**UK aquaculture initiative**

This programme supports high-quality, innovative research and research translation to help develop a healthy, safe and sustainable UK aquaculture system. It aims to bring together diverse expertise, knowledge, skills and facilities to deliver innovative approaches to solving industry challenges.

The UK Aquaculture Initiative is a joint BBSRC and NERC initiative to support high-quality, innovative research and research translation within a growing community of people working together towards a mutual goal of developing a healthy, safe and sustainable UK aquaculture system.

By funding projects that incorporate both the environmental and biological sciences, this cross-council initiative will bring together diverse expertise, knowledge, skills and facilities to deliver innovative approaches to solving industry challenges. In doing so, it will strengthen the research community to underpin the long-term needs of industry through interdisciplinary research, research translation and the provision of training.

The aims of the initiative are to:

* support high-quality, innovative, strategic research within UK higher education institutions and centres
* build UK academic capability and underpinning capacity to meet the long-term needs of industry
* encourage cross-discipline working and draw in new researchers to the aquaculture sector
* support the translation of existing research data and knowledge into new tools, technologies and solutions
* ensure the exchange of knowledge between the academic science base and industry through the support of effective networking between academic groups and businesses
* build a community of people working together towards a mutual goal of developing a healthy, safe and sustainable UK aquaculture system.

A rapidly increasing global population, climate change and intensified pressure upon vital resources are collectively threatening global food security.

By 2030, 62% of fish eaten by humans is expected to be produced from aquaculture. In the UK, aquaculture is a key strategic food production sector.

Sustainable expansion of the UK industry requires improved understanding of the basic biology, health and environmental interactions of farmed finfish and shellfish. In recognition of this importance, NERC and BBSRC, as contributors to the UK Global Food Security (GSF) programme, are acting to turn around the declining investment made by research councils in recent years.

### Priority areas

The programme focuses on six priority areas.

#### Aquaculture and natural capital

The relationships between current and projected environmental impacts of UK aquaculture and ecosystem services. How different aquaculture operations can enhance and impact on natural capital, including off-shore developments. How aquaculture operations can work more effectively with other users of the environment.

#### Interrelationships between farmed species (including algae) and wild organisms

This includes disease transmission, and ways to mitigate introgression between wild and farmed species.

#### Aquaculture and climate change

Analyses and modelling of how and where future climate change scenarios are most likely to impact on current and future aquaculture practices, including for invasive species, disease and harmful environmental effects (for example algal blooms) and how we might most effectively monitor and combat these for protecting the industry. This includes climate change resilience of current and potential aquaculture development assessed using life cycle assessment and other tools.

#### Health and disease in finfish and shellfish

Investigations into important existing and emerging diseases in finfish and shellfish, including research into stock enhancement and genome editing for disease resistance, host-pathogen and parasite interactions, multiscale modelling, environmental factors that influence disease incidence, and vaccine development (including effective alternative delivery vehicles). The development of novel tools and technologies to tackle diseases in aquaculture is particularly welcomed.

#### Nutrition, feed and interactions with the natural environment

The impact of diet on fish intestinal health, the fish microbiome, immune development and disease resistance. Also, the role of diet on reproduction and early life development, and nutritional programming. Sustainable (novel) feed development research is also welcome, particularly where it relates to improving animal health, improving the status of the natural environment or where such feeds improve the security of supply of feed for the UK. Fundamental research on traits responsible for metabolism, health and nutrition, which could lead to improved health of fish stocks (including shellfish) and less waste, is also in scope.

#### Food safety

Improving the understanding of the factors that influence food safety, and developing ways to reduce food-borne diseases in fish. Novel technologies that can rapidly monitor, screen and detect food-borne diseases and harmful environmental toxins (for example algal blooms) in aquaculture populations and the wider environment are in scope, as well as fundamental biological and environmental research development.

### Cross-cutting themes

Focus will be on the following cross-cutting themes:

* disruptive technologies for monitoring and predicting risks, and to enhance the capacity of aquaculture
* data sharing and management.