

Report on the use of the MASTS PEER funding to support the development of an EUH2020 proposal on Optimising space for Aquaculture (SFS11a)

ABS6 PEERAW KBLACK

1. The meeting

The proposal meeting was held on the 12th of February at the NH-Schiphol Hotel at Schiphol airport. The agenda and details of the participants are given in the appendix.

The essential outcome of the meeting is that we agreed the basic structure of the proposal and set writing tasks.

2. The proposal

The proposed project name has changed through the writing process and it was finally submitted under the name: **AquaSpace – Ecosystem Approach to making Space for Sustainable Aquaculture** [633476-1 (internal reference number: SEP-210136054)]

2.1 Proposal abstract

This AquaSpace proposal specifically sets itself the goal of providing increased space for aquaculture. In summary, following the call, we will achieve this by identifying the key constraints experienced by aquaculture development in a wide range of contexts and aquaculture types and taking into account all relevant factors. We will then map these constraints against a very wide variety of tools that have already been developed in national and EU projects for spatial planning purposes, including some that have been designed specifically for aquaculture. In the freshwater sector only, we will also consider ecosystem services provided by aquaculture that are relevant to integrated catchment planning and management. At a very wide range of sites, at a variety of scales and considering aquaculture at different trophic levels and thus with different environmental interactions, and most importantly, with a range of key space-related development constraints as defined by local stakeholders, we will assess appropriate tools using a common process so as to facilitate synthesis and comparison. This case study approach will generate a large amount of information but will only be allocated about a third of the projects resources. Most importantly, to have impact, the project must complete a synthesis of all the outcomes and which will lead to a set of evaluated tools for facilitating the aquaculture planning process by overcoming present constraints. This information will be presented to the users in a web based platform with tailored entry points for specific user types (e.g. planners, farmers, public) to enable them to navigate to the tools most appropriate to their application. The knowledge and information gained during this process will be developed into an online module at Masters level and will also be developed into a short CPD course aimed at aquaculture planning professionals.

2.2 List of participants

Participant No	Participant organisation name	Country
1 (Coord)	SAMS	UK
2	Agri-Food and Biosciences Institute (AFBI)	UK
3	AZTI-Tecnalia	ES
4	Bluefarm s.r.l.	IT
5	Christian Michelsen Research AS (CMR)	NO
6	Council for Scientific Research (CSIC)	ES
7	Food and Agriculture Organization of the United Nations (FAO)	IT
8	National Agricultural Research and Innovation Centre (NARIC)	HU
9	French Research Institute for Exploitation of the Sea (IFREMER)	FR

10	Institute for Marine Research (IMR)	NO
11	James Hutton Institute (JHI)	UK
12	<i>Longline Environment Ltd.(LLE)</i>	UK
13	Marine Scotland Science (MSS)	UK
14	<i>Sagremarisco Lda (SGM)</i>	PT
15	Thünen-Institute of Sea Fisheries (Thünen)	DE
16	University College Cork (UCC)	IE
17	University of Crete	EL
18	University of Dalhousie ^a	CA
19	National Oceanic and Atmospheric Administration NOAA ^a	US
20	Yellow Sea Fisheries Research Institute (YSFRI) ^a	CN
21	University of Western Australia ^a	AU

^a These international partners will provide the requisite global dimension but will not derive direct financial benefit.

SME partners are shown in italics.

2.3 Next steps

I have not been given any indication of when this first stage application will be reviewed. However, if we are invited to submit a stage 2 application then the deadline will be 2014-06-26 +17:00:00 (Brussels local time).

3. Costs incurred

The PEER grant awarded to SAMS was for a maximum of £1,740.00 whereas the meeting costs turned out to be £1952. I will cover the difference from another SAMS code. The hotel meeting costs were £1025 which included use of a meeting room, lunch and coffee breaks. The remainder was used for travel costs for the 3 SAMS staff who attended.

Professor Kenny Black
SAMS
14/4/14

Appendix

Optimising Space for Aquaculture – AquaSpace

February 12th 2014

NH Schiphol Airport

Kruisweg 495. 2132NA Hoofddorp. Amsterdam

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Agenda

0900 Brief introductions

0930 What is this call really about/brainstorm.

1030 Coffee

1100 Addressing the call – what is the central concept of our proposal – lets address the biggest constraints faced by the industry

1200 Addressing the call – what are the big topics /WP titles

1300 Lunch

1400 Who will work in which WP? Who will lead WPs?

1500 Writing tasks, deadlines, formats.

1600 Coffee

1630 What else?

1800 Close

José Aguilar-Manjarrez

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An oceanographer and aquaculturist, he obtained his Ph.D. (1992–1996) and M.Sc. (1991–1992) on Aquaculture planning and management from the University of Stirling in the United Kingdom. He graduated in Oceanography in 1989 from the Faculty of Marine Sciences in Ensenada, Baja California, Mexico. He has worked for the FAO Fisheries and Aquaculture Department for 17 years, first as a visiting scientist (1996–1998), then as a consultant (1998–2000) and since 2001 as an Aquaculture Officer in the Aquaculture Branch (FIRA). His current responsibilities at FAO-FIRA include planning, promoting, implementing and providing technical support to programmes and activities in the field of spatial planning. The main activities currently focused on are aquaculture site selection and zoning, ecosystem approach to aquaculture, and offshore mariculture. Dr Aguilar has coordinated and co-authored a number of FAO Fisheries and Aquaculture Technical Papers and proceedings, as well as papers in peer-reviewed journals mainly focusing on spatial planning for aquaculture development.

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My expertise related to this project is focused on development of decision support system based on geographic information system (GIS) and its applications in spatial planning of aquaculture farms. I am responsible for the development of AkvaVis system at CMR and also extending of AkvaVis to other aquaculture regions (e.g., Normandy in France and Yellow Sea in China). My interests are to develop more functionalities in AkvaVis for decision support and also to adapt AkvaVis to other European aquaculture segments.

Núria Marbà

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Núria Marbà (on behalf CSIC; team: Carlos Duarte (IP), Núria Marbà) Team expertise on macrophyte ecology, marine biodiversity and biogeochemistry. Regarding aquaculture, the team has expertise on assessing the impact of aquaculture on marine ecosystems and examining global trends of aquaculture for food provision, production of other products. We are interested on assessing global change effects on marine biota as well as the role of marine biota for mitigation and adaptation to global change. Under A (spatial issues), we would be keen to develop a WP or component in the project on vulnerability and buffer distances of sensitive European marine ecosystems to aquaculture.

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Øivind Bergh (b. 1962) Dr. scient in General Microbiology. Principal Scientist at IMR. About 80 peer-reviewed papers, and 20 book chapters, in aquaculture, fish health and ecological interactions between aquaculture, other uses of the coastal zone and the environment. Manager of several IMR projects, coordinator of the 7th FP RTD-project COEXIST (Interactions of fisheries and aquaculture in the coastal zone) 2010-2013

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To better understand its role in shellfish ecosystems on the coast and in the fjords. Cultivation, ranching and utilization of natural populations of shellfish. Focus on how the environment affects shells the food uptake and growth, and the effects of shellfish farming on the ecosystem. To better understand how upwelling of nutrient-rich water dip to the upper layers in fjords can increase the production of phytoplankton and animals (shellfish) which feed on the algae. location and capacity in aquaculture, related to the development of tools for decision support in management and business.

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I have been a researcher in aquaculture environment interactions at SAMS since 1991. I have coordinated 6 EU projects concerning the environmental interactions of aquaculture and participated in 3 others. My interests include modelling benthic impacts and connectivity between farms, using scales to discriminate escaped fish, and understanding the interface between regulation and social licence issues.

Karen Alexander PhD MSB
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Karen Alexander is a human geographer with multi-disciplinary interests, centring on environmental governance and including aquaculture, renewable energy, marine spatial planning, integrated socio-ecological impacts and policy. Karen's previous experience has involved developing and trialling novel methods for participatory marine spatial planning alongside working with stakeholders to identify opportunities and constraints relating to spatial aspects of marine industry sectors.

Dr. Javier Franco
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PhD in Biology (University of the Basque Country, 1994). He is working in the Marine Research Division of AZTI since 1995. Since 2004 he is the Head of the Marine Environment Area. Expert in estuarine ecology, phytoplankton communities and biodiversity. His main interest is the integrative assessment of the ecological status and environmental status of coastal and marine waters, as well as implementation of marine spatial planning for the sustainable management of human activities in the framework of the ecosystem approach.

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- Building of geospatial decision support systems; data management and analysis; interoperability; web-GIS development.
- Sourcing and processing of remotely sensed data for the generation of environmental indicators.
- communications and outreach including website design, newsletters, stakeholder engagement.
- Jellyfish aquaculture interactions' – such as early warning systems, jellyfish mitigation (trailing bubble curtains), looking at hydroid fouling on nets in different area, so location of aquaculture sites to avoid jellyfish.

Dr Tavis Potts
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Tavis is an environmental geographer with a broad interest in the social and political aspects of coastal and marine systems. His research interests fall into the topics of marine planning and governance; cultural ecosystem services; the blue economy; and marine resource management in fisheries and aquaculture. A common thread in his research is understanding the complexities that face communities and institutions in driving sustainable marine systems and the role of policy, law and politics as a facilitator of change.

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She is ecologist (Diploma in Biology and Ecology, 1998), PhD in Environmental Sciences (2006), scientist at HAKI since 1999. Her main interest is environmental impact of freshwater aquaculture, concerned topics: sustainable aquaculture technologies, nutrient cycling in aquaculture ponds, treatment of intensive aquaculture effluents by wetlands, ecosystem goods and services of fishponds, pollutant removal (nutrients, PCPPs) removal by wetlands.

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Mahesh is an Environmental Economist with a broad interest in the social and economic aspects of climate change. He is Pioneer as well as Director of Tata Centre of Excellence, Faculty of Economics and Social Sciences, Szent Istvan University, Hungary. He Published book, book chapters and more than 110 Scientific Research Papers in National and International conferences, journals and reviews. Dr. Singh received several national and international awards for his academic and research activities e.g. Professor Honoris Causa from New Delhi, INDIA, Awarded "Pro Facultate Internationale" from Szent Istvan University.

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My research covers several types and scales of modelling: response of living organisms to environmental drivers using Dynamic Energy Budget theory, primary productivity and trophic networks, bioaccumulation of chemical contaminants, aquaculture production, integrated modeling and system approach, functional biodiversity. In applied aquaculture, my work and my main interest lie in the assessment of aquaculture/environment interactions through the implementation of mathematical models and building of spatial indicators. Recently, I have been using extensive spatial datasets (temperature, chlorophyll a) provided by operational models and remote sensing in coastal areas to assess the scope for growth of benthic populations along the French Atlantic coastline - see the paper by Thomas et al. (2011) below to have a flavor of the methodology and some results. My guess is that it is possible to build spatial indicators for aquaculture by combining models (ecosystem, individual growth, hydrodynamics) and spatial data (e.g. remote sensing, maps of human activities) which will be combined into Geographic Information System.

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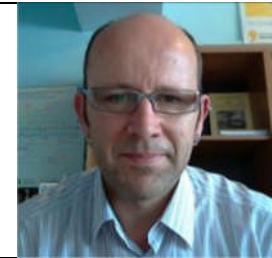
Ecosystem-based fisheries management, in particular the spatial dimension of fishing activities
Marine spatial planning and interactions between fishing activities, other uses and marine ecosystems in the North Sea.
Development of quantitative and adaptive methods for implementing the ecosystem approach to fisheries and marine management
Development of spatial resolution models of marine resources and fisheries activities, among other geostatistical techniques and Geographical INFORMATION SYSTEMS (GIS)
Development of spatially explicit decision support tools for the spatial management of the use of marine resources
Evaluation of spatial planning measures in relation to fisheries and living marine resources

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Analysis and modeling of the interaction between biotic components of the ecosystems and anthropogenic influences
Processing and analysis of spatial data sets (biological and economic) using a Geographic Information System (GIS)
Processing and interpretation of ecosystem-based data-
Development of spatial management scenarios for sustainable use in the sense of an ecosystem-based marine management
Public relations and environmental education

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Sustainable aquaculture and fisheries projects. Development of sustainable strategies and value-added farm improvement programs and assessment of risks and solutions for business growth and advancement. Support to Aquaculture EIA policy development and application and ecologically sound development strategies. Experience of EU funded and other international development projects, short and long term projects that underpin development of ecologically sound and sustainable business growth.

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My background is in shellfish physiology and I got a PhD on carrying capacity of bivalve aquaculture, from Bangor University, Wales. I have been a researcher at IMAR, institute of Marine Research, FCT New University of Lisbon, Portugal, since 2008 working on management and development of sustainable aquaculture with the application of ecological modelling for supporting decision-makers. I have been involved in both the FP7 COEXIST project and the FORWARD project and done various works through Longline (LLE) in Puget Sound and Long Island Sound.

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Regarding economics, the proposal "should ultimately secure that the maximum economic potential of growth and employment is reached by the sector". Beyond of the technico-economic feasibility where competencies could be also provided (experiences in coastal and marine European aquaculture both for fish and shellfish), this could be addressed through the measure of spillover effects of planed aquaculture schemes into the regional economy. Ifremer has developed an important capacity in the field of input/output matrixes tools and especially in terms of regionalization of I/O matrixes and in integrating the environmental dimension into traditional accounting (going beyond of GDP, ecological debt...).

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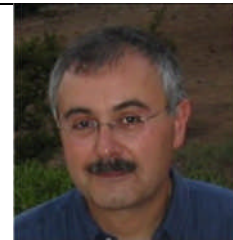
I work in ecosystem-based management and marine spatial planning applied to finfish and shellfish aquaculture. I have a dedicated collaboration with Cooke Aquaculture, the largest locally owned fish farming company in North America. Our work in modelling and field studies of aquaculture bays in Nova Scotia incorporates explicit work on MSP. Specifically, we are studying the relationship between lobster habitat defined by acoustic mapping and habitat modelling and the siting of fish farms. Other spatial work looks at disease vectors via hydrodynamics, and benthic impacts via diagenetic models. Our field and modelling program has many opportunities for collaboration including full cooperation and logistic access by Cooke. I am particularly interested in criteria for sustainability at the ecosystem scale and its spatial dimension applied to cage culture.

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PhD in Chemistry, I have been working on developing simulation models for EIA, monitoring optimization and site selection of both finfish and shellfish aquaculture, with focus on the Mediterranean and, in particular, the Adriatic Sea. The modelling activity takes also into account the role of aquaculture within biogeochemical cycles. Recently, I have focused my activity on North African Mediterranean coastline as a coordinator of the FP7 project MEDINA. Within MEDINA, we are working at a spatially explicit site selection procedure for seabass/seabream cage culture in Algeria, which makes use of satellite data, data from operational circulation models and wave models in order to take into account water quality, risk of cage breaking, impact on benthic communities and conflicts of use with tourism. I have developed strong contact with the Italian Shellfish Farmer Association within the framework of FP7 Euroshell project.

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PhD in Benthic Ecology (UoC 1991). Currently Professor at the Biology Department of the UoC, head of the Marine Ecology Laboratory. I have been involved as PI or coordinator in >40 national or international research projects 10 of which are EU-funded ones relevant to Aquaculture-environment interactions (AQUAENV-GR, MARAQUA, AQCESS, BIOFAQs, MERAMED, MedVeg, ECASA, SAMI, AQUAGRIS, PREVENT ESCAPE). Member of the Benthic Indicators Group (BIG) of the IOC-UNESCO, of the GESAMP WG on Offshore Aquaculture and of the FAO WG on Ecosystem Approach to Aquaculture. Coordinator of the SHOCMED initiative and the WG on Site Selection and Carrying Capacity of Mediterranean Aquaculture of the GFCM. Research interests include anthropogenic effects on marine ecosystems, development of indicators for the assessment of biodiversity and the level of health/disturbance of marine ecosystems.