Where

Carlingford Lough, UK

Issue type(s):

Conflicts with other sectors, environmental, policy and management.

Specific Issue:

Carlingford Lough is a trans-boundary sea lough, with complex management issues. The expansion of the aquaculture industry is seriously hampered by nature conservation legislation.

Case study:

05. Carlingford Lough

Objective:

Identification of areas for future aquaculture development which do not conflict with nature conservation designation or other users.

Tool(s):

GIS multicriteria analysis (ArcGIS),

Carrying Capacity Model (SMILE),

Decision support/risk analysis model (Carlingford Lough AkvaVis).

How tool(s) has/have been implemented:

GIS multicriteria analysis to inform the Cumulative impact assessment report for aquaculture activities within and adjacent to Natura 2000 designated areas prepared for the Department of Agriculture, Environment and Rural Affairs (DAERA) who license aquaculture activities in Northern Ireland.

The hydrodynamic and ecological model components of the Sustainable Mariculture in northern Irish Lough Ecosystems (SMILE) Carrying Capacity Model for Carlingford Lough was updated by project partners Longline Environment (LLE). The new model was then run to determine the ecological carrying capacity of Carlingford Lough.

A Carlingford Lough AkvaVis demonstrator model was developed and applied to highlight areas for the future expansion of aquaculture activities within Carlingford Lough.

Results:

GIS has proven to be an invaluable tool in the assessment of the impacts of current licensed aquaculture sites on nature conservation designations within Carlingford Lough. Updating the hydrodynamic component of the SMILE model, and the resultant changes to the ecological component, enabled the determination of the ecological carrying capacity (in terms of Chl a availability) of the Lough. This enables the determination of the potential impacts of new

aquaculture sites on the natural ecosystem of Carlingford Lough. The development of the AkvaVis demonstrator model for Carlingford Lough provides the user with a quick answer as to the suitability (based on a limited set of predetermined parameters) of potential new areas for aquaculture development.

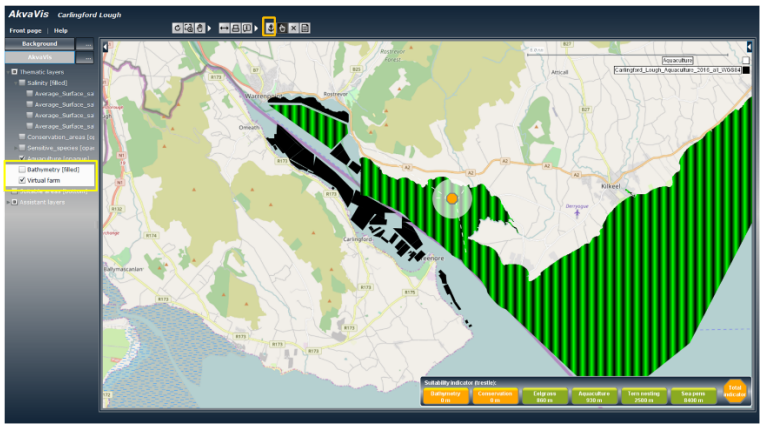

Figure 1: AkvaVis Carlingford Lough demonstrator showing placement of a virtual farm.

Links:

AquaSpace D4.2 at aquaspace-h2020.eu on Library/Reports page

Reference

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Boyd, A. (2017) Shellfish culture in Emilia-Romagna, Adriatic Sea, Italy.
Implementation factsheet from Aquaspace toolbox. aquaspace-h2020.eu/