CEFAS SOLVING PROBLEMS IN FISHERIES AND THE ENVIRONMENT

Coastal Zone Processes and Management

Understanding coastal environmental processes is vital to the economic success of operations in the coastal zone. It is also important because operators have to be able to provide information on the likely impacts of their activities on the environment and, increasingly, to ensure compliance with regulations. Policy-makers, planners and managers of marine and coastal environments need sound data, information and expertise to develop practical policies to achieve a sustainable balance between conservation and exploitation.

At CEFAS we have a broad portfolio of scientific expertise and instrumentation to meet the diverse environmental needs of operators, consultants, policy-makers, coastal managers and conservation groups.

We provide practical solutions to environmental concerns that arise from multiple uses of the coastal zone, based upon authorative research, assessments and advice.

- thorough understanding of the complex processes taking place in the coastal zone
- unique range of instruments for observation and measurement of coastal zone processes
- practical experience in operational monitoring and data processing
- expertise in marine and environmental science to interpret these measurements to provide practical options for solving a broad range of environmental issues
- expertise in fisheries stock assessment and fish farming

Mineral and energy extraction, offshore construction

Aggregate extraction

- Advice on environmental impact minimisation including fisheries impacts
- Monitoring and modelling sediment plume density and dispersion for impact assessment before, during and after extraction

Offshore constructions, pipelines and cable laying, mineral exploration

- Investigating local sediment dynamics and sea bed stability to determine pipeline security and environmental impact
- Assessing impacts of seismic surveys upon stocks of fish and shellfish, their behaviour (spawning, migration) and upon recruitment (larval dynamics)
- Baseline benthic surveys for local and regional Environmental Impact Assessments (EIAs)

Oil and gas extraction operations

- Minimising environmental impacts of acute and chronic oil spills
- Advising on OSPAR compliant regulatory, monitoring, analysis regimes
- Assessing toxicity, long term fate and effects, persistence and biodegradation of produced water, drilling muds and cuttings

Platform decommissioning/recommissioning

- Characterising toxicity of cutting piles and environmental impacts of removal
- Beneficial effect of rig installations on fish populations (e.g. artificial reefs)

Ports, harbours and navigation

- Monitoring navigation channel location and depth using advanced position fixing and bathymetric surveying techniques
- Establishing sediment transport patterns for cost-effective dredging schemes
- Sediment plume density, dispersion monitoring and modelling for capital and maintenance dredging
- Advising on environmental impact minimisation, including beneficial uses of dredged material

Coastal defence, infrastructure development, and shoreline management

- Investigating sediment transport processes and habitat degradation
- Assessing impacts of storm flooding and of climate change
- Assessing, predicting and monitoring changes to coastal zone processes and advising on the impact of developments
- Development of numerical models of physical, chemical, geochemical and biological processes to understand and predict changes in the marine environment

- Applying integrated environmental information systems such as Geographic Information Systems (GIS) to provide specialised interpretation of data for improved understanding of existing and future impacts of human activity
- Environmental quality status assessment and monitoring of conservation areas

Activities of coastal zone communities

Waste disposal and pollution

- Environmental impact assessments of land-based activities such as nutrient and pesticide run-off or discharges of radioactivity, sewage and industrial effluents
- Advising on safe discharge levels of pollutants
- Analysing and assessing contaminant toxicity, fate and effect, persistence, and biodegradation
- Advising on bathing water quality, and cost-effective improvement schemes
- Developing and using biomarkers for determining the chronic effects of contaminants

Protecting public health

- Management strategies to manage human health risks from contaminated shellfish
- GIS for shellfish harvesting area monitoring
- Innovative methods based upon molecular biology to detect viral pathogens that contaminate shellfish grown in water polluted by sewage and industrial discharges
- Advice on EU quality and safety import requirements for fish and shellfish

Environmental impact of fish farming

- Contamination from effluent or veterinary medicines
- Escape of cultured animals
- Disturbance to the coastal zone caused by shellfish harvesting
- Degradation of benthic communities around fish farm structures

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Economically viable and sustainable fisheries

- Stock assessment methodologies for single species and multispecies fisheries
- Investigating links between the environment and fisheries recruitment, studies of predator / prey relationships and fish population dynamics
- Developing and applying molecular biology tools to aid stock assessments
- Economic and effective tracking of fish movements using state-of-the-art data storage tags that simultaneously record a variety of environmental factors
- Fish tracking using conventional acoustic and radio tracking equipment in freshwater, brackish and marine conditions
- Assessing the impact of fishing activity on the marine environment
- Developing and applying fishery-specific mathematical models to interpret stock assessment data
- Providing fisheries management strategy advice to Governments and other organisations
- Using satellite and remote sensing technology for applications in fleet management

CEFAS profile

- CEFAS (Centre for Environment, Fisheries and Aquaculture Science) is a scientific research, assessment and advisory centre active in the fisheries, aquaculture and environment sectors for almost 100 years. We have over 450 staff, from a wide range of scientific disciplines, three research laboratories based at coastal sites around the UK and two research vessels
- Existing clients are drawn from a broad spectrum of interests, and include both small and multinational concerns in the offshore, agro-chemical and aggregates industries, port and harbour authorities, managing and engineering consultants, central and local Government Departments (UK and international), the EU, NGOs and environmental organisations.
- We have a successful track record in carrying out work for clients in a focused, confidential and impartial way. Our internationally respected scientific pedigree means that clients can rely upon our work to be authoratative.

For further information about any of our services or to discuss your needs with one of our specialists please contact

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