TOOL FACTSHEET

Tool name
META – Maritime and Environmental Thresholds for Aquaculture

Tool type
Online platform to search thresholds for cultivated species in marine environments

Short description of the tool
The Maritime and Environmental Thresholds for Aquaculture (META) platform was designed to provide easy access to data on biological and other thresholds that condition growth in different marine areas. It combines physiological data obtained from experimental work with accepted ranges for culture practice, e.g. the depths at which structures can be moored. It allows a user to list all known thresholds for a species, search for all species that can be cultivated within a particular parameter range (see example in Table 1), and review the literature sources that provided the datasets used by the platform. META contains information for 45 species and 16 parameters. This combination provides 500 environmental thresholds, supported by 969 scientific references.

Table 1. META output of species that can be grown in waters with a temperature range of 0-6 ^{o}C

Name	Latin name	Minimum (^{o}C)	Maximum (^{o}C)
Sea trout	*Salmo trutta m. trutta*	0	25
Grass carp	*Ctenopharyngodon idella*	0	38
European catfish	*Silurus glanis*	0	34
European whitefish	*Coregonus lavaretus*	0	22
Northern pike	*Esox lucius*	0	30
Arctic char	*Salvelinus alpinus*	0	24
Manila clam	*Ruditapes philippinarum*	0	36
European flat oyster	*Ostrea edulis*	0	32
Winged kelp	*Alaria esculenta*	-2	20
Sea belt	*Saccharina lattisima*	-1.5	24
Sea lettuce	*Ulva lactuca*	-2	2

The database contains species names in English, French, Spanish, Italian, Portuguese, and Chinese. The main purpose of developing the database itself was for integration in the WATER (Where can Aquaculture Thrive in EuRope) site selection tool (see separate fact sheet), but the project recognized the value of a standalone platform to allow the public to access the data.

Source (where/ link)
http://longline.co.uk/meta

Licence cost or other type of costs (e.g. maintenance)
There is no cost for access to META, but the site will be maintained beyond the life-cycle of AquaSpace, and it is likely that there will be maintenance costs as the software is updated and new features are added to the platform.

General requirements (technical and input data)

Up-to-date html 5.1 compatible web-browser.

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)

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

META is designed to identify the limits within which a species can be cultivated. The backend of the platform is used by WATER, as detailed above and in the WATER fact sheet, and thus the core functionality of some META components extends to site selection and other components which are key for aquaculture development.

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

The tool is already implemented for 45 species and 16 parameters.

Limitations

In the preparation and use of the platform, and analysis of search outputs, the following issues were identified:

- For some parameters, data are hard to find or unavailable;
- Thresholds can be unrealistic for cultivation purposes, e.g. some values shown for water temperature, dissolved oxygen, and chlorophyll are questionable. This may partly be due to the fact that some of these values are experimental limits for tolerance, based on LC50-type approaches, and are of little use to aquaculture practitioners;

- For the reason above, although heuristic thresholds may sometimes be considered unscientific, META nevertheless includes threshold, optimum, and industry ranges—the latter part is under development.

Technical skills needed to operate the tool

None.

Background knowledge needed to implement the tool

None.

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

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AquaSpace case studies in which it has been implemented

Case study name:

NA.

Reference and link to tool report:

Aquaspace D2.5 at www.aquaspace-h2020.eu

Other bibliographic references

J.G. Ferreira, F.J. Boogert, A.M. Cubillo, J.P. Nunes, J. Lencart e Silva, RA. Corner, R.G. Ferreira, P. Lourenço 2017. Top-Down Assessment of Aquaculture Expansion Potential in Europe. Aquaculture Canada and Sea Farmers 2017, Halifax, May 2017.