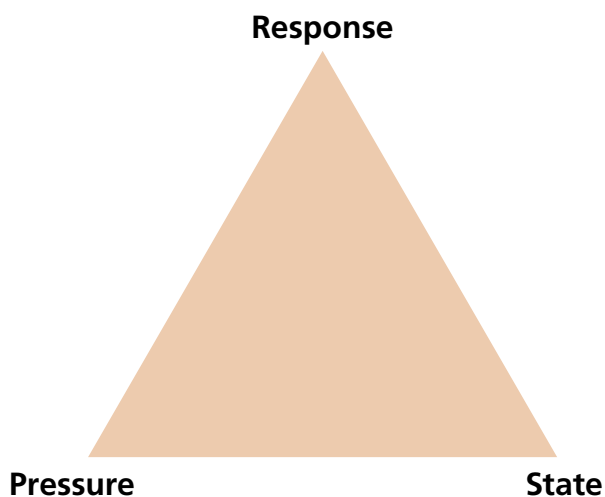
Research helps Defra to shape forward-looking policies to tackle the causes of problems, not just the symptoms. The marine research programme therefore needs to include both applied and strategic elements. Whilst Defra does not need to develop a complete understanding of the whole ecosystem, our programme does need to link with marine science programmes funded by others who are seeking to develop wider understanding of whole Earth systems.

Based on this thinking, we have used the widely accepted Pressure-State-Response (P-S-R) model, adopted by the Organisation for Economic Co-operation and Development (OECD) and others, to provide a suitable

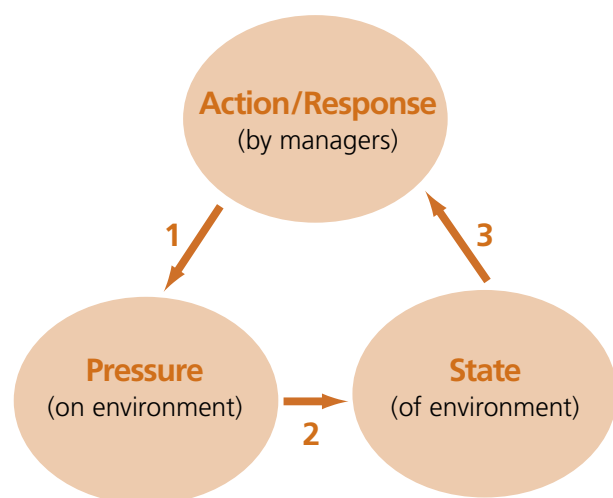
framework around which to develop the new programme. This model (Figure 1) assumes that human activities exert pressures (P) on the environment. These pressures affect its state (S) and society responds (R) to these changes with policies and management action.

For Defra this model needs to be developed further to emphasise the important role of 'management' (Figure 2). Arrow 1 denotes how management actions control pressure, Arrow 2 denotes how changes in pressure modify the state of the environment, and Arrow 3 denotes how monitoring the state of the environment helps to inform managers as to whether it meets management objectives.

**Figure 1: Pressure-State-Response (P-S-R) model**



**Figure 2: Dynamic model showing the relationship between management, pressure and state**

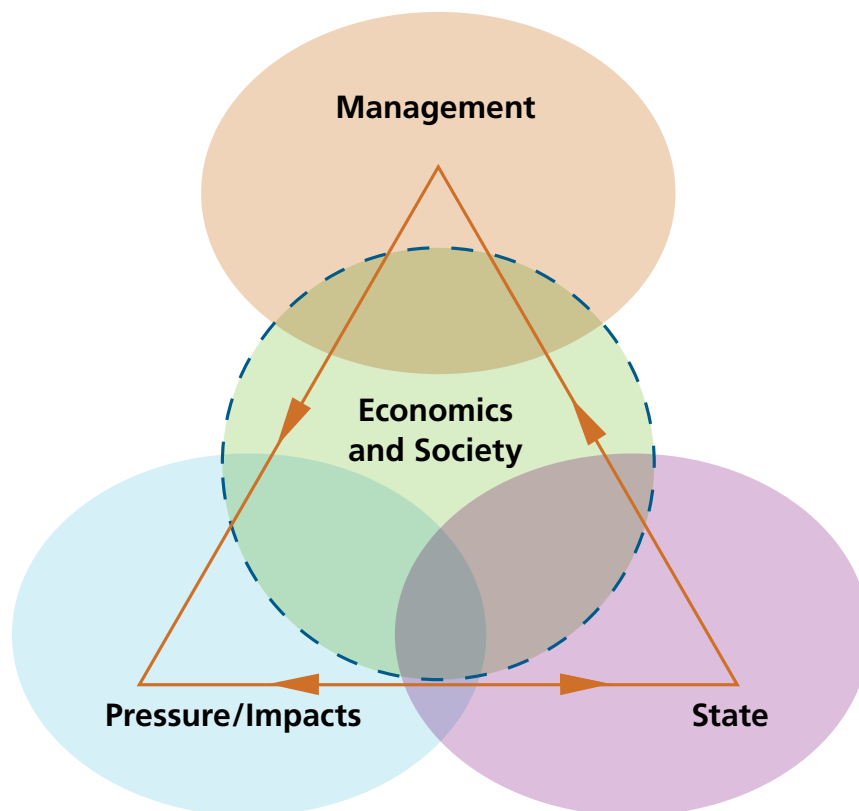


When using this model in developing the new research structure, three further factors were taken into account:

- Research undertaken on the axis linking Pressure/Impact and State/Environment is, in reality, likely to be a continuum, with individual projects including elements of both impact and environment. As a result they may be difficult to categorise and to address this, the Pressure and State ovals need to overlap.

- 'State' itself is not static. It is subject to natural change and because of this its response to pressures may vary. To illustrate this, the Pressure-State axis needs to incorporate a two-way arrow.
- Economic and social research has been identified as a priority area. One option is to integrate economic and social research into all three areas: management, pressure/impact and state. However, to give emphasis to this new area, we have included it as a separate theme, but with close links to each axis (Figure 3).

**Figure 3: Model for the marine research programme structure**



# Links to key policy drivers

The marine science programme structure links to three key policy drivers which will influence future evidence needs: the UK Government's Marine Objectives<sup>4</sup>, the European Marine Strategy Framework Directive<sup>5</sup> and Fisheries 2027, Defra's long-term vision for sustainable fisheries<sup>6</sup>.

## Marine Objectives

The Government is committed to five high level Marine Objectives designed to deliver its vision for the marine environment of *clean, healthy, safe, productive and biologically diverse oceans and seas*. These Objectives, published in 2009, provide the framework for developing policy within Defra and for this reason have been used to shape the new research programme. The Objectives are:

- achieving a sustainable marine economy;
- ensuring a strong healthy and just society;
- living within environmental limits;
- promoting good governance; and
- using sound science responsibly.

The UK Marine Science Strategy, which is being developed by the Marine Science Co-ordination Committee, will use the Marine Objectives as an important point of reference.



## The Marine Strategy Framework Directive

The European Marine Strategy Framework Directive, which was adopted in July 2008, provides a significant marker for marine policy and for marine research.

4. *Our Seas- a shared resource. High level marine objectives*, see: [www.defra.gov.uk/marine/pdf/environment/ourseas-2009update.pdf](http://www.defra.gov.uk/marine/pdf/environment/ourseas-2009update.pdf)

5. Marine Strategy Framework Directive 2008 (2008/56/EC), see: [www.defra.gov.uk/marine/environment/msfd.htm](http://www.defra.gov.uk/marine/environment/msfd.htm)

6. *Fisheries 2027; a long-term vision for sustainable fisheries*, see: [www.defra.gov.uk/marine/fisheries/policy.htm](http://www.defra.gov.uk/marine/fisheries/policy.htm)

The Directive states that 'marine strategies will be effective only if they are devised on the basis of a sound knowledge of the state of the marine environment' and that an appropriate framework, including marine research, is needed for informed policy-making. The new research programme structure takes account of the Directive and the research priorities flowing from it.

The Directive puts in place a range of requirements. Those needing research can be summarised as follows:

- analysis of the essential features and characteristics of the marine environment;
- analysis of the predominant pressures and impacts of human activity;
- economic and social analysis of the use of the marine environment;
- determination of a set of characteristics of good environmental status;
- establishment of a comprehensive set of environmental targets and associated indicators for the marine environment; and
- identification of measures which need to be taken in order to achieve or maintain good environmental status, including restoration.



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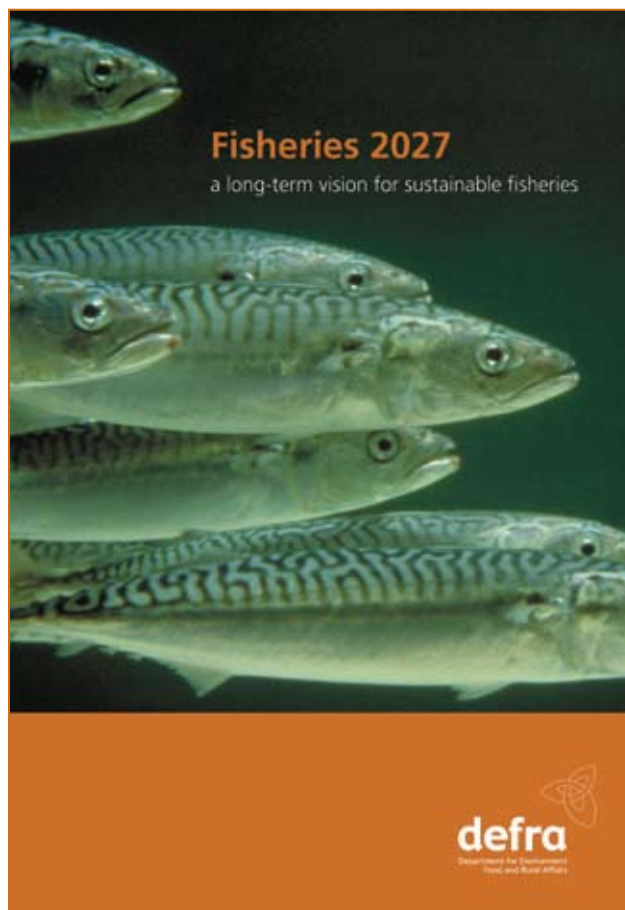
These requirements will need a significant research effort, with four key areas requiring evidence being the need to:

- analyse economic and social use of the marine environment;
- analyse pressures and impacts of human activity, including physical damage, contamination by hazardous substances, release of substances and nutrient enrichment;
- understand essential characteristics of the marine environment, including physical, chemical and biological features and habitat types; and
- identify measures to help achieve or maintain good environmental status.

## Fisheries 2027

Following wide consultation, in 2007 Defra published its long-term vision for sustainable fisheries 'Fisheries 2027'. The overall priority set out in the vision is to get the best long-term economic benefits for society through effective management of our fisheries within the two following constraints:

- fishing is managed according to an ecosystem-based approach which ensures ecosystems are healthy and that rare, vulnerable or valued species and habitats are protected; and
- access to fisheries continues to be available to small-scale fishing vessels, even if in some cases that is not the most economically efficient way of harvesting the resource.



Sustainability, as set out in the vision, means that:

- Economic returns are optimised;
- There are rights of access to fisheries coupled with clear responsibilities;
- Stocks are plentiful and sustainably harvested;
- Fishing activity contributes to coastal communities;
- The environmental impact of producing and consuming fish products is acceptable;



- A Common Fisheries Policy is delivering sustainable fisheries;
- Management is integrated and devolved to the most appropriate national, regional or local level;
- Management is responsive and based on agreed criteria for assessing impacts on stocks and the environment more widely;
- Fish are a readily available and valued source of protein.

Scientists, including economists and social scientists, have a role in delivering these vision statements by:

- providing the best possible science;
- involving stakeholders in data collection and development of science to ensure it is the best quality possible;
- communicating effectively with and earning stakeholders' respect;
- providing objective information and advice to fisheries managers; and
- clearly differentiating between scientific evidence and management advice.

Managers will be seeking answers to key questions including:

- How do we restore and maintain healthy fish stocks?

- How do we adopt an ecosystem-based approach?
- How do we promote and support a profitable and sustainable industry?

Research will play an important part in taking the vision forward, for example in the development of long-term plans for stocks and fisheries, the adoption of a more ecosystem-based approach to management, and the important socio and economic aspects of the fishing industry.

## Big Science Challenges

In addition to providing evidence for specific policy drivers, the Defra's Marine Programme also needs to take into account challenges that are not confined to the marine area. Drawing on information from a number of sources Defra has identified some high level cross-cutting 'Big Science Challenges' including Adapting to Climate Change, Sustainable Food Supply, and Ecosystems. The Marine Programme will need to commission research that helps provide the necessary evidence. We will also be bringing together evidence from across Defra's research programmes, and working collaboratively with other funders.

# The structure of the marine research programme

The marine research programme is structured around the Marine Objectives, with the Objective of ‘using sound science responsibly’ being the guiding principle for Defra’s management of the programme. This includes adopting good practice, working with other funders and managing knowledge.

The marine research programme, which includes the sustainable marine environment research programme and the sustainable marine fisheries research programme, is organised into the following themes:

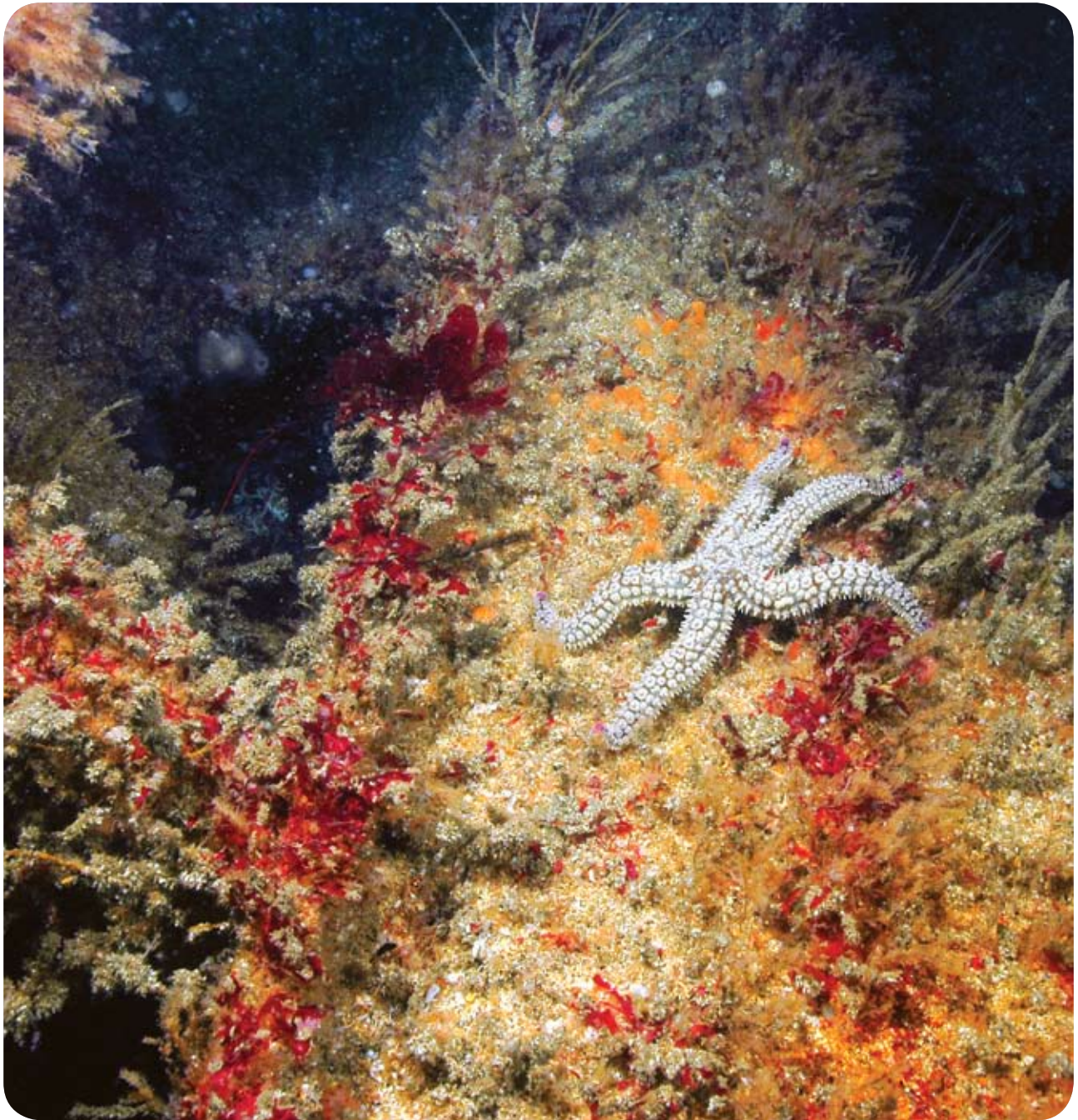
- Economic and social research in the marine environment
- Human pressures and impacts on the marine environment
- State of the marine environment
- Science for integrated marine management

These four research themes link to the Marine Objectives, the Marine Strategy Framework Directive and Fisheries 2027 (Table 1).

**Table 1: Links between the research themes and key policy drivers**

Research theme	Marine Objective	Broad research areas identified in the Marine Strategy Framework Directive and Fisheries 2027
Economic and social research in the marine environment (Economics and Society)	Ensuring a strong healthy and just society	Analysing economic and social use of the marine environment, including fish stocks
Human pressures and Impacts on the marine environment (Pressure/Impact)	Living within environmental limits	Analysing pressures and impacts of human activity, including fishing, contamination by hazardous substances, release of substances and nutrient enrichment
State of the marine environment (State)	Living within environmental limits	Understanding essential characteristics of the marine environment, including physical, chemical and biological features and habitat types, and fish stock dynamics
Science for integrated marine management (Management)	Promoting good governance	Identifying measures to help achieve or maintain good environmental status and developing long-term management plans for fish stocks

The next sections set out the broad scope of the four research themes to define the 'boundaries' of each theme, summarise the challenges identified by key policy drivers, and indicate broad areas for future research.



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# Theme 1: Economic and social research in the marine environment

## Aim of research

This research aims to develop methods for valuing ecosystem goods and services provision and assessing the impacts of resource degradation on this; to identify the key socio-economic and environmental drivers of marine ecosystem change; and to assess the potential of developing economic instruments that reinforce the sustainable use of marine resources. Social research is needed to provide qualitative and quantitative information on a range of issues related to the value of the marine environment.

Fisheries research aims to give us a better understanding of the socio-economic drivers and incentives affecting fishermen's behaviour and the resulting effect on the dynamics of fishing fleets.

## Objectives of research

The objectives are to:

- investigate a range of economic and social factors relevant to marine environment management including evaluation of ecosystem goods and services and the relationship with marine biodiversity; the impact of human activity on ecosystem services provision; the cost of degradation of the marine environment and its capacity for recovery;
- provide a better understanding of social, economic and environmental aspects of the marine environment, including how the benefits of marine ecosystems are

distributed across society and how this can support marine planning; and

- investigate the potential scope for market-based instruments in managing marine resources effectively.

## Links to key policy drivers

A wide variety of marine environment and fisheries policy areas need the support of economic and social evidence:

- the Marine Objectives need an understanding of how people value the marine environment and how they view different priorities for the use of marine areas;
- the Marine Strategy Framework Directive needs an economic and social analysis of the UK seas, including the cost of degradation of the marine environment and an understanding of the key tensions between socio-economic and environmental outcomes;
- the Marine and Coastal Access Bill needs socio-economic evidence to support the process of developing marine plans and selecting marine conservation zones;
- the Fisheries 2027 vision for sustainable fisheries needs assessments of the wider social, economic and environmental benefits and impacts of the fishing industry to inform fisheries management.

## Meeting policy needs

The research will give policy-makers a range of economic and social evidence to help inform decision-making related to marine environment management, including assessing the total economic value of the environment in order to assess the economic impact arising from resource degradation; assessing the potential for developing economic instruments (e.g. licences, incentives, tradable permits that change behaviour to favour the sustainable use of marine resources); and assessing society's needs related to the marine environment and how the benefits of marine ecosystems are distributed across society.

## Research areas

Research is needed in the following areas:

- valuation exercises on the contribution key habitats and species make to goods and services of the marine environment; market values for traded goods and services; and derived market values for non-traded goods and services;
- understanding the cost of degradation of the marine environment and its capacity for recovery, in particular how existing socio-economic activities affect ecosystem service provision, what future impact they are expected to have and how this information should be used in marine planning;
- economic analysis of marine industries to identify the likely future scale of existing industries and development of new ones;

- development of bio-economic models and other tools to assist in assessing the impact of climate change on the provision of goods and services from the marine environment;
- analysis of appropriate market-based and other economic instruments to be used in the effective management of marine resources; and
- assessing the impact of industry on the provision of ecosystem goods and services, at the regional scale.



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# Theme 2: Human pressures and impacts on the marine environment

## Aim of research

This research aims to understand the impact that specific and cumulative human activities (Pressure), and climate change, have on key aspects of the marine environment and its ecosystems (State). Impacts can include nutrient enrichment, aggregate extraction, hazardous substances, accidental oil spills and deposits. The research allows us to assess whether such impacts are sufficiently damaging to warrant management actions.

Research on impacts of fishing on the marine ecosystem, including vulnerable species and habitats, aims to develop an ecosystem-based approach to fisheries management. We also need to develop robust indicators of the status of marine ecosystems, and appropriate measures to help us avoid or mitigate against damage. Climate change is likely to have a significant impact on fish stocks, and fisheries managers need predictions of possible future scenarios.

## Objectives of research

The objectives are to:

- describe the effects of the impacts, from the cellular and individual level through to populations and ecosystems, to determine whether these effects are sustainable;
- help develop alternative management scenarios for effects which are not sustainable and investigate the potential for adopting measures that will help restoration;

- understand the impact of fishing on the wider marine ecosystem, including vulnerable species and habitats and develop suitable mitigating measures (such as discard reduction); and
- understand how environmental variability and climate change affect fisheries productivity by area and timescale.

## Links to key policy drivers

Research on pressures and impacts links to:

- the Marine Objectives, which need an understanding of human impact on biodiversity and how to conserve and recover the marine environment to halt the loss of biodiversity;
- the Marine Strategy Framework Directive, which needs analysis of the predominant pressures and impacts on the status of the marine environment;
- the Marine and Coastal Access Bill, which needs support for the development of marine plans and help to determine which human activities should be restricted within marine conservation zones; and
- the Fisheries 2027 vision of a European Common Fisheries Policy delivering sustainable fisheries, which needs an understanding of the impact that fishing has on the wider marine environment, including on sensitive habitats and species, to develop the ecosystem-based approach to fisheries management.



## Meeting policy needs

The research will enable Defra to assess the extent to which human-induced changes to the marine environment are significant and to develop alternative management scenarios. It will also help Defra to adopt an ecosystem-based approach to management which achieves sustainability of the fisheries, fish stocks and the environment.

## Research areas

Research is needed in the following areas:

- development of tools, including indicators, to monitor pressure and impact on the marine environment including subtle and sub-lethal effects;
- development of models for a wide range of purposes including translating individual impact to populations, modelling pathways and footprint of pollution events;
- understanding how impacts at the cellular level translate through to the whole animal, leading to community change;
- understanding the potential for recovery once the impact is reduced, for example through the creation of marine protected areas;
- predicting the likely impact of climate change on the marine environment;
- understanding how different levels of fishing effort impact on ecosystem sustainability; and
- developing and testing modifications to fishing gear that reduce its environmental impact.



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# Theme 3: State of the marine environment

## Aim of research

This research aims to improve understanding of the meaning of terms such as 'healthy marine habitats', 'strong, biologically diverse communities', and 'functioning of healthy, resilient and adaptable marine ecosystems'. Qualitative descriptors for determining good environmental status are for most criteria rather broad and need to be refined. For example, criteria state that biological diversity needs to be 'maintained', food webs need to occur at 'normal abundance and diversity' and sea bed integrity is at a level that ensures the structure and function of the ecosystem are not 'adversely affected'. There is the added complexity because marine systems are subject to annual, inter-annual and decadal natural variation which needs to be taken into account when trying to establish human effects.

Changes in the marine environment through natural fluctuations can have a major effect on fish and shellfish stocks, and the ecosystems to which they belong. Environmental variability is the key driver of the major annual variations in recruitment and of medium-term fluctuations in abundance, and such changes may affect food webs and productivity over a range of areas and timescales. Research on the effects of the environment on fish stocks will help us to understand how the environment is affecting stocks to be able to explain and forecast changes in fish and shellfish distribution, recruitment and growth, and to distinguish the effects of environmental factors from the impacts of fishing when making management decisions.

## Objectives of research

The objectives are to:

- determine the essential features and characteristics of the marine ecosystem that help define good environmental status, taking into account natural variability; and
- understand how environmental variability affects fisheries' productivity over a range of areas and timescales.

## Links to key policy drivers

Research on the state of the marine environment links to:

- the Marine Objectives to establish measures of healthy marine habitats that support strong, diverse biological communities, and the functioning of healthy, resilient and adaptable marine ecosystems. We also need to develop measures of viable populations of rare, vulnerable and valued species, for future adoption by management;
- the Marine Strategy Framework Directive to establish a set of characteristics for good environmental status for a range of physical, chemical, habitat and biological features, and to improve understanding of 'ecologically diverse and dynamic oceans and seas which are clean, healthy and productive';
- the Marine and Coastal Access Bill to inform the selection of marine conservation zones;

- the Convention on Biological Diversity to inform how to halt the loss of biodiversity; and
- the Fisheries 2027 vision for a European Common Fisheries Policy delivering sustainable fisheries to understand fish population biology, such as migration, and the potential impact of the environment on stocks to feed into the development of long-term management plans for fisheries.

### Meeting policy needs

The research will enable Defra to develop a set of definitions and qualitative descriptors of good environmental status, in order to establish appropriate environmental targets. It will contribute to the development of innovative and cost effective means of monitoring change in the marine environment. It will also help to ensure that management measures take account of short-term and longer-term environmental changes, through an understanding of how biological processes and the environment help to determine fish stock size.

### Research areas

Research is needed in the following areas:

- developing tools and technologies to take forward marine habitat mapping and improve current understanding of extent of habitats and resources;
- understanding natural variability in the ecosystem;

- understanding resilience and productivity of the marine environment;
- understanding the abundance and distribution of key habitats and species of interest and the threats to their status;
- understanding the connections between habitats and species in order to implement the ecosystem approach;
- developing indicators of biodiversity and other aspects of the environment; and
- understanding essential biological processes of commercial finfish and shellfish species, including spatial aspects such as migration, and the relationship between stocks and their immediate environment.



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# Theme 4: Science for integrated marine management

## Aim of research

This research aims to draw together findings from the Pressure/Impact and State research themes to help Defra develop effective management strategies, such as marine planning, adopting the ecosystem approach and integrated coastal zone management. Research will also help to monitor the effectiveness of adopted management measures.

Fisheries management decisions are taken against a background of considerable biological and economic uncertainty and complexity. Areas of biological uncertainty include the size and status of the fish stocks, the effects of the environment on recruitment, the interactions between predators and their prey, and the impact that fishing has on stocks. Areas of economic complexity include the interaction between fleets in mixed fisheries and the response of fishermen to management measures. Since it is not generally possible to test alternative policies and management strategies experimentally, managers have to rely on computer models to help answer 'what-if' questions. The focus for fisheries management research in this theme is the development of computer-based tools that can be used to test the performance of current and alternative strategies for management. An important driver is to reduce uncertainty and thus improve management plans.

## Objectives of research

The objectives are to:

- assimilate and analyse the evidence emerging from other research themes

and, through further focussed research, support the development of management strategies;

- evaluate the effectiveness of measures once adopted; and
- provide the tools for better fisheries management including improved understanding of the status of stocks, and biological and fisheries interactions.

## Links to key policy drivers

The research on integrated management links to:

- the Marine Objectives to develop responsive management mechanisms which work effectively together, for example through integrated coastal zone management. The use of the marine environment needs to be planned and based on an ecosystem approach which takes account of climate change;
- the Marine Strategy Framework Directive to ensure the use of the marine environment is at a level that is sustainable; to help develop and implement a marine strategy; and to identify measures needed to achieve or maintain good environmental status;
- the Marine and Coastal Access Bill to help establish the effectiveness of marine conservation zones as a management approach for marine conservation, and assess the effectiveness of marine planning tools in delivering marine planning objectives; and

- the Fisheries 2027 vision for a European Common Fisheries Policy delivering sustainable fisheries to develop long-term fisheries management plans, which rely on models that take account of incomplete data and uncertainty over the dynamics of fish population and fishing fleets.

### Meeting policy needs

The research will assist Defra in developing a more holistic and fully integrated approach to the management of the marine environment, and assessing the effectiveness of management measures. It will also support strategic and tactical fisheries management decisions including the development of management plans, the adoption of technical conservation measures, and assessment of novel approaches to management.

### Research areas

Research is needed in the following areas:

- developing modelling and other approaches to assist effective management of the marine environment, including responding to accidental pollution events, handling contaminated dredged material, and adopting marine planning;
- contributing to the practical application of the ecosystem-based approach for fisheries at a regional level;
- contributing to the development of management objectives, as part of adopting the ecosystem approach, based on evidence gathered in the State theme;

- advising on the likely consequences of adopting alternative management objectives for the marine environment;
- examining how management systems can be used to modify pressure in order to meet management objectives;
- determining characteristics that help define good environmental status;
- assessing alternative management measures for achieving and maintaining good environmental status; and
- evaluating the success of policies.



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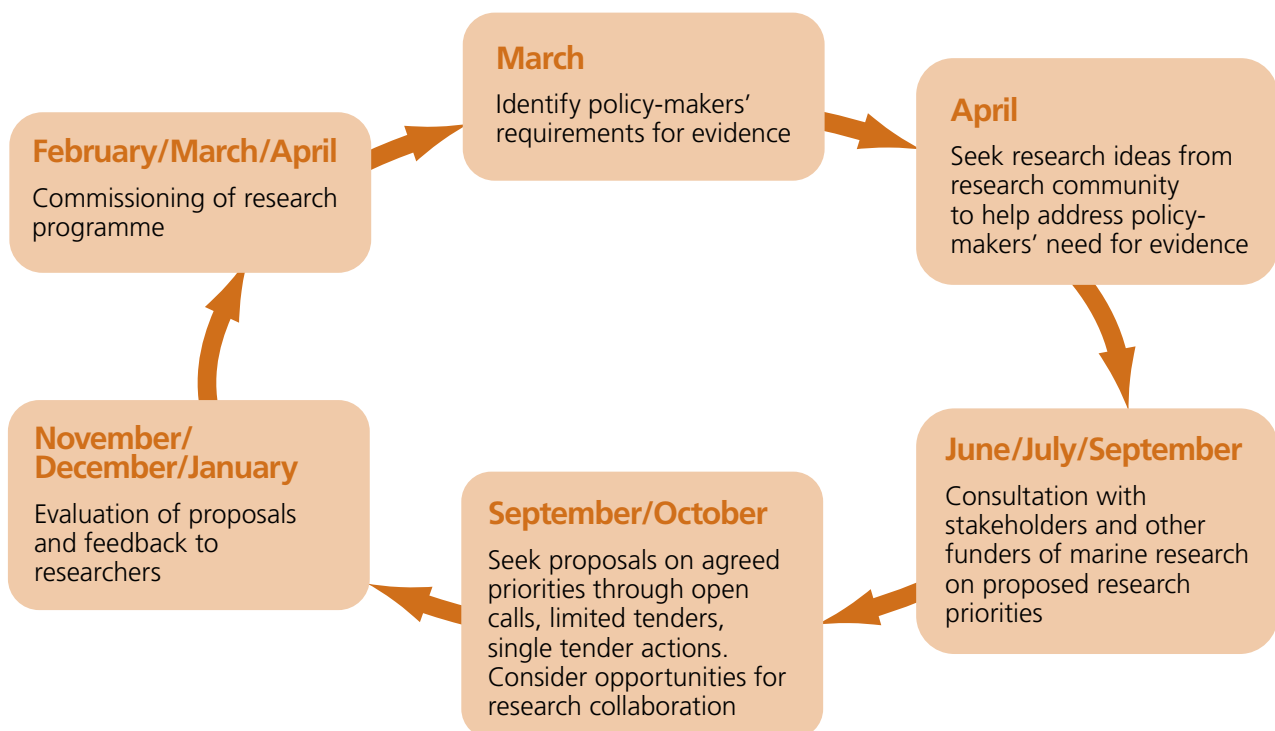
# The research commissioning process

Defra's commissioning of marine research is guided by the broad principles set out in the Marine Objective of 'using sound science responsibly':

- our understanding of the marine environment continues to develop through new scientific and socio-economic research and data collection;
- sound evidence and monitoring underpins effective marine management and policy development; and
- the precautionary principle is applied consistently in accordance with the Government's sustainable development policy.

An annual commissioning timetable, which sets out key steps for commissioning work with Cefas (Centre for Environment, Aquaculture and Fisheries Science), Defra's executive agency, and other research organisations, is being operated by the Marine and Fisheries Science Unit from 2009 (Figure 4). The commissioning process will be reviewed for 2010 to allow further improvements to be made.

**Figure 4: Annual commissioning timetable**





# Working with other funders and stakeholders

The research commissioning process will encourage greater sharing of knowledge with other funders and facilitate the identification of collaborative opportunities, while minimising duplication of effort. Defra is particularly seeking closer liaison with Research Councils, (especially the Natural Environment Research Council (NERC)), the European Commission and other international funders.

We are planning to work more closely with other funders of research by establishing a Research Liaison Group to improve linkages and consultation with other funders. The Group will include organisations such as:

- Defra – Marine Programme policy team leaders
- Devolved Administrations
- the Environment Agency
- Research Councils (such as NERC)
- the secretariat of the Marine Science Co-ordination Committee
- other Government funding bodies
- other marine science funders

We will consult this Group during the commissioning process to seek comments on policy priorities, research areas, and the quality of proposals. By using this Group, we aim to avoid duplicating research funded elsewhere in Defra or in the statutory agencies and to ensure a more cohesive programme of marine research.

We are aiming to improve stakeholder engagement in the commissioning process.

We are setting up a Marine Science Stakeholder Advisory Group to replace the Marine Fisheries Science Stakeholder Advisory Group. Its role will be to advise Defra on priorities for its future marine research programme. The interests of scientists, conservation and environmental organisations, and sea users will all be represented on the Group.

Running in parallel to the commissioning process Defra also has a peer review process for each project and a major review every four to five years to assess the quality of the research being delivered. We will be looking at these processes in 2009 to see if we can make improvements.



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# Access to research findings

We are aiming to improve the way we communicate research findings. We are developing a database of marine projects (MARDAT) which lists all marine and fisheries research projects completed since 1990. It aims to make research evidence more accessible to policy-makers and the research community. This database will be available on the Defra website.

A Marine Fisheries Science Yearbook has been published since 2006/07 to illustrate the work funded each year, explain how the results are being used, promote understanding of fisheries science and help people interested in fisheries to contribute ideas for scientific work. A Marine Environment Science Yearbook is planned for projects completed in 2008/9 onwards. We will also be publishing short summaries of all research projects we fund.

## Where to find more information

To find out more about the marine science Defra commissions see:

[www.defra.gov.uk/science/default.htm](http://www.defra.gov.uk/science/default.htm) and [www.defra.gov.uk/marine/science/index.htm](http://www.defra.gov.uk/marine/science/index.htm)

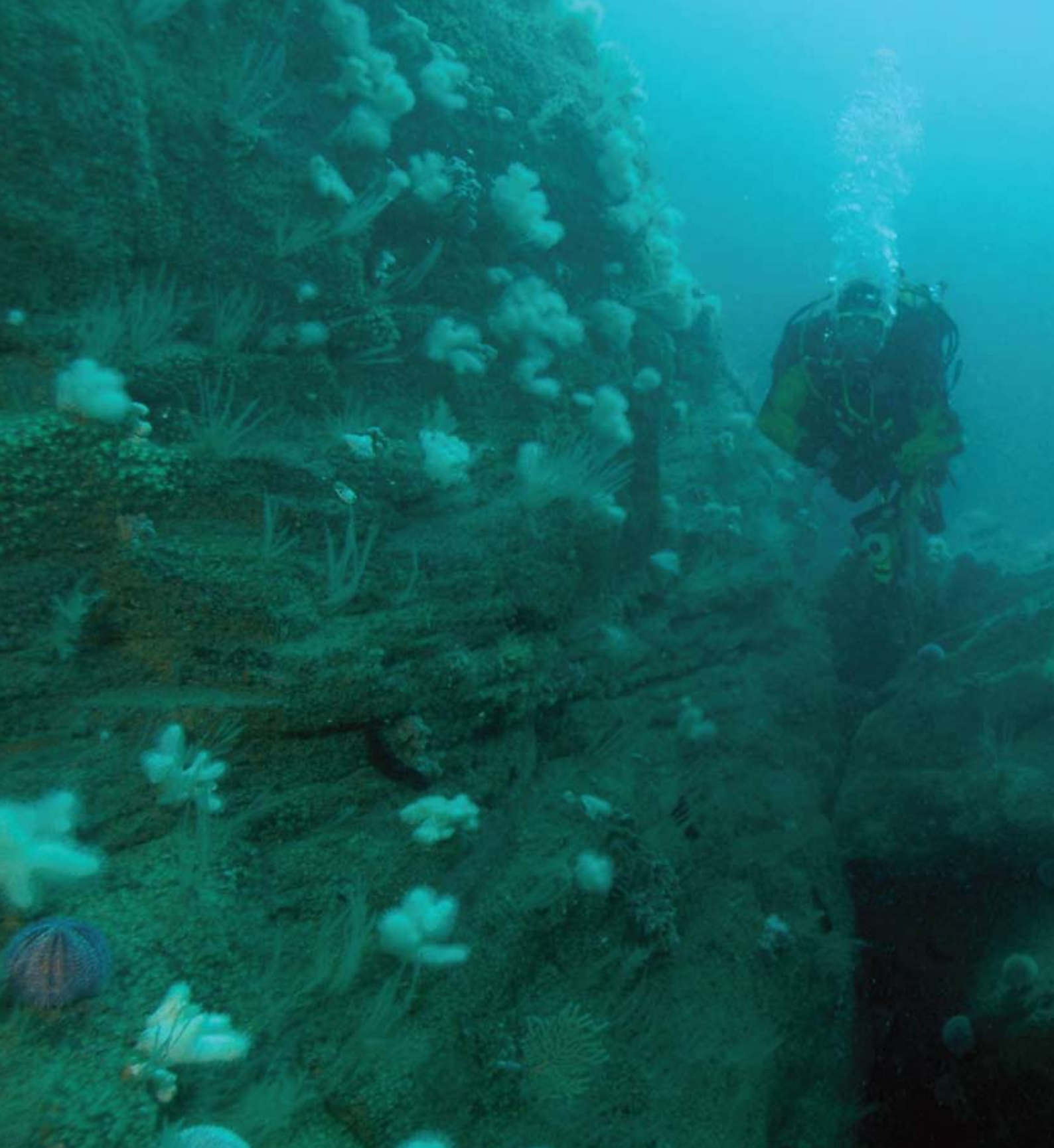
The Marine Fisheries Science Yearbooks 2006/7, 2007/8 and 2008/9 are at [www.defra.gov.uk/marine/science/yearbook.htm](http://www.defra.gov.uk/marine/science/yearbook.htm) and when published the Marine Environment Science Yearbook will be available from [www.defra.gov.uk/marine/science/index.htm](http://www.defra.gov.uk/marine/science/index.htm)

When the database of marine projects (MARDAT) is operational there will be a link to it from [www.defra.gov.uk/marine/science/index.htm](http://www.defra.gov.uk/marine/science/index.htm)

To explore research ideas with Defra's Marine and Fisheries Science Unit email: [fisheriesscience@defra.gsi.gov.uk](mailto:fisheriesscience@defra.gsi.gov.uk)







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