

Water Quality and Aquaculture

Water quality management underpinning sustainable aquaculture and its expansion in South West England



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Partners:

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The South West Partnership for Environment & Economic Prosperity (SWEEP) is a partnership of three research institutions; University of Exeter, Plymouth University and Plymouth Marine Laboratory.

Funded by the Natural Environment Research Council, SWEEP brings experts and stakeholders together to solve some of the key challenges faced when working with natural resources and help ensure the region's natural capital is protected for future generations.

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Compared to other coastal areas in the UK, shellfish aquaculture is relatively underexploited in the South West. This expansion is limited by, among other reasons, variable water quality which can affect the classification of shellfish production sites, and restrict the harvesting of shellfish.

This project brings together a wide range of stakeholders with a vested interest in the development of sustainable aquaculture and water quality. Working alongside them is the SWEEP project team, which comprises geographers, environmental economists, biologists, hydrologists and a host of contributors with experience of catchment and ecosystem management.

The key project challenge is to better understand the dependencies water quality and the aquaculture industry have on one another. The future success of shellfish aquaculture depends on high water quality with nutrient levels that are conducive to healthy phytoplankton communities (a sustainable food source for shellfish), and minimising levels of contaminants that are potentially harmful to shellfish or their consumers. To achieve all this requires a more holistic approach in resource management that promotes sustainable gains across the sectors of agriculture, water treatment and aquaculture.

Over the course of the project, the team aims to:

- Build an understanding of the reasons for the success and failure of shellfish aquaculture installations.
- Quantify water quality and trace pollution sources for selected catchments in the South West.
- Use the ShellSIM model to relate shellfish quantity and quality to water quality.
- Predict water quality based on land use and simulate future land management scenarios and their resulting impacts (NEVO model).
- Provide a spatial view of water quality pressures in the South West, and compare this against other constraints for future aquaculture development.