Tool name
Aquaculture Planning Decision Support System (APDSS)

Tool type
GIS based modelling platform

Short description of the tool
A GIS based information system that integrates environmental data of an aquaculture system (such as Sanggou Bay in China), and it can provide decision support for aquaculture practitioners and the authority, regarding production planning and management, and spatial planning of the culture facilities or farms, based on suitability assessment and the calculation of aquaculture carrying capacity of a particular water region.
Modelling for growth performance of aquaculture and the general carrying capacity of an area is included in the tool, and there will be economic module in the tool during the later stage of its development.

Source (where/ link)
Currently under development by Yellow Sea Fisheries Research Institute CAFS, the Second Institute of Oceanology SOA, Yantai Institute of Coastal Zone Research CAS, Norway Institute for Marine Research (IMR) and Christian Michelsen Research (CMR)

Licence cost or other type of costs (e.g. maintenance)
Not commercially available for the moment

General requirements (technical and input data)
It does not require any relevant computational requirements
Input data are usually tabular data of any kind of nature: environmental, economic, social, etc.

Management dimension for which the tool could be used
☒ Policy / Management

☒ Environmental

☒ Economic / Market

☒ Other sectors

Main functionality
☒ Site identification

☒ Mapping

☒ Modelling

☐ Stakeholder engagement

☐ Economic analysis ☐ Ecosystem services assessment

☒ Scenario analysis ☐ Other: (Please specify)

Fields of application (i.e. issue to be solved)

APDSS can be used for site identification of marine activities, determination of habitat suitability, risk and environmental impact assessment and aquaculture management decisions. In spatial context APDSS can also be used to analyse dynamics of marine environment.

Circumstances in which it can be implemented (strength and opportunities)

Tool lets user to combine both empirical data and expert opinion. APDSS can be used for scenario analysis, site selection or re-allocation even in data-poor conditions.

Limitations

The number of indicators is still limited for both suitability assessment and growth prediction for aquaculture species. Time-series environmental data input is needed for spatial analysis of the target area, and insufficient data may affect the consistency of the output. As such, the lack of public available environmental data may limit the application of this tool, since field survey for obtaining marine environmental data proves to be costly and its frequency may not satisfy requirements for decision making.

Technical skills needed to operate the tool

Computer skills related with APDSS and GIS software (for spatially explicit analysis) are necessary to operate the tool.

Background knowledge needed to implement the tool

User needs to have enough expertise of the system to be modelled (e.g. ecosystem structure and functioning, economic trade-offs, etc.) in order to apply the models correctly.

How can the tool contribute to the EAA

Please select the EAA steps that the tool can contribute:

1. ☐ Scoping
2. ☒ The identification of issues and opportunities
3. ☒ Prioritisation of issues
4. ☐Objectives
5. ☒ Management actions
6. ☒ Monitoring

How can the tool contribute to the MSP

Please select the MSP steps that the tool can contribute:

1. ☐ Define goals and objectives
2. ☒ Gather data and define current conditions
3. ☒ Identify issues, constraints, and future conditions
4. ☒ Develop alternative management actions
5. ☒ Evaluate alternative management actions
6. ☐Monitor and evaluate management actions
7. ☐Refine goals, objectives and management actions

AquaSpace case studies in which it has been implemented

Case study name:

Sanggou Bay, China

Reference and link to case studies report:

http://www.aquaspace-h2020.eu/

Other bibliographic references

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, http://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.

Cite as:

Yellow Sea Fisheries Research Institute (2017) Aquaculture Planning Decision Support System (APDSS) Tools factsheet from Aquaspace toolbox. http://aquaspace-h2020.eu