



sustainable development of aquaculture





management for growth and sustainability

a sustainable approach Decline in the world's fish stocks has led to an increasing demand for food from fish farming. Aquaculture is now a substantial global industry supplying a significant proportion of the fish and shellfish consumed. As with other forms of intensive farming there are environmental consequences. For example, aquaculture can exacerbate the impact of human activities on our already stressed coastal and inland aquatic and wetland zones.

A sustainable approach to the development, management and regulation of aquaculture can ensure that both the environment and industry provide long-term economic and social benefits. Managed sensitively, aquaculture can become a sustainable industry supplementing the food supply from capture fisheries.

international research and consultancy CEFAS provides consultancy and research services to organisations world-wide. We have a thorough knowledge and practical skills-base to assist and advise with legislation development and implementation; environmental impact studies; fish cultivation; disease diagnosis, management, cure and prevention; fish productivity, health and welfare; and wider impacts on human health. Our wealth of national and international experience provides our clients with practical solutions to ensure the sustainable development of aquaculture.



the economy and environment

institutional strengthening Aquaculture offers tremendous socio-economic benefits and many countries are looking at ways in which to either develop their existing aquaculture industry or to invest in new production. To become a sustainable and profitable industry, causing minimal environmental impacts, development must be achieved through appropriate regulatory and policy frameworks. CEFAS provides advice to international governments on the development of regulations and policy frameworks to create and maintain a sustainable industry. We advise on EU standards for importing and exporting products, and meeting the requirements for EU accession. We work together with governments, industry and donor agencies to achieve this.

the wider impacts Although aquaculture offers relief to our over-stressed natural fish resources, it can impact on the environment in a number of adverse ways. These impacts must be monitored and managed for the industry to survive long-term. Impacts on the environment can include water quality, chemo-therapeutant use, eutrophication, biodiversity, animal health, human health and effects of interbreeding between farmed escapees and wild stocks. CEFAS is a multidisciplinary organisation with expertise in aquaculture, environmental and fisheries sciences. We are well placed to address the broader, cross-cutting issues, offering solutions to large and small scale problems.



maximising health

a healthy stock Disease prevention and control is fundamental to the success of aquaculture. In the UK fish farms, freshwater fisheries, rivers and lakes are largely free from some of the most serious diseases that occur in other countries. This has been mainly achieved through legislation with effective regulatory monitoring and enforcement. CEFAS has expert knowledge of this legislation and has designed and implemented tools, such as our multi-site and user information system, to monitor the movements of live fish and to facilitate effective enforcement of legislation. This system can be tailored to most regulatory needs to facilitate the management of fish movements and the spread of fish diseases. We are leaders in disease diagnosis and can apply risk assessment and mathematical modelling techniques to predict the spread and transmission of disease between farms and the wild, and offer advice on prevention measures.

Contamination of shellfish with micro-organisms and toxins harmful to human health is a major concern for farmers, retailers and the public. We have developed shellfish contamination detection techniques and management strategies to monitor and control the occurrence of harmful algae, bacteria, viruses and toxins.



productivity and capability

enhanced productivity There are many ways to maximise productivity and increase the profits of an aquaculture business, including the management of aspects of the biology and life-cycle of the farmed species. CEFAS undertakes research into sex control (to produce all-female broods), optimum diets and feed strategies, genetics and disease resistance: these can all be applied to enhance productivity or quality.

product evaluation We have a dedicated group of scientists expert in the evaluation of products for use in aquaculture and product registration. Our services are used by vaccine, pharmaceutical, pesticide, disinfectant and feed additive manufacturers, retailers for product authentication, and by governments to assist in regulation. Our aquarium facilities are Good Laboratory Practice (GLP) accredited and confidentiality is assured.

training Developing capabilities and expertise is crucial for the development of a sustainable aquaculture industry. We provide customised training courses for clients in a range of techniques used in aquaculture and fisheries management. We advise on the design and installation of new facilities to enable the complete transfer of skills to new laboratories.



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about us

CEFAS is a multi-disciplinary scientific research and consultancy centre providing a comprehensive range of services in fisheries management, environmental monitoring and assessment, and aquaculture to a large number of clients worldwide.

We have more than 500 staff, 3 laboratories and 2 ocean-going research vessels, and over 100 years of fisheries experience.

We have a long and successful track record in delivering high quality services to clients in a confidential and impartial manner. (www.cefas.co.uk)

CEFAS Technology Limited (CTL) is a wholly owned subsidiary of CEFAS specialising in the application of CEFAS technology to specific customer needs in a cost effective and focussed manner.

CTL systems and services are developed by teams that are experienced in fisheries, environmental management and aquaculture and in working closely with clients to ensure that their needs are fully met. (www.cefastechnology.co.uk)

customer focus

With our unique facilities and our breadth of expertise in environmental and fisheries management, we can rapidly put together a multi-disciplinary team of experienced specialists, fully supported by our comprehensive in-house resources.

Our existing customers are drawn from a broad spectrum with wide ranging interests. Clients include:

- international and UK government departments
- the European Commission
- the World Bank
- Food and Agriculture Organisation of the United Nations (FAO)
- oil, water, chemical, pharmaceutical, agro-chemical, aggregate and marine industries
- non-governmental and environmental organisations
- regulators and enforcement agencies
- local authorities and other public bodies

We also work successfully in partnership with other organisations, operate in international consortia and have several joint ventures commercialising our intellectual property.