Where

Houtman Abrolhos archipelago,Western Australia

Issue type(s):

Conflicts with other sectors, economic, environment, policy and management.

Specific Issue:

The Houtman Abrolhos Islands is a unique ecosystem and a popular tourist destination. Therefore, specific concerns were associated with site suitability assessment and carrying capacity as well as with the potential for disease spreading.

Case study:

07. Houtman Abrolhos Islands, AU

Objective:

Develop tools which can be used to measure the environmental impact of aquaculture development (e.g. nutrient loads and disease risk) and useful for site suitability and carrying capacity assessment.

Tool(s):

TUFLOW FV (BMT WBN) hydrodynamics,

FABM-AED sediment diagenesis model,

GIS mapping,

Species specific fish growth model.

How tool(s) has/have been implemented:

Previous to AquaSpace, two models were implemented: TuFlow hydrodynamic model for particle transport and biochemical processes, and FABM-AED model for sediment diagenesis (e.g. turbidity, nutrients, general ecosystem interactions etc.). We were given access to bathymetry data and areas of other multiple uses within the region. This information was used to create a geographical information system (GIS) of the region and to define box limits for incorporation of aggregated hydrodynamic modelling outputs. As part of the AquaSpace toolbox, EcoWin was identified as the most suitable tool to address the issues identified above. We have adapted an existing fish growth and physiology model to yellowtail kingfish (the species to be cultured). This fish model could be incorporated in EcoWin to run scenarios at the population level.

Results:

GIS mapping resulted in 23 grid cells to be modelled at two depths (surface and bottom). Lack of funds for the project (H2020 funds not release to non-EU countries) did not allow outsourcing hydrodynamic modelling outputs needed as input to EcoWin.

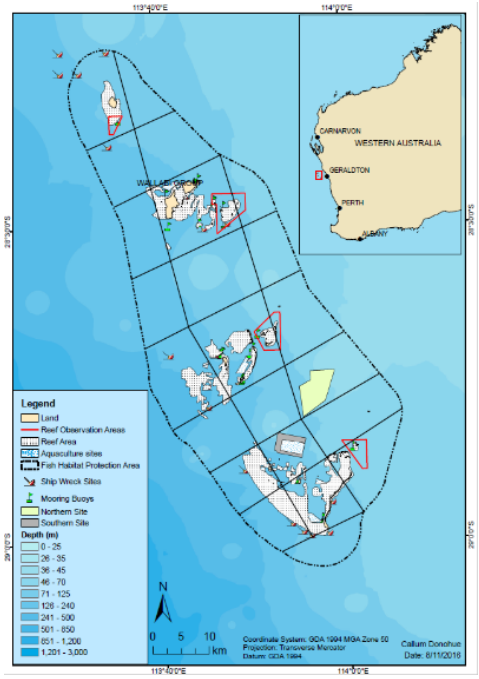

Figure 1: Grid cells established for the ecohydrodynamic model

Links:

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

Reference

NA

The information in this fact-sheet has been assembled as part of Milestone 20 (WP5) of the AquaSpace project (Ecosystem Approach to making Space for Aquaculture, aquaspace-h2020.eu, which has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under grant agreement n° 633476.

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Implementation factsheet from Aquaspace toolbox. aquaspace-h2020.eu/