

MOMA – April 2008

**Objectives of the MOMA project
(Modelling mussel in aquaculture, 2008-09)**
funded by the Norwegian Research Council
and the French Ministry for Foreign Affairs

- ❑ Adapting and implementing the ecophysiology DEB model for mussels using Norwegian datasets
- ❑ Calibrating the Mussel model to low seston conditions and validate the model simulations on data collected from mussel farms and production areas
- ❑ Coupling existing models: the Fjord, Mussel, Farm models
- ❑ Training scientists to the use of the models through its implementation in easy to use simulation software, and help therefore to convert model outputs into recommendations for shellfish farmers.

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Working program – year 1 (2008)

- ❑ Months 1-3: exchange of data sent by IMR to IFREMER in order to test the individual model of mussel ecophysiology
- ❑ Month 4: workshop in Norway to discuss the results of the mussel model (one week), calibrate the model on measured growth data and to train partners from IMR using STELLA simulation software
- ❑ Month 5-9: test of the individual model using datasets provided by the NORWECOM ecosystem model in order to assess the differences in mussel growth at different locations. The model will provide the current velocity, primary production, phytoplankton concentrations, flagellate/diatom composition, detritus in the fjord for various situations, necessary to force the mussel model. Datasets will be sent by IMR partners to IFREMER who will test the mussel model
- ❑ Month 10: workshop in France to discuss the new results, transfer the code to IMR and plan the work on the coupling between the ecosystem and mussel models

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Working program – year 2 (2009)

- Month 11-17: coupling of the mussel and ecosystem models. IMR partners will implement the mussel model into the NORWECOM model and IFREMER will develop the farm model, coupling transport and mussel models at a small scale. Both models will be applied to the fjord selected and documented in the CANO project
- Month 18: workshop in Norway to discuss the results of ecosystem/mussel and farm models. Scenarios to apply the models will be proposed and discussed. Publications in scientific journals will also be planned for the final 6 months of the project
- Month 19-23: simulations of scenarios: locations of farms in the selected fjord, density of mussels and size of the farm, application to several time series of driving functions in order to reflect inter-annual variability. Drafts of scientific papers will be started
- Month 24: final workshop in France. Discussion of the results, drafting and editing of the scientific paper

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Issues & tasks of the project

- Calibration of the DEB model
 - Update the DEB model
 - Use the starvation experiment to estimate some parameters
 - Field data sets
 - Add excretion and biodeposition
- Farm model
 - Couple Aure *et al.* model with Mussel model
 - Compute depletion and growth as a function of current velocity, food concentration and mussel density
- Ecosystem model (NORWECOM): delayed

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Timetable

- April 2008: 1st meeting at Finse (Norway)
 - Updating the DEB model (half-saturation coeff., ingestion rate)
 - Applying DEB to different data sets
- May 2008: Training on DEB (France)
 - Calibration using experimental data
- September 2008: Meeting in France (Brest, PHYSIOMAR)
 - Calibration of DEB model on Norwegian datasets: final version
 - Draft on DEB application on several datasets
 - Farm model coupled to DEB: first trials
- November 2008:
 - Report to AURORA
 - Draft on the comparison of models (e.g. DEB, EMMY, Jon Grant's model)
- December 2008:
 - Post-doc (18 months?): improvement of mussel model, application to different geographic areas, building up impact indicators

