11. CONSERVATION OBJECTIVES

294. With the main levels of the draft framework for marine nature conservation identified (the Wider Sea, Regional Sea, marine landscapes, nationally-important features and nationally-important areas), it was considered necessary to set appropriate conservation objectives for these. Such conservation objectives would serve as a benchmark against which to assess the likely harm to the marine environment from human activities, and thus guide the management of human activity.

295. Originally, it had been envisaged that it would be desirable to develop conservation objectives at each of the various levels of the framework for marine nature conservation, but as work on the Pilot progressed it became clear that such an approach would not only be very onerous to develop technically, but, more importantly, be extremely difficult to implement in practice because of its complexity. Moreover, the results of initial work commissioned on conservation objectives from the Nature Bureau, and also discussions held with stakeholders, illustrated that the primary benefits of identifying conservation objectives would be likely to accrue at the Regional Sea level, and that necessary refinements at other levels could be achieved through fine tuning.

296. In order to set nature conservation most effectively within the overall context of Sustainable Development, it was felt necessary to align the conservation objectives, wherever possible, with the objectives of other sectors. To help achieve this, the Pilot first considered the position of conservation objectives within the context of Strategic Goals for the marine environment.

Strategic goals for the marine environment

297. The Pilot considered that there should be a clear line of sight between the vision and strategic goals for the marine environment in general, right through to the specific actions needed to deliver marine nature conservation. The vision has been set out in *Safeguarding our Seas* (Defra, 2002a), and strategic goals proposed in *Seas of Change* (Defra, 2002b).

Vision for the UK marine environment:
'Clean, healthy, safe, productive and biologically diverse oceans and seas. We want to see this both nationally and globally. Within one generation we want to have made a real difference.'

Proposed strategic goals for the UK marine environment:

1. To conserve and enhance the overall quality of our seas, their natural processes and biodiversity;

2. To use marine resources in a sustainable and ecologically sensitive manner in order to achieve maximum environmental, social and economic benefit from the marine environment;

3. To sustain economic benefits and growth in the marine environment by enabling and encouraging environmentally sustainable employment;

4. To increase our understanding of the marine environment, its natural processes and our cultural marine heritage;

5. To promote public awareness, understanding and appreciation of the marine environment and seek active public participation in the development of new policies.

These strategic goals have been the subject of wide consultation since they were published and they may be refined.

298. There are also many international and European targets for the marine environment which the UK and other governments need to meet. These targets have been incorporated into the approach to defining conservation objectives.

International and European targets for the marine environment which the UK government needs to meet, include:

1. Halt the decline of biodiversity across the European Union by 2010 (EU 6th Environmental Action Programme);

2. Encourage the ecosystem approach in marine management by 2010 (World Summit on Sustainable Development, 2002); ecosystem-based management approach formally endorsed by UK (5th North Sea Conference);

3. Identify and designate by 2010 relevant areas of the UK's seas as areas of marine protection belonging to a network of well managed sites (5th North Sea Conference and OSPAR Convention);

4. Restore depleted fish stocks to maximum sustainable yields by 2015 'where possible' (WSSD);

5. Maintain or restore natural habitats and species of wild fauna and flora to a favourable conservation status (EC Habitats Directive);

6. Prevent further deterioration in and protect and enhance the status of aquatic ecosystems, including estuarine and coastal waters (EC Water Framework Directive).

Conservation objectives for the Irish Sea

299. The focus of this chapter is to develop an approach to the setting of conservation objectives which addresses the first of the strategic goals referred to in paragraph 297, namely *'to conserve and enhance the overall quality of our seas, their natural processes and biodiversity'* and make a significant contribution to the second goal *'to use marine resources in a sustainable and ecologically sensitive manner in order to achieve maximum environmental, social and economic benefit from the marine environment'*. The approach taken is one which can be applied to the various levels of the draft framework for marine nature conservation.

300. For the purpose of setting conservation objectives, the Regional Sea is considered as having three components: the physical and chemical properties of the Regional Sea, its productivity and its biodiversity. It is proposed to set an aim for each of these components as follows:

i. to maintain the physical and chemical properties of the ecosystem;

ii. to maintain each component of the ecosystem so that it can make its expected contribution to the food web;

iii. to prevent further loss of marine biodiversity, and promote its recovery where practicable, so as to maintain the natural richness and resilience of the ecosystem.

301. For each of these aims a series of high level conservation objectives has been developed. For example, under the first aim*'to maintain the physical and chemical properties of the ecosystem'* four high level conservation objectives are proposed:

i. to protect seabed features so that they can support the processes, habitats and species characteristic of the marine landscapes;

ii. to protect water column features so that they can support the processes, habitats and species characteristic of the water column;

iii. to protect the water quality of the component water column features so that they can support the processes, habitats and species characteristic of the water column and associated seabed habitats;

iv. to protect biota quality.

302. Each high level conservation objective has been further refined by the development of one or more 'operational' conservation objectives. The operational conservation objectives are defined in one of the following ways:

i. compliance with standards aimed at protecting the marine environment;

ii. protection or recovery from adverse impacts due to human activity;

iii. achievement of a particular target state or level.

An example of an operational conservation objective would be to *'recover spawning stock biomass of commercially-exploited fish/shellfish species stocks to within safe biological limits'*.

303. The purpose of defining conservation objectives at an 'operational ' level is to provide practical guidance for management. The format employed is designed so that the operational conservation objectives can be integrated with the ecological quality objectives being developed under OSPAR. Progress towards achieving the operational conservation objectives would be assessed by defining and monitoring indicators and targets set for these objectives. There may be an opportunity to use higher level indicators and targets to cover a suite of operational conservation objectives (a marine equivalent to the ‘farmland bird indicator).

304. In defining the operational conservation objectives (and particularly when assessing progress towards meeting them) account needs to be taken of the natural variability of the marine ecosystem. Some elements of the ecosystem are highly dynamic whilst others are more stable. The operational conservation objectives aim to safeguard the natural variability through protecting the marine environment from significant change due to human activity, thereby avoiding or minimising disturbance to natural variability and natural processes.

305. A set of proposed operational conservation objectives is provided in Table 8 below for the three strategic goals and the high level objectives. The set of objectives provides a structure to help identify and integrate what needs to be achieved to contribute to meeting a wide range of international and European commitments and targets for marine nature conservation, including those listed in paragraph 298 above, and the sustainable development of the marine environment.

306. These conservation objectives would apply at the UK and Regional Sea levels. Once agreed, the conservation objectives are unlikely to require significant change over time.

Table 8: Conservation Objectives

Aim 1: To maintain the physical and chemical properties of the ecosystem		
High level objectives	**Ecosystem components (illustrative)**	**Operational conservation objectives**
1. Protect seabed features so that they can support the processes, habitats and species characteristic of the marine landscapes.	Coastal morphology • coastal processes	1.1 Protect coastal processes from ecologically-significant change due to human activity, and reverse such change where practicable.
	Seabed habitats • substratum type • particle size composition • topography • substratum structure • siltation • physical processes • chemical processes	1.2 Protect seabed habitats from ecologically-significant change due to human activity, and reverse such change where practicable.
	Biogenic structures • saltmarshes • eelgrass beds • Sabellaria spp reefs • Modiolus reefs	1.3 Protect biogenic structures from ecologically-significant change due to human activity, and reverse such change where practicable.
2. To protect water column features so that they can support the processes, habitats and species characteristic of the waterbodies.	Water column features • Tides, waves, fetch, currents • Fronts • Stratification • Temporal changes • Freshwater inputs • Salinity • Suspended solids • Turbidity	2.1 Protect the water column features from ecologically-significant change due to human activity, and reverse such change where practicable.
3. Protect the water quality of the component water column features so they can support the processes, habitats and species characteristic of the water column and associated seabed habitats.	Water quality • Chemical conditions • Nutrients • Dissolved gases	3.1 Maintain or recover water quality to within defined standards which aim to prevent 'undesirable disturbance' caused by eutrophication.
	Chemical pollutants • Contaminants • Organic compounds • Radioactive elements	3.2 Ensure that environmental standards are not exceeded.
	Oil • Chronic • Acute	3.3 Ensure that environmental standards are not exceeded. 3.4 Reduce the input of oil from accidents, as far as practicable.
	Noise and vibration	3.5 Maintain noise and vibration levels below precautionary standards aimed at protecting vulnerable marine species from disturbance.
	Marine litter	3.6 Reduce input of litter to the marine environment to below levels aimed at protecting vulnerable marine habitats and species.
4. Maintain biota quality	Contaminants • Contaminant loads • Bioaccumulations • Health of animals	4.1 Ensure standards for contaminants in biota are not exceeded.

Table 8: (continued)

Aim 2: To maintain each component of the ecosystem so that it can make its expected contribution to the foodweb		
High level objectives	**Ecosystem components (illustrative)**	**Operational conservation objectives**
1. Maintain primary production within bounds of natural variability	Trophic status • nutrient concentrations, • water clarity, • chlorophyll A concentration	1.1 Ensure compliance with precautionary standards which aim to avoid 'undesirable disturbance' of trophic status.
2. Maintain trophic structure so that individual species and stages can sustain their characteristic roles in the foodweb	Trophic complexity • number of trophic levels • biomass at each trophic level	2.1 Ensure harvest of all species at a specified trophic level is below precautionary limits.
	Habitat availability: • pelagic habitats • benthic habitats • nursery areas • spawning areas • migration pathways	2.2 To protect the extent and function of habitats, areas and pathways from significant decline due to human activities.
	Predator-prey relationships • predator-induced mortality rates on prey populations • biomass of key dependent predators: ◦ commercially exploited fish/shellfish ◦ non-target fish species ◦ benthic animals ◦ birds ◦ marine mammals	2.3 Reduce direct and indirect impacts upon prey populations to below levels at which their populations may be affected. 2.4 Reduce direct and indirect impacts upon key dependent predators to below levels at which their populations may be significantly affected.
3. Maintain mean generation times of populations within bounds of natural variability	Longevity • survivorship curves • mortality rate	3.1 Protect populations from changes in longevity which may have a significant impact upon the marine ecosystem, due to human activity.
	Life history strategy • changes in reproductive parameters (age of maturity, time of breeding) • lifetime reproductive success rates	3.2 Protect populations from changes in life history strategy which may have a significant impact upon the marine ecosystem, due to human activity.
	Reproductive potential • fecundity • spawning stock biomass	3.3 Enable the spawning stock biomass of commercially-exploited fish/shellfish to recover to within safe biological limits. 3.4 Increase the spawning stock biomass of commercially-exploited fish/ shellfish stocks further, to within limits defined for an ecologically-sustainable fishery, where this is possible.
	Fishing mortality	3.5 Reduce fishing mortality of commercially-exploited fish/shellfish stocks to within safe biological limits 3.6 Reduce fishing mortality of commercially-exploited fish/shellfish stocks further, to within limits defined for an ecologically-sustainable fishery where this is possible.

Table 8: (continued)

Aim 3: To prevent further loss of marine biodiversity, and promote its recovery where practicable, so as to maintain the natural richness and resilience of the ecosystem		
High level objectives	**Ecosystem components (illustrative)**	**Operational conservation objectives**
1. Maintain habitats/ communities within bounds of natural variability	Trophic level balance • effective number of species within each trophic level • abundance of keystone species	1.1 Protect the trophic level balance from significant changes due to human activity.
	Habitat complexity • overall number of habitats/communities	1.2 Prevent a significant decline in the habitat complexity of marine ecosystems due to human activity.
	Areas identified as being the 'best representative examples' of the range of marine landscapes, water body features habitats and species	1.3 Maintain the 'best representative examples' in, or recover them to, as close to their natural state as practicable.
	Rare and sensitive habitats	1.4 Protect rare and sensitive habitats from decline due to human activity.
	Habitats which are threatened by decline or have declined	1.5 Protect threatened habitats from decline due to human activity. 1.6 Enable habitats which have declined to recover to a non-threatened state, where practicable.
	Non-native species	1.7 Prevent the introduction of non-native species that may adversely impact the marine environment. 1.8 Reduce impacts of existing non-native species to below levels which risk affecting the marine ecosystem, where practicable.
2. Maintain species within bounds of natural variability	Overall diversity of species	2.1 Prevent significant changes in the overall species diversity of marine landscapes and water bodies due to human activity.
	Important areas for highly mobile and migratory species • spawning/breeding • calving • nursery • feeding • migration bottlenecks • nesting	2.2 Protect the important areas for aggregations of mobile species (e.g. spawning/breeding, nursery, calving, feeding or resting areas, and migration bottlenecks).
	Species which are threatened by decline or have declined	2.3 Safeguard species which are threatened by decline due to human activity. 2.4 Promote the recovery of species which have declined, to a non-threatened state, where practicable.
3. Maintain populations within bounds of natural variability	Structure among populations • metapopulation structure • distribution • habitat availability	3.1 Protect the structure among populations from significant change due to human activity.
	Structure within populations • population size • distribution • habitat availability • age structure	3.2 Protect the structure within populations from significant change due to human activity.
	Populations at risk	3.3 Protect populations defined to be at risk and recover them to non-at risk state, where practicable.
	Genetic diversity among populations	3.4 Protect the genetic diversity among populations from significant change due to human activity.
	Genetic diversity within populations	3.5 Protect the genetic diversity within populations from significant change due to human activity.

Setting targets for the conservation objectives

307. A process needs to be put in place at government level for setting targets for the marine environment at UK and regional sea scales. This process needs to be at the centre of a strengthened strategic planning framework for the marine environment. It is a critical stage in the integration of strategic goals and sectoral objectives for the marine environment. Stakeholder participation in the process and ownership of the outcomes would be essential.

308. Within the marine spatial planning framework proposed in Chapter 12 of this report, it should be possible to identify those parts of UK waters or the regional seas which will contribute to these targets being achieved, and the contribution which they will need to make. In some cases, the targets will apply to the whole area. In other cases, the targets will apply to specific areas such as a marine landscape or critical areas for a particular habitat or species. This spatial referencing of the agreed targets for the sustainable development of the marine environment, which include those for nature conservation, and of the action necessary to deliver them, is a key benefit of marine spatial planning.

309. To implement the conservation objectives, appropriate targets should be set at the operational conservation objective level. Collectively, these targets should aim to define the nature conservation requirements for the marine environment. To the extent appropriate, they also need to take account of other sectoral objectives and make appropriate contributions towards achieving sustainable development. The application of the principles of the ecosystem approach will be particularly critical in setting these targets.

310. The targets set for the conservation objectives should define what needs to be achieved for marine nature conservation at the UK and Regional Sea scales. They should take account of the existing targets for the marine environment identified under the UK Biodiversity Action Plan process.

311. In contrast to the conservation objectives themselves, the targets are likely to need to be amended in the future. The targets will be based upon what specialists and experts consider appropriate and achievable at the time. As circumstances change, or progress is made, the targets may need to be reviewed. This is particularly the case for those components of the marine environment which lack baseline biological status information.

Conservation objectives for marine protected areas

312. Conservation objectives are already in place for a range of marine protected areas including:

    i. marine Natura 2000 sites designated under the EC Habitats and Birds Directives (candidate Special Areas of Conservation, Special Protection Areas);

    ii. Marine Nature Reserves, Marine Natural Heritage Areas, Sites of Special Scientific Interest and Areas of Special Scientific Interest;

    iii. areas protected for other purposes, for example fisheries management, also have objectives which may contribute directly, through protecting fish stocks, or indirectly, through protecting habitats, to marine nature conservation.

313. Examples of such targets may be found in English Nature (2000) and English Nature and Scottish Natural Heritage (2000). These conservation objectives and those set for future marine protected areas should form an integral part of the strategic goals and objectives for the UK marine environment.

Monitoring the achievement of the conservation objectives and targets

314. The progress made towards achieving the targets set will need to be monitored, to assess the effectiveness of measures taken to deliver them. Government should identify which of the conservation objectives and targets should be incorporated for use in national marine monitoring programmes.

Recommendations

R25 The national strategic goals, objectives and targets for the marine environment should form the basis for policy guidance and strategic planning for the marine environment and its sustainable development.

R26 The conservation objectives should be integrated into a single, unified set of national strategic goals and objectives for the marine environment and its sustainable development.

R27 A process should be established to identify and set appropriate targets for each operational conservation objective which are consistent with achieving international and national commitments and strategic goals, including implementation of the ecosystem approach.

R28 The government should identify which of the conservation objectives and targets should be incorporated for use in the national marine monitoring programme.

315. A full report of the work carried out on the conservation objectives is available (Lumb *et al*., 2004b, and online at **www.jncc.gov.uk/irishseapilot**).