TOOL FACTSHEET

Tool name
Lakselus.no
(Salmon lice infestation pressure and coastal zoning for production area management)

Tool type
A hydrodynamic model, coupled with a salmon lice dispersion model used in connectivity analysis based on existing locations of aquaculture farms, and real-time dispersion simulations.

Short description of the tool
The tool is based on a framework of models used to determine the positions of the borders for zoning and the abundance of infestive salmon lice copepods in the waters along the Norwegian coast. A hydrodynamic model, operational for the entire coastal zone of Norway (Norkyst800), is coupled with a salmon lice dispersion model and used in connectivity analysis based on existing locations of aquaculture farms. The source of salmon lice information is from weekly data on the estimated abundance at each farming site and the output is the abundance of infected salmon lice along the coast. The primary goal is to give a geographical overview of infestation pressure from salmon lice on wild fish, as well as assessing the siting of farms at local and regional spatial scales and on a larger national scale for the implementation of production zoning.

The salmon lice dispersion model provides weekly results for information on salmon lice copepodite concentrations (infection pressure). This information is presented on the IMR web portal "Infection pressure – Salmon lice" (Lakseluskart).

Source (where/ link)
http://www.imr.no/lakseluskart/html/lakseluskart.html
http://lakselus.no

Licence cost or other type of costs (e.g. maintenance)
Free

General requirements (technical and input data)
Assessing "firebrakes" for zoning require specific technical and analytical knowledge.
No specific requirements or input data to use the web portal lakselus.no

Management dimension for which the tool could be used

☒ Policy / Management

☒ Environmental

☒ Economic / Market

☒ Other sectors

Main functionality

☒ Site identification

☒ Modelling

☐ Mapping

☐ Stakeholder engagement

☐ Economic analysis

☐ Ecosystem services assessment

☒ Scenario analysis

☒ Other: (Please specify) parasite dispersion and connectivity between sites

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

The tool is used to estimate the infestation pressure from salmon lice on wild and farmed salmonid fish along the Norwegian coast. Also the tool is used to establish the positioning of the "fire brake" areas located where the method predicts the least connectivity between farming areas. This creates the basis for suggestions on where to position "fire brakes" in order to make up for the requested 11-13 zones along the coast.

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

Implementation of the tool require substantial national level effort involving scientific knowledge and governmental coordination. Possible outcome is management use of production zoning supporting sustainable development and growth of a national aquaculture industry.

Limitations

Although the model system parameters are based on the best available knowledge from scientific literature today, it deals with processes close to the research front and it is expected that results will improve in an on-going development. As for weather forecast models, the embedded chaotic nature of ocean hydrodynamics introduces an uncertainty of the results, mainly in the level of absolute numbers, timing of events and small-scale details.

Technical skills needed to operate the tool

Computer and analytical skills are needed to assess "firebrakes" for zoning

No specific skills needed to use the web portal lakselus.no

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Background knowledge needed to implement the tool

The combined tool includes available sub models and can be implemented free of charge anywhere. The system is relatively specialized and knowledge in computer sciences and ocean modelling is needed. Also one will need fast computers with large storage.

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:

Norwegian Coast, Norway

Reference and link to case studies report:

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

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Other bibliographic references

Albretsen J, Sperrevik AK, Staalstrøm A, Sandvik AD, Vikebø FB, Asplin L 2011. NorKyst-800 report no. 1: user manual and technical descriptions. Fisken Havet 2- 2011. Institute of Marine Research, Bergen. http: //hdl. handle.net/11250/113866