

6 Fish and fisheries

Fish stocks around the UK are a valuable natural resource. The fishing industry is still at the heart of our maritime culture and has important social and economic benefits, especially in remote coastal areas.

However, concerns are growing about the effect that fishing is having on fish stocks and the marine environment.

Commercial fisheries

- In 2003, UK vessels landed 494,000 tonnes of fish and 138,000 tonnes of shellfish. The fishing fleets in England and Wales landed 25 per cent of these fish and 56 per cent of shellfish. In 2002, the UK catch was worth over £540 million, or 0.05 per cent of Gross Domestic Product (GDP). The industry supports 26,000 jobs in the UK, of which 12,000 are in England and Wales⁸.
- Inshore fisheries, including bass, cockles and scallops, have local social and economic benefits that could be further developed⁸. Net and trap fishing for migratory salmon, trout and eels also contribute to these local benefits.
- Sea fisheries are managed independently of other marine activities. The aim of the Government's sustainable fisheries programme is to secure a profitable industry while protecting fish stocks and the environment. The joint UK report, "Securing the Benefits", proposes a range of measures to improve the sustainability of the fishing industry⁴⁵.

Fish stocks

- Over the past decade, most species have fallen to historically low levels. In 2004, 38 per cent of UK fish stocks were being harvested sustainably (Figure 17). North Sea cod stocks have fallen to dangerously low numbers although herring have recovered to healthy levels (Figure 18). The state of sandeels, important prey for seabirds, is uncertain⁴⁷.
- The total number of salmon returning to English and Welsh rivers has fallen by about 35 per cent since the 1970s, with an even greater decline in the number of larger fish that have spent more than one winter at sea⁴⁸ (Figure 19). In contrast, the River Tyne and some other rivers have seen numbers of salmon increase, particularly where water quality is recovering from pollution. Stronger regulation, the buying out of net licences, and catch and release schemes operated by anglers have helped maintain spawning numbers, but salmon stocks remained below the conservation limit in 40 per cent of rivers in 2004.
- At times of low river flows and high temperatures, low dissolved oxygen levels (section 5) can be a problem for migrating fish. In 2003, these conditions affected many estuaries and led to the death of over 1,000 salmon in the Tyne. Climate change also seems to be reducing the survival of these fish at sea. The Irish Coastal Fishery takes salmon from English and Welsh rivers, including about 10 per cent of salmon returning to the Taff and the Test⁴⁸.



- Rod catches of sea trout show no trend over the past 25 years although poor catches occurred during the droughts of the 1990s. Net catches have declined as net fishing effort has fallen⁴⁹.
- The numbers of young European eels or elvers returning from the sea to fresh waters in England and Wales fell by about 70 per cent from the early 1980s to 2000⁵⁰. This may be related to changing North Atlantic currents and sea temperatures. Our eel management strategy aims to protect and enhance eel stocks in inland waters. By 2004, there was a very slight recovery in elvers, but the outlook gives cause for concern.

Figure 17 Sustainably harvested fish stocks around the UK, 1998 to 2004³⁵

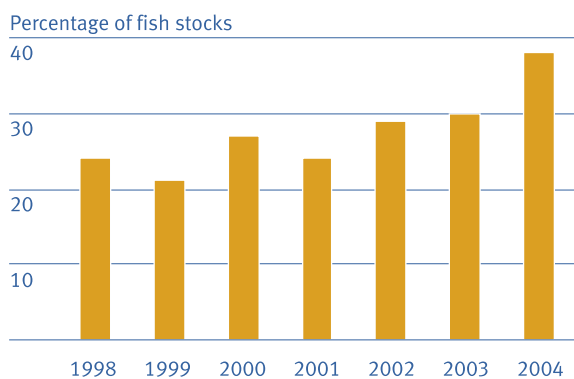


Figure 18 North sea cod catch, 1963 to 2003⁴⁶

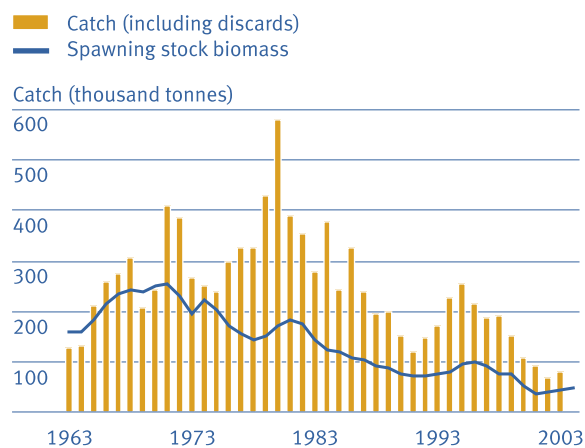
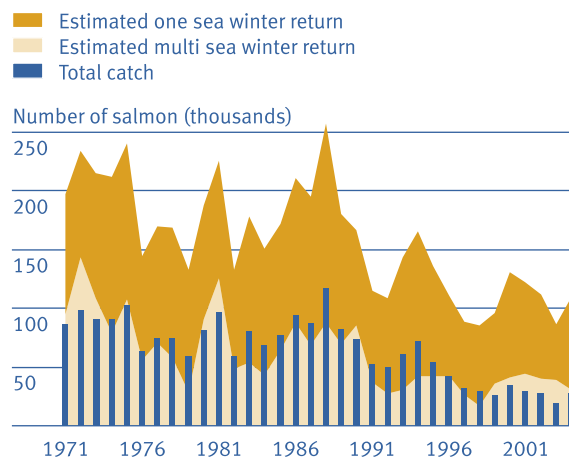


Figure 19 Salmon stocks in England and Wales, 1971 to 2004⁴⁸





- Increasing temperatures and changing ocean currents due to climate change could dramatically affect fish stocks. Between 1977 and 2001, the distribution of 21 out of 36 demersal fish species in the North Sea moved either northwards or into deeper water⁵¹. Plaice preferred deeper water while cod moved north by some 117km. The southern edge of the blue whiting's range retreated by over 800km and this species could leave the North Sea altogether by 2050. Warm water species such as the John Dory are becoming more abundant.
- Towed bottom fishing gear affects large areas of the seabed. Trawls and dredges can damage habitats and fragile animals such as corals and sponges creating seabed communities dominated by scavengers and small fast-growing species. We estimate that 12 per cent of estuaries and 19 per cent of coastal waters may be at risk from the effects of commercial fishing and shellfish harvesting.

The impacts of fishing

- Commercial fishing has profound effects on the marine ecosystem⁵². Large fish (16 to 66kg) in the North Sea are estimated to be 99 per cent less abundant (by weight) than they would be without fishing. There is evidence that fishing has altered plaice and cod populations so that they grow more slowly and mature at a younger age. Common skate, a non-target species, are now very rare in the Irish and North Seas. These changes affect the whole food web, and have reduced fish abundance to the point where 27 marine fish species have now been included in the UK Biodiversity Action Plan.
- The UK's first statutory no-take zone to protect marine habitats came into effect off Lundy Island in 2003. Although this was not an intensively fished area before, the initial findings are that there are more, and larger, lobsters in the area due to the lack of fishing. Consultation is now underway to restricting fishing off Skomer Island.
- Our surveys show that saltmarshes are important as nursery areas for fish. Saltmarsh created by managed realignment on the Blackwater in Essex is now used by 11 species of fish including juvenile herring, bass and flounder. In future, saltmarshes should be included in marine protected areas to support fisheries management in estuarine and coastal waters.

7 Wildlife

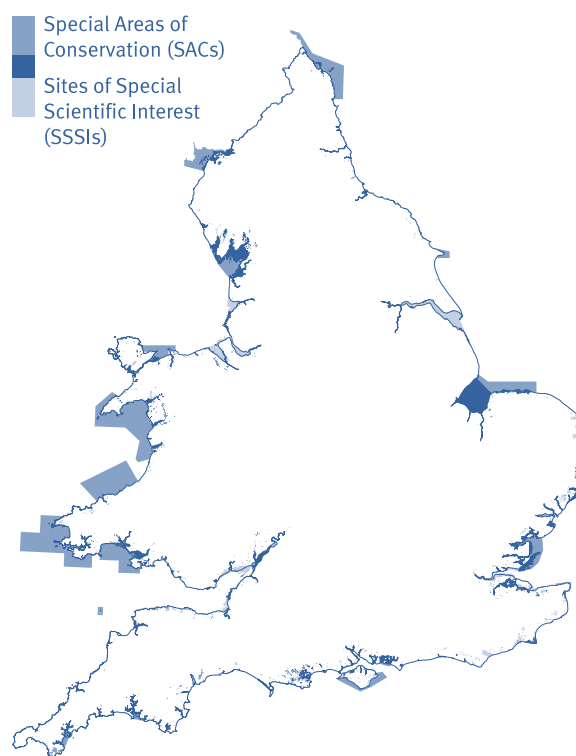
There are an estimated 10,600 species of plants and animals in our seas, ranging from the diverse creatures of the seabed to the wildfowl and waders that flock to our estuaries⁵³. This tremendous diversity of wildlife is supported by a wide range of natural habitats, such as saltmarshes, sandy beaches, mudflats, and underwater reefs.

Unfortunately there are signs that our activities and climate change are affecting marine wildlife habitats and species.

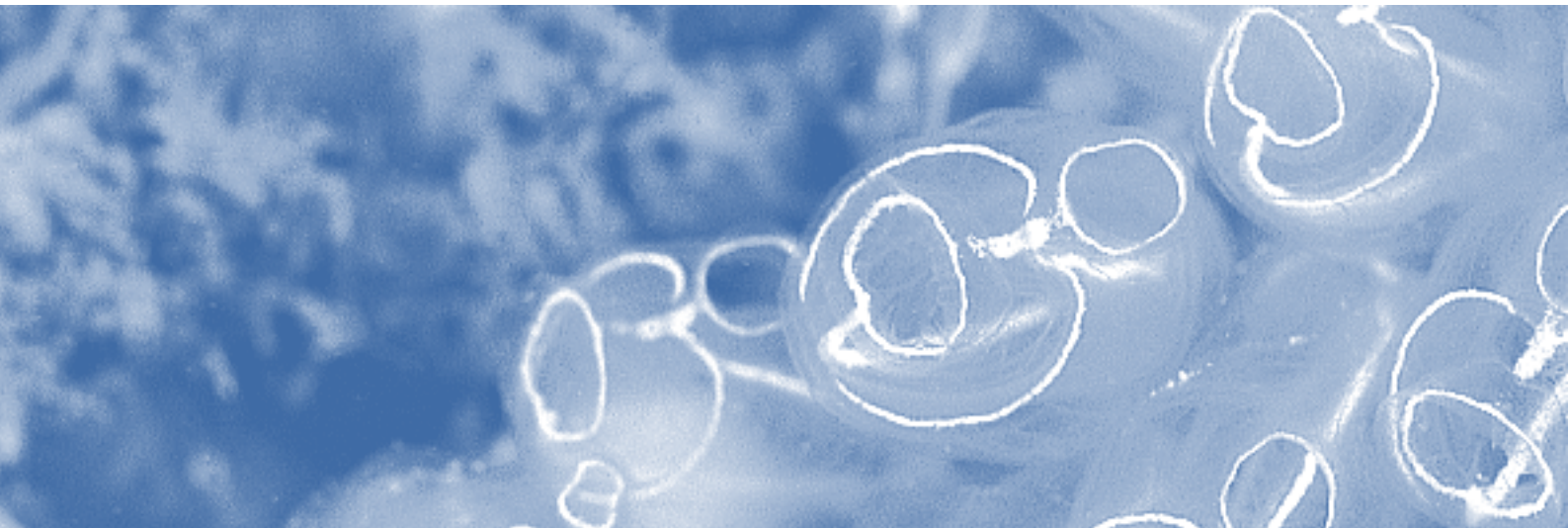
Habitats

- About one-third of all estuarine habitats in Britain have been lost to land reclamation since Roman times⁵⁴. These losses are continuing as natural habitats are squeezed between rising sea levels and coastal developments.
- Over the past century, many grazing marshes and cliff-top grasslands have also been converted to arable farming¹¹.
- Sites of Special Scientific Interest (SSSIs), created to protect both wildlife and geology, cover two-thirds of the English coast and nearly half of the Welsh coast (Figure 20). In England, 79 per cent of coastal SSSIs were in a favourable or recovering condition in 2005, although habitats like sand dunes continue to be at risk from development, poor management and rising sea levels (the condition of Welsh SSSIs will be reported during 2005)³⁵.
- A network of Special Areas of Conservation (SACs), established under the Habitats Directive, cover eight per cent of the seabed within 12nm of the coast.
- There are two Marine Nature Reserves in England and Wales, at Lundy and Skomer islands.

Figure 20 Special Areas of Conservation and Sites of Special Scientific Interest in coastal areas⁵⁵

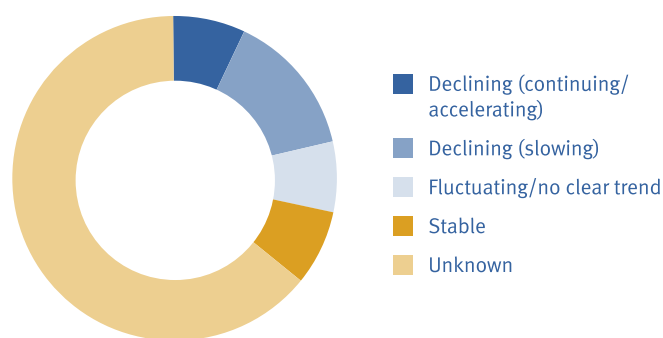


Some areas are designated as both SSSIs and SACs



- The UK Biodiversity Action Plan (BAP) includes 14 marine habitats, but presently we do not know the status of nine of them (Figure 21).
- Development, land reclamation, barrages and rises in sea levels have led to large habitat losses in the past. 100ha of saltmarshes are being lost every year, due to the coastal squeeze caused by development, sea level rise, and coastal erosion. Over the next 50 years, some 23,000ha or about 10 per cent of coastal habitats in England could be lost in this way. However, if managed realignment schemes go ahead, much of this habitat could be regained which would help to reach the UK Biodiversity Action Plan target of creating 140ha of saltmarsh per year (section 4)¹¹.

Figure 21 Status of priority marine habitats, 2002²³



Based on 14 habitats

Species

- In 2002, the status of 35 per cent of priority maritime species was unknown²³. A review of priority marine species is currently underway as part of the wider UK Biodiversity Action Plan Species and Habitats Review⁵⁶.
- Fishing pressure has reduced the abundance of important fish species (section 6). There is evidence that fishing pressure has caused a shift from large long-lived organisms to smaller short-lived species in seabed communities⁵⁷. Fish are also being affected by climate change, which is altering the temperature of the sea and the availability of prey, forcing changes in distributions (section 3).
- Seabirds seem to be faring better. Some 55 per cent of wading bird species increased by more than 10 per cent during the 1990s⁵⁸ and 60 per cent of seabird species have increased by more than 10 per cent since 1970²³. But poor seabird breeding success in 2004 and other years has been linked with fluctuating sandeel stocks and other climate related changes in food supply²³.

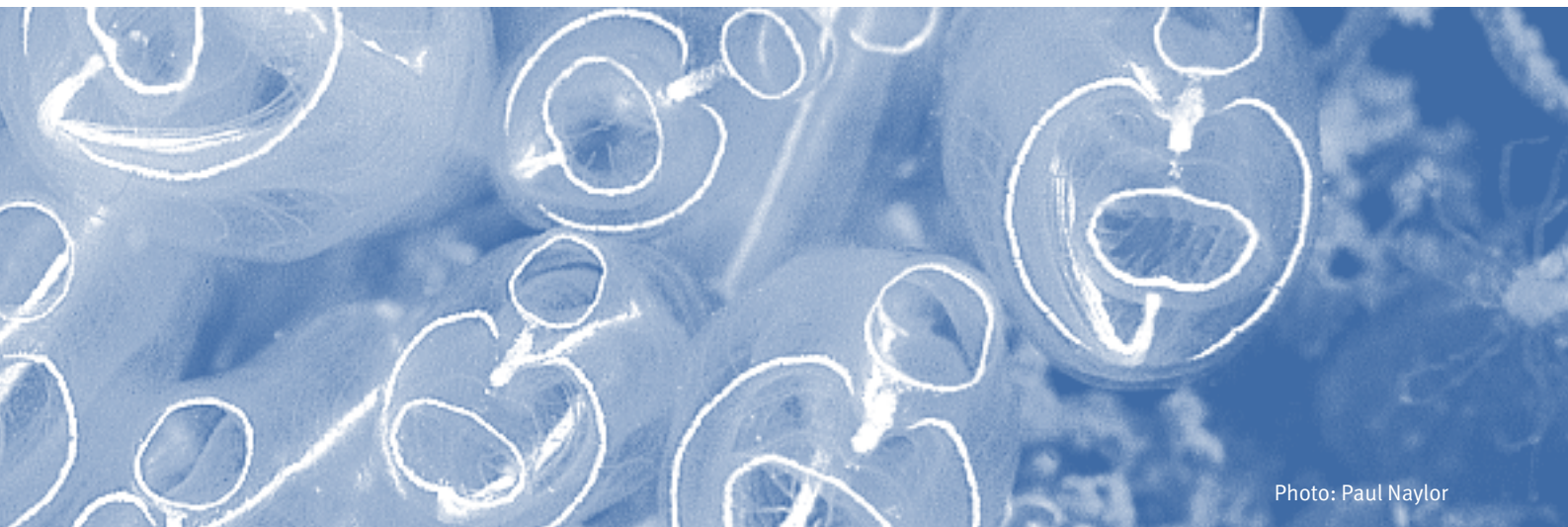


Photo: Paul Naylor

- Grey seals breed at numerous sites around the coast of England and Wales while common seals occur on the east coast, mainly in the Wash. Populations of both species appear to be healthy, although common seals were affected by disease (phocine distemper virus) in 1988 and 2002⁵⁹.
- The status of cetaceans (whales and dolphins) in our waters is not well known. Cardigan Bay is a Special Area of Conservation (SAC) for bottlenose dolphins. The international limit for the annual porpoise bycatch is 1.7 per cent of the population by 2006⁶⁰. The UK is committed to meeting its share, with an estimated limit of 500 a year. In 2000, the estimated bycatch was 600.
- Some 51 non-native species have been reported in British coastal waters. Over half arrived on ships, either attached to their hulls, or in ballast water carried across the oceans and discharged near our coast. Other species have been introduced accidentally through fish and shellfish farming operations⁶¹. Some have become serious pests that are impossible to get rid of (Table 2). Warmer sea water temperatures resulting from climate change may allow these species to spread and others to colonise our seas. To reduce the risks of further introductions of non-native species, the International Maritime Organisation has agreed rules for ballast water management and treatment which will be phased in from 2009.

Table 2: Some non-native marine species and their effects in British waters⁶¹

Species	Effects
Japanese weed (<i>Sargassum muticum</i>)	Occurs on entire Channel coast and south east coast, has reached Anglesey in the past five years. Can displace eel grass and other plants, fouls small boats, oyster beds and fishing nets.
Slipper limpet (<i>Crepidula fornicata</i>)	Introduced in late 19th century with American oysters. Widespread except in the North West. Competition damaging to commercial oyster beds
Chinese mitten crab (<i>Eriocheir sinensis</i>)	Humber, Thames, Tyne and Medway estuaries. Burrows cause bank erosion that may undermine flood defences.

8 Conclusions

It is clear from this report that our coasts and seas are under great pressure. Human activities and climate change are altering and damaging many aspects of the marine environment.

If we are to achieve the UK Government's vision of *'clean, healthy, safe, productive and biologically diverse oceans and seas'*, we will all need to take action now to tackle several major challenges:

- Commercial development and other human activities are putting great pressure on our marine environment. We must introduce new ways of managing human activities, such as marine spatial planning, to provide better protection for marine ecosystems, as well as more effective management of human activities.
- Climate change is a major threat to wildlife, businesses and coastal communities. We need to take tougher action to reduce greenhouse gas emissions by promoting energy efficiency and encouraging appropriate renewable energy schemes.
- We also need to adapt the way that we manage key aspects of the marine environment to accommodate the effects of climate change. This is especially important for shoreline defence, flood risk management, and the conservation of both fisheries and wildlife.
- We need to improve the quality of our coastal waters to meet new EU standards for water and environmental quality. We also need to reduce the amount of litter in the sea and on our coasts.
- Good environmental quality is vital for our economy and the wellbeing of communities. We must ensure that the marine environment is protected so that its economic and social benefits, including coastal recreation and tourism, are maintained.
- We need much better information to help us manage and protect our coasts and seas. We need to know more about the risks of flooding and erosion in the future, effects of climate change and pollution, and the state of our wildlife habitats and species.

We have developed a Marine Strategy that addresses the threats identified in this report. It sets out our priorities, and how we will work to tackle the challenges facing the marine environment. Our Marine Strategy will guide our work, and help to strengthen our partnerships with other organisations, businesses, and coastal communities so that we can all work together to create cleaner coasts and healthier seas.

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References

- 1 Department for Environment, Food and Rural Affairs, 2005. *Charting Progress: An Integrated Assessment of the State of UK Seas*. Defra, London, 120pp.
- 2 Department for Transport, 2004. *Transport Trends: 2004 Edition*. www.dft.gov.uk/stellent/groups/dft_transstats/documents/divisionhomepage/035611.hcsp
- 3 Department for Transport, 2004. *Transport Statistics for Great Britain 2004*. DfT, London, 188pp.
- 4 Marine Environment Monitoring Group, 2005. *Marine Environment Quality*. A contribution to Charting Progress: an Integrated Assessment of the State of UK Seas. Defra, London, 162pp.
- 5 Department for Transport, 2003. *Modern ports: A UK Policy*. www.dft.gov.uk/stellent/groups/dft_shipping/documents/page/dft_shipping_505279.hcsp
- 6 Ballinger R, Gubbay S, Stojanovic T, Ball I, Taussik J and Smith H, 2005. *A Review of Coastal and Maritime Initiatives and Pressures*. A report to the National Assembly for Wales and the Welsh Coastal Maritime Partnership, 160pp.
- 7 British Resorts Association, 2005. *Facts about UK Tourism*. www.britishresorts.co.uk/static/facts.asp
- 8 Prime Minister's Strategy Unit, 2004. *Net Benefits: A Sustainable and Profitable future for UK Fishing*. Strategy Unit, London, 168pp.
- 9 British Marine Federation, 2004. *Planning Guide for Boating Facilities*. BMF, Egham, 20pp.
- 10 South West Observatory, 2004. *State of the South West*. www.swo.org.uk/State_of_the_South_West/index.asp
- 11 English Nature, 2002. *Maritime State of Nature Report for England: getting onto an even keel*. English Nature, Peterborough, 90pp.
- 12 Minerals UK, 2004. *Minerals Produced in the United Kingdom 2003*. www.bgs.ac.uk/mineralsuk/statistics/uk/home.html
- 13 United Kingdom Offshore Operators Association, 2005. *2004 Activity Survey*. UKOOA, London, 9pp.
- 14 Department of Trade and Industry, 2005. *UKCS Oil and Gas Information*. www.og.dti.gov.uk/information
- 15 Department of Trade and Industry, 2004. *Digest of United Kingdom Energy Statistics 2004*. www.dti.gov.uk/energy/inform/dukes/index.shtml
- 16 Department of Trade and Industry, 2004. *UK Energy Sector Indicators 2004*. www.dti.gov.uk/energy/inform/energy_indicators/indicators2004.pdf
- 17 United Kingdom Offshore Operators Association, 2004. *Economic Report, 2004: Maximising Britain's Oil and Gas*. UKOOA, London, 34pp.
- 18 Department of Trade and Industry, 2005. *Decommissioning*. www.og.dti.gov.uk/upstream/decommissioning/index.htm
- 19 Department of Trade and Industry, 2005. *Renewables explained: Offshore Wind*. www.dti.gov.uk/renewables/renew_1.htm
- 20 Sustainable Development Commission, 2005. *Wind Power in the UK*. SDC, London, 166pp.
- 21 Environment Agency, 2005. *The Climate is Changing; time to get ready*. Environment Agency, Bristol, 28pp.
- 22 Data provided by the Met Office Hadley Centre for Climate Prediction and Research, from the HadISST1 dataset.
- 23 Joint Nature Conservation Committee, 2005. *Marine Habitats and Species*. A contribution to Charting Progress: an Integrated Assessment of the State of UK Seas. Defra, London, 188pp.
- 24 Proudman Oceanographic Laboratory. www.pol.ac.uk
- 25 Inter-Agency Committee on Marine Science and Technology, 2005. *Marine Processes and Climate*. A contribution to Charting Progress: an Integrated Assessment of the State of UK Seas. Defra, London, 132pp.
- 26 Hulme M, Jenkins G, Lu X, Turnpenny J, Mitchell T, Jones R, Lowe J, Murphy J, Hassell D, Boorman P, McDonald R, and Hill S, 2002. *Climate Change Scenarios for the United Kingdom: The UKCIP02 Scientific Report*. Tyndall Centre for Climate Change Research, Norwich, 120pp
- 27 Dickson B, Yashayaev I, Meincke J, Turrell B, Dye S and Holfort J, 2002. *Rapid freshening of the deep North Atlantic Ocean over the past four decades*. Nature, 416, 832-837.
- 28 Royal Society, 2005. *Ocean acidification due to increasing atmospheric carbon dioxide*. Policy document 12/05, RS, London, 60pp.
- 29 Office of Science and Technology, 2004. *Future Flooding: Executive Summary*. Foresight Report, DTI, London, 59pp.
- 30 Walker G, Fairburn J, Graham S, and Mitchell G, 2003. *Environmental quality and social deprivation*. R&D technical report E2-067/1/TR, Environment Agency, Bristol, 54pp
- 31 Department for Environment, Food and Rural Affairs and Environment Agency, 2002. *Managed realignment review*. Policy Research Project Report FD 2008, Defra, London, 324pp.
- 32 Department for Environment, Food and Rural Affairs, 2002. *Safeguarding our Seas: A Strategy for the Conservation and Sustainable Development of our Marine Environment*. Defra, London, 80pp.
- 33 Marine Environment Monitoring Group, 2004. *UK National Marine Monitoring Programme – Second Report (1999-2000)*. CEFAS, Lowestoft, 136pp.
- 34 Environment Agency, 2005. *Environmental Facts and Figures: Shellfish Waters*. www.environment-agency.gov.uk/yourenv/eff/water
- 35 Department for Environment, Food and Rural Affairs. *e-Digest of Environmental Statistics*. www.defra.gov.uk/environment/statistics/index.htm
- 36 Food Standards Agency, 2004. *Advice on fish consumption: benefits and risks*. TSO, Norwich, 204pp.
- 37 European Environment Agency, 2003. *Europe's Water: an indicator-based assessment*. European Environment Agency, Copenhagen, 97pp.
- 38 The Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR), 2000. *Quality Status Report 2000, Region II – Greater North Sea*. OSPAR, London, 136pp.
- 39 European Environment Agency, 2003. *Testing indicators for the Marine and Coastal Environment in Europe. Part 3: Present state and development of indicators for eutrophication, hazardous substances, oil and ecological quality*. European Environment Agency, Copenhagen, 64pp.

- 40 Bartnicki J and Fagerli H, 2004. *Atmospheric nitrogen in the OSPAR Convention Area in the period 1990-2001*. EMEP/MS-CHEM Technical Report 4/2004, Meteorological Synthesizing Centre, Oslo, 97pp.
- 41 European Commission, 2002. *A European Union strategy to reduce atmospheric emissions from seagoing ships*. Communication 595 Final Volume I, European Commission, Brussels, 23pp.
- 42 Williams A, Tudor D, and Randerson P, 2003. *Beach litter sourcing in the Bristol Channel and Wales, U.K.* Water, Air, and Soil Pollution, 143, 387-408.
- 43 Marine Conservation Society, 2004. *Beachwatch 2004*. www.adoptabeach.org.uk
- 44 KIMO (Kommunenenes Internasjonale Miljøorganisasjon), 2000. *Impacts of Marine Debris and Oil: Economic and Social Costs to Coastal Communities*. KIMO, Lerwick, 97pp.
- 45 Department for Environment, Food and Rural Affairs, Department of Agriculture and Rural Development, Scottish Executive and Welsh Assembly Government, 2005. *Securing the Benefits: The joint UK response to the Prime Minister's Strategy Unit Net Benefits report on the future of the fishing industry in the UK*. Defra, London, 53pp.
- 46 International Council for the Exploration of the Sea, 2004. *Extract of the Report of the Advisory Committee on Fishery Management: ICES Advice, Autumn 2004*. www.ices.dk/committe/acfm/comwork/report/2004/oct/alloct.pdf
- 47 Centre for Environment, Fisheries and Aquaculture Science, 2005. *Marine Fish and Fisheries*. A contribution to Charting Progress: an Integrated Assessment of the State of UK Seas. Defra, London, 52pp.
- 48 Environment Agency and Centre for Environment, Fisheries and Aquaculture Science, 2005. *Annual Assessment of Salmon Stocks and Fisheries in England and Wales in 2004*. EA and CEFAS, 79pp.
- 49 Environment Agency 2004. *Salmonid and Freshwater Fisheries Statistics for England and Wales 2003*. www.environment-agency.gov.uk/subjects/fish
- 50 Pawson M, Knights B, Aprahamian M, Rosell R, Bark T, Williams B and Beveridge M, 2005. *Report on Eel Stocks & Fisheries in the United Kingdom and Northern Ireland, in 2004*. A contribution to the ICES WGEEL 2005 Report, www.ices.dk/reports/DFC/2005/WGEEL/Annex%204-2.pdf
- 51 Perry A, Low P, Ellis J and Reynolds J, 2005. *Climate Change and Distribution Shifts in Marine Fisheries*. Science, 308, 1912-1915.
- 52 Royal Commission on Environmental Pollution, 2004. *Turning the Tide: Addressing the Impact of Fisheries on the Marine Environment*. Twenty-fifth report, Cm 6392, TSO, Norwich, 480pp.
- 53 World Wildlife Fund UK, 2004. *Marine Health Check 2005*. WWF-UK, Goldaming, 79pp.
- 54 Davidson N, Laffoley D, Doody J, Way L, Gordon J, Key R, Drake C, Pienkowski M, Mitchell R and Duff K, 1991. *Nature Conservation and Estuaries in Great Britain*. Nature Conservancy Council, Peterborough, 422pp.
- 55 Data provided by English Nature and Countryside Council for Wales.
- 56 Further information on the 2005 Marine Habitats and Species review available at www.ukbap.org.uk
- 57 International Council for the Exploration of the Sea, 2003. *Environmental Status of the European Sea*. ICES, Copenhagen, 75pp.
- 58 Rehfish M, Austin G, Armitage M, Atkinson P, Holloway S, Misgrove A and Pollitt M, 2003. *Numbers of wintering waterbirds in Great Britain in Great Britain and the Isle of Man (1994/1995 – 1998/1999): II. Coastal Waders*. Biological Conservation, 112, 329-341.
- 59 Sea Mammal Research Unit, 2004. *Scientific Report*. SMRU, St. Andrews, 39pp.
- 60 Department for Environment, Food and Rural Affairs, 2004. *Biodiversity indicators*. www.defra.gov.uk/wildlife-countryside/biodiversity/biostrat/indicators/index.htm
- 61 Eno N, Clark R and Sanderson W (eds), 1997. *Non-native marine species in British Waters: a review and directory*. JNCC, Peterborough, 152pp.

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