



**What future for Mediterranean Mariculture?
22-23rd November 2007 – Athens (Greece)**



Athens

Compilation of Abstracts



What future for Mediterranean Mariculture? 22-23rd November 2007 – Athens (Greece)

INVITED SPEAKERS / MODERATORS

Dr. Waddah Saab (Member of Cabinet - Fisheries & Maritime Affairs)

Prof. Basil Stephanis (Selonda Group)

Despina Simons (EBCD - IUCN consultant)

Prof. Giannis Karakassis (Univ of Crete)

Gustavo Larrazábal (Tinamenor group)

Dr. Stamatios Varsamos (Commission)

Dr. Massimo Caggiano (Manager in Panittica Pugliese)

Dr. Filiep Vanhonacker (Dept of Agricultural Economics Univ. of Gent)

Prof. Giorgos Koumoundouros (Univ of Patras)

Dr. Georgios Kotoulas (Institute of Marine Biology and Genetics IMBG, HCMR)

Neda Skakelja (Croatian Chamber of Economy)

Dr. Panos Christofilogiannis (AQUARK)

Nikos Anagnopoulos (LAMANS s.a)

Alastair Lane (EAS)

Dr. Douglas Tocher (Nutrition Group, Institute of Aquaculture, Un. of Stirling, Aquamax)

Pavlina Pavlidou (Selonda Group)

David Murphy (AquaTT)

Dr. Constantinos Mylonas (Hellenic Centre for Marine Research)

Jon Arne Grottum (FHL)

Prof. Nikos Margaritis (University of the Aegean)

John Stephanis (FEAP President)

Mario Lopes Santos (European Commission)

Courtney Hough (FEAP General Secretary)

Dr. Jean Weissenberger (Aquaculture Unit - DG Fisheries and Maritime affairs - EC)

Dr. Giorgia Bressani (University of Salento)

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SESSION 1: REGIONAL DEVELOPMENT & ROLE OF RESEARCH

WADDAH SAAB

EU Maritime Policy and the implications to Mediterranean Aquaculture

Abstract

The presentation will explain the rationale and the content of the EU integrated maritime policy adopted by the European Commission on 10 October 2007. It will focus on those initiatives or aspects of the policy that are particularly relevant to the aquaculture sector. The so-called “Blue Paper” indicates the importance of the sustainable development of the aquaculture sector and Commission’s commitment to review its strategy for the sustainable development of aquaculture in 2008. Initiatives in the areas of marine spatial planning and the marine and maritime research strategy are also important for the sector and will be discussed.

Short CV

Waddah Saab holds an engineering doctorate in physical chemistry from Ecole Nationale Supérieure de Chimie de Paris. He also completed an MBA at INSEAD in Fontainebleau – France.

He worked 7 years as a project manager in the chemical industry from 1985 to 1992. He also was an advisor to the government of Kazakhstan in 1994-1995 on its restructuring and privatisation programmes. He joined the European Commission in August 1995, where he has worked in the areas of energy research, internal audit, and accession negotiations with Malta. He has been since May 2004 a member of the cabinet of Joe Borg, Commissioner for Fisheries and Maritime Affairs in the European Commission.

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SESSION 1: REGIONAL DEVELOPMENT & ROLE OF RESEARCH

JOHN STEPHANIS

Short Bio

John Stephanis is Founder and Managing Director of Selonda Aquaculture S.A. since 1981 with BSc.in Economics (School of Economic and Commercial Sciences - ASOE) and M.A. in Economic Planning (New School for Social Research, NY). He is President of the Federation of Greek Maricultures (FGM), Member of the Board in the newly founded European Aquaculture Technology Platform (EATP).and since 2003 President of Federation of European Aquaculture Producers (FEAP).

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SESSION 1: REGIONAL DEVELOPMENT & ROLE OF RESEARCH

COURTNEY HOUGH

Opening Remarks on Profet Policy - Background on Research Compilation

Short Bio

After starting in scientific research and development, mainly on food product development, Courtney Hough has worked on the international development of aquaculture for 20 years, specialising in project development, market research and economic assessment. Since 1993, he has also been General Secretary of the Federation of European Aquaculture Producers and has worked on research and network projects in Europe as well as training and educational projects. He coordinated the development and the launch of the 'Aquamedia' communication initiative (www.aquamedia.org) and assures its continuing activities.

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SESSION 1: REGIONAL DEVELOPMENT & ROLE OF RESEARCH**BASIL STEPHANIS****European policies and their effects on the development of
Mediterranean Aquaculture*****Short Bio***

Professor of Transportation Planning and Engineering in the Democritus University of Thrace since 1977 with emphasis on planning, forecasting and mathematical modeling. He holds a Diploma in Civil Engineering from the National Technical University of Athens, an M. Sc and a Ph.D. in Transportation Planning from the Polytechnic Institute of Brooklyn. He has been counselor to the Secretary of Transportation (USA), National Representative to the Inland Transport Committee (Economic Commission for Europe, U.N.), Member to the Committee for Economic Research to the European Conference of Ministers of Transport (ECMT), National Representative to the Transport Group of EEC on issues regarding infrastructure, transport policy and air transport, Member of the Inland Transport Committee (EEC), Member of the High Level Group for Air Transport (EEC), Scientific Coordinator of the Hellenic Presidency to the EEC (Council of Ministers of Transport, 1983), Special negotiator of the Hellenic - American Air Transport Agreement, Coordinator in the European Science Foundation on "Transport Policy" and Scientific Coordinator of the committee for transport of the Ministry of Foreign Affairs for the Hellenic Presidency to the EU, 2003. Today is a Member of the Committee for the National Transport Policy 2007 – 2013 of the Ministry for Transport and Communications. Author of books and articles in international journals and consultant in many transport studies. Chairman of BOD of SELONDA Group of Companies.

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SESSION 1: REGIONAL DEVELOPMENT & ROLE OF RESEARCH

GUSTAVO LARRAZABAL

Relevance of European and National aquaculture research to the Mediterranean Producers

Short Bio

Gustavo Larrazábal is President and Managing Director of the Tinamenor Group, he joined the company 23 years ago. The flagship of the Group, Tinamenor, S.L. was founded in 1973 and was the pioneer Spanish company in marine fish farming. Today, this is one of the most representative groups of the Spanish aquaculture, and holds six companies, operating from hatchery breeding to table-fish production and commercialisation. Member of the Board of Directors of APROMAR (Spanish Marine Fish Farmers Association). Vice-President of FEAP. Chairman of EATP (European Aquaculture Technology Platform).

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SESSION 2: POLICY & REGULATORY FRAMEWORK

JEAN WEISSENBERGER

Abstract

In 2002, the European Commission presented a Communication on a Strategy for the sustainable development of European aquaculture (COM(2002)511), which gave a ten-year vision of aquaculture aimed at reaching the status of a stable industry guaranteeing long-term secure employment, which was able to cope with the main problems identified, ensuring health and environmental protection. Five years later, time has come to take stock of progress made so far and to launch a debate with all stakeholders on the further development of sustainable aquaculture in the European Community. The European Commission (DG FISH) initiated in May 2007 a large consultation regarding the opportunities for the development of community aquaculture. To this end, an internet consultation was started on the 10 May 2007 to last until mid of July¹. In parallel to the consultation published on the internet and within the same period, specific consultation meetings were organised with each of the main stakeholders and civil society representatives groups (fish producers, shellfish producers, feed industry, NGOs, social partners). As a third step, the European Commission hosted on 15-16 November a major conference in Brussels on "European Aquaculture and its Opportunities for Development". The purpose of the conference was to advance the debate on the sustainable development of European aquaculture, and in particular to examine the role that public authorities can and should play in this context. These consultations and the discussions held at the Conference addressed numerous questions and main challenges faced by the European fin-fish and shellfish aquaculture, such as:

- The need for a Community strategy
- The economic outlook of aquaculture in Europe
- The environmental challenges faced by aquaculture, both in terms of impact of aquaculture on its environment, but also the strong dependency of aquaculture on a environment (water) of high quality
- The challenges of providing healthy food, while ensuring animal health and welfare
- The prospects related to a new area of domestication (new species, feed limitations)
- The need to overcome space limitation through spatial planning and/or technological innovations
- The possibilities offered under the European Fisheries Funds
- The strategic importance of research ...

This consultation and this Conference pave the way to a review of the Strategy for sustainable development of aquaculture in Europe.

¹ See http://ec.europa.eu/fisheries/cfp/governance/consultations/consultation_100507_en.htm

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Short CV

Jean Weissenberger is a Graduate as DVM from French Veterinary High Schools (Maisons-Alfort - Paris 1986) and third Cycle in "Fundamental and applied toxicology (University Paris VII - 1988)

- a few years in veterinary practice and teaching (Assistant lecturer in Pharmacy-Toxicology in Vet High School)

- Six years in the Pharmaceutical Industry (Drug development, mainly "safety" and "efficacy" files)

- Joined the European Commission in Dec 1995. Worked successively in DG ENV (Nature protection), DG ENTR (Pharmaceuticals) and DG FISH (Environment and Health). Beginning of 2007, joined the Aquaculture Unit of DG FISH: in charge in particular with the preparation of the Community Aquaculture Strategy.

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Presentation of IUCN and its functioning. The work of IUCN on the Mediterranean Aquaculture and specifically a presentation of the work of IUCN on the recently published IUCN-FEAP guide. Furthermore, aquaculture and the environment as well as the ongoing and future works of IUCN, regarding the development of other guidelines, such as those concerning site selection, certification and fresh water.

Short Bio

Despina Symons Pyrovalidou is director since 1989 of the European Bureau on Conservation and Development (EBCD) , a non governmental organization based in Brussels. An active member of the World Conservation Union (IUCN), EBCD collaborates closely with the IUCN, both the European Office and the Mediterranean office, as well as the Marine Programme for which Despina Symons provides the link to the EU institutions and the fisheries-aquaculture sectors. Despina Symons is coordinator of the Fisheries and Aquaculture Working Group for the European Experts Group of IUCN and is partner with IUCN on various projects such as the IUCN-FEAP guidelines for Sustainable Aquaculture in the Mediterranean. Moreover, EBCD provides jointly with IUCN, the Secretariat to the European Parliament Intergroup on Sustainable Development.

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SESSION 3: RTD NEEDS RELATED TO EUROPEAN POLICIES

PANOS CHRISTOFILOGIANNIS

Fish Health Management – RTD contributions, needs and Choices available for the future.

Abstract

Advances and bottlenecks in the implementation of the new EU Directive 2006/88 and recent EFSA consultations are discussed and extensive testing and screening in a meaningless and costly attempt to theoretically improve fish health status in Europe is discouraged. The requirements for advanced Epidemiological studies in order to define the procedures for quarantine measures, regulations for transport, import and export regulations, principles for zoning as well as the type of eradication programme, carcass handling, disinfection, fallowing and restocking are identified. The need for the development of initiatives on benchmarking of disinfection measures and chemical used in aquaculture and adoption of the relevant legislation regarding methods of mortality disposal are stated. The requirement of Reliable fast track field diagnostics (Rapid non-invasive diagnostic tests) in order to provide quick response especially during an outbreak is underlined. Research and technical development work on optimising transport / holding conditions are essential in avoiding spread of new pathogens is also required (www.europanda.net). Viral diseases like VNN and parasitic diseases have become an increasing problem in Mediterranean while new pathogens like *Streptococcus iniae* are recorded. Aquaculture mainly depends on the application of the cascade principle for therapeutic agents. The proposed MUMS approach would not facilitate higher interest by the Animal Health Sector. European Commission needs to address the issue of the mechanism for the authorisation of VMPs for aquaculture. Equitable licensing procedures in all Member States are required. One European License Scheme will solve the issue of vaccines and chemotherapeutant availability in aquaculture and will apply an “even playing field”. Re-definition of the concept of “autogenous / autologous” vaccines is required at a Community level. This should be change to a “first line of defence” vaccination scheme where pharmaceutical companies could be able following strict protocols on safety and quality to bring to the market vaccines within half a year from the occurrence of a new disease. Quantitative genetics in industry and research organisations led selective breeding programmes create are lacking in sea bass and sea bream. Knowledge building on welfare needs for marine species now being developed for aquaculture is required. European research on aquaculture is dispersed with duplication of effort within the National programmes. Regular open evaluation of the RTD progress and it’s final output applicability is urgently required. Long term research strategy beyond the horizon of the Community Framework Programmes is necessary to be developed through foresight studies. Such studies along with the development of the Strategic agenda of the EATP would give a clearer industry-led focus on sectoral priorities. EU needs to expand epidemiological research in fish diseases and risk analysis in order to determine threats to aquaculture operations to facilitate a fertile environment on realistic applied control strategies, to identify and apply operational welfare indicators and interact with the research



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community and the fish farmers associations on developing codes of practice for responsible aquaculture. Equitable legislation implementation and Horizontal knowledge transfer is required.

Short Bio

Panos Christofilogiannis is General Manager of AQUARK a consultancy company for Mediterranean Aquaculture. After concluding DVM studies (Aristotelian Un. Of Thessaloniki) and two MSCs in Applied fish Biology (Un. Plymouth and Un. Stirling he concluded a PhD thesis on Applications of Antibiotics in Greek Maricultures sponsored by FGM and Ministry of Development (Un.of Stirling). AQUARK is technical consultant for the sector (FGM, FEAP) with active role in consultation processes at ACFA level, consultant for fish farming groups in Spain, Croatia, Greece and Turkey as well as for Pharmaceutical companies and Aquaculture Insurance companies focusing on serving the region.

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SESSION 3: RTD NEEDS RELATED TO EUROPEAN POLICIES

NIKOS ANAGNOPOULOS

“Marine Protected areas or aquaculture in the coastal zone? Choice or combination? The needs of governance”

Abstract

Marine Protected Areas (MPAs) are increasingly being used as a tool for both marine nature conservation and the sustainable management of the living resources in our seas. One of the main issues concerning MPAs is the role that they can play in sustaining local livelihoods and providing employment opportunities in rural areas. Small scale fisheries, ecotourism and diving activities are often presented as the only sustainable activities that can take place inside, or close to, MPAs. Aquaculture can probably play a role in this case. The current framework that aquaculture farms operate is not satisfactory both to scientists and the businessmen. LAMANS, as advisor of the Federation of Greek Maricultures (FGM), has proposed a radical change to the legal framework that dictates the licensing system for marine aquaculture in Greece. The establishment of a specific Framework for the development of aquaculture and the design of aquaculture planning (the so called “Areas of Organised Aquaculture Development” - AOAD) in order to promote and solve a long lasting issue such as the planning of the aquaculture units and the land use for the land supporting facilities (hatcheries, packaging units, warehouses etc). The establishment of the specific AOAD present a challenge for the local and national governing bodies, as they could coexist with NATURA 2000 sites and MPAs. Some types of aquaculture, such as shellfish culture, have a long history, are traditional practices, and are heavily linked with the local ecosystems. In this case, some aquaculture areas would merit protection in the same way that some vineyards or olive trees fields are now protected in rural areas. Areas where traditional aquaculture takes place (extensive type) could be designated as MPAs. In this case they would fall under IUCN category V (Protected Landscape/Seascape: Protected area managed mainly for landscape/seascape conservation and recreation). Marine finfish farms that operate in depths of less than 40 meters could be also a part of MPAs provided that no seagrass beds of *Posidonia oceanica* occur close to the cages. However, the knowledge about the biological benefits or impacts of aquaculture in an MPA is limited and is often a point of controversy.

Short Bio

Nikos Anagnopoulos has more than 26 years of experience in the field of consulting for fisheries and aquaculture related projects with involvement in more than 300 studies. He worked in the Fisheries Directory of the Greek Min. of Agriculture (1982-1988) and then moved to the private sector. From 2001 he is a share-holder and the General Manager of the consulting company LAMANS Management Services SA. Since 2006 he is advisor of the Federation of Greek Maricultures (FGM).

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Aquaculture has emerged as an alternative for capture fisheries, in order to respond to the increasing fish demand in a sustainable way. Consumer acceptance is crucial for future market success. However, consumer knowledge and awareness about aquaculture is very limited. As a consequence, consumers' perception about farmed fish is rather driven by emotions than by ratio or factual knowledge. In this sense, wild fish, which is associated with a natural and happy life, tends to be perceived as more tasty, healthy and of a higher overall quality. On the contrary, in consumers' minds farmed fish is more related to an industrial fish, with projections from the intensive livestock production not being far away. As a result, farmed fish is often believed not to yield the same taste and quality and even perceived as less healthy to consume, regardless of the advantage of being tailor-made and better priced. Notwithstanding the differences in perceived intrinsic quality, information about fish origin is only considered by a small group of consumers. Despite being a small market segment, consumers claiming to refuse farmed fish constitute an economically important group, because they seem to have the highest fish consumption frequency, general attitude, subjective knowledge and strongest interest in information. Seen that the refusal was largely based upon a lower perceived intrinsic quality, i.e. beliefs and expectations that do not match with current scientific evidence, clear potential opportunities for the aquaculture industry can be found in tackling these beliefs with appropriate communication and by increasing consumer's awareness and factual knowledge about the sector.

Short Bio

Filiep Vanhonacker has a MSc. in Bio-Science Engineering (graduated: 07/07/2005), working at the Department of Agricultural Economics, Ghent University as a PhD-researcher. Research activities pertain to participation in national and international projects related to fish and aquaculture (e.g. SEAFOODplus, CONSENSUS), traditional food and animal welfare; to congress attendance and presentations, and to international publications.

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SESSION 3: RTD NEEDS RELATED TO EUROPEAN POLICIES

MASSIMO CAGGIANO

Are aquaculture products adapted to consumer demands? Fish Farmers perspective

Abstract

Aquaculture in Mediterranean countries has grown quickly in the past 20 years, thanks to technological progress and favourable environmental conditions. Nevertheless, sea bass and sea bream represent the overwhelming majority of fish species cultured. In the last ten years, traditional sea food distribution channels (fishmongers and wholesalers), have been replaced almost totally by the large-scale retail trade (chain of hypermarkets). This Phenomenon has enabled the farmer to increase production and sales, because of the possibility to reach new buyers, but has left in the hands of these big companies the task to listen consumer demands and steer their behaviours. Fish farmers more than in the past five years, are pushed to give answers to new demands: new species, new type of presentation (pre-packed, gutted, fresh fillets, frozen fillets), organic food. Mediterranean countries have different socio-economic conditions and gastronomic traditions. Northern European countries have even bigger differences compared with the Southern ones.

Proper marketing and producing strategies must be realized, to meet different requests among European consumers and compete with fish food coming from the Far East.

Short Bio

Massimo Caggiano has a Bachelor of Science degree: Scienze Biologiche Università La Sapienza Roma and since 1999 is the Technical director of Panittica Pugliese Spa. He has acted as Technical director of Ittica Ugento Spa (1982 – 1999) and Research coordinator of Ittica Ugento Spa (1980 – 1982). He is a Teacher and tutor in many professional courses and stages for Italian and foreign students and new graduates and author and co-author of many publications and posters on reproduction, rearing and disease of marine fishes and shrimp. He also is often invited to give lectures and contributions in many workshops and meetings in Italy and Belgium. He is a Member of the Sanitary Commission of API (Associazione Piscicoltori Italiana) and Member of the Biologist National Association (Ordine Nazionale dei Biologi) in Italy.

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The basis and the successful implementation of the Common Fisheries Policy rely to a large extent on Science. Aquaculture has been the fastest growing animal production sector in Europe, supported by a high quality research community (public and industry driven) that demonstrates a high potential for innovation and technological development.

EU supports an integrated approach for aquaculture research to maximise synergies between Member States and Community efforts and improve the dialogue between the scientific community, industry and policy makers. The key challenge is to provide the knowledge-base required for the implementation of the Strategy for sustainable aquaculture development, which calls for increased support to aquaculture research in areas such as health & welfare, environment, production systems and feeds, spatial planning and governance.

The 6th Research Framework programme (2002-2006) has offered opportunities for RTD to support the development of the European aquaculture mainly through the Scientific Support to Policies (SSP). These opportunities, especially with regards to the Mediterranean Aquaculture, will be the main focus of the presentation.

Short Bio

- Bachelor of Marine Biology and Oceanography (University Aix-Marseille II)
- DEA of Biological Oceanography (University Aix-Marseille II).
- PhD on fish physiology at the University Montpellier II. (PhD grant of the Greek State Grants Foundation, IKY).
- Postdoctoral researcher on fish physiology & genomics at the University of Nijmegen (Marie Curie Individual Fellowship for research on aquaculture).
- Temporary Assistant Professor at the University Montpellier II (fish physiology & genomics).
- Consultant - Project developer & manager in a private company in Montpellier (Biotech/aquaculture)
- Scientific officer in DG Fisheries & Maritime affairs (EU).

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SESSION 4: RTD NEEDS AND SUSTAINABLE DEVELOPMENT

ALISTAIR LANE

What do we mean by sustainability? The CONSENSUS initiative.

Abstract

Europe has a strategy for sustainable development, a position that now includes the development and promotion of sustainable European aquaculture. Several definitions of sustainability exist, based on the three pillars of economic, environmental and social factors – often also called the 3 P's - people, profit and planet. But what does this really mean for European aquaculture?

The strategic objective of CONSENSUS is to provide consumers with, and demonstrate the benefits of, high quality, safe and nutritious farmed fish and shellfish products, grown under sustainable conditions.

- CONSENSUS is building sustainable aquaculture protocols based on a number of desired trends for the sustainable development of the industry and supporting indicators by which those trends can be measured. These were agreed by 120 stakeholders from 16 countries. The Code of Conduct of the Federation of European Aquaculture Producers has now been updated to include the themes raised by CONSENSUS, and has selected those indicators that are relevant to the finfish sector, and which can be implemented at farm level. 2007 is a consultation period for these draft protocols. It is hoped that Codes of Practice at National or Species level will also incorporate the indicators.
- CONSENSUS is also developing balanced information for consumers, showing the benefits of sustainable European aquaculture and its products, with the firm message that aquaculture is the only way to fill the gap between supply and demand for seafood. CONSENSUS partners have now drafted a brochure that is targeted at the 40 member organisations of the European Consumers' Organisation (BEUC) and the Euroconsumers network. Messages from this brochure will be tested on consumers in several European countries.

So what about the definition? As CONSENSUS draws to a close, we have started to ask producers around Europe to give us their definition – putting the focus on what they believe to be the main issue(s).

CONSENSUS is at www.euraquaculture.info

Short Bio

Alistair Lane has an MSc. in Marine Biology (University College of North Wales, UK), following his BSc Hons degree obtained in Plymouth. He worked in the aquaculture feeds business for 10 years in UK, France and Spain, with responsibilities in distribution, marketing and general management. He has been the Executive Director of EAS since March 2000. He has a special interest in communication and in networks. He is an expert evaluator for the EU Research Framework Programmes and for the Research Council of Norway.

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The FORM project was an EU FP5 Thematic Network on Replacement of fish meal and fish oil in aquafeeds involving five FP5 projects namely, RAFOA, PEPPA, PUFAFEED, fPPARs and GUT INTEGRITY. Four annual network meetings were held at locations across Europe with the themes, Alternative feed resources (proteins and lipids), Alternative feed resources (Focus on GM raw materials), Aquaculture and food safety and Aquaculture and healthy eating. The interchange of ideas and methods arising from FORM allowed the development of the 32-partner research consortium that comprises the EU FP6 Integrated Project, AQUAMAX. Programme 1 aims to produce new alternative sustainable aquafeeds that produce highly nutritious seafood that is low in organic and inorganic contaminants. Preliminary data will be presented on the development and use of these feeds and their consequences for fish growth and product quality. The other AQUAMAX programmes will also be described; Programmes 2, To assess health benefits of fish produced on new feeds; 3, To assess the safety of fish farmed on the new feeds and 4, To assess consumer perception of farmed fish fed new diets.

Short Bio

Dr. Douglas Tocher has a BSc and Doctorate in Biochemistry from the University of Edinburgh, Scotland. He has worked for 25 years in fish lipid and fatty acid metabolism and is currently a Senior Lecturer in the Nutrition Group, Institute of Aquaculture, University of Stirling. He was a project leader in the EU RAFOA project, and is currently a workpackage leader in the EU Aquamax project.

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SESSION 4: RTD NEEDS AND SUSTAINABLE DEVELOPMENT

PAVLINA PAVLIDOU

Present and Future status of Mediterranean fry production

Abstract

The development of hatcheries has greatly contributed to the sustainable expansion of the Mediterranean Aquaculture. The role of fry production is essential since, apart from the fry availability regarding quantities, species and timing it also influences the cost and the performance of the on growing. During the last 10 years the Med fry production has increased by 175% while the fry price has remained relatively stable . The med production in 2007 reached an output of just above 1 billion fry with the key countries being Greece followed by Turkey, Italy, Spain and France. In the key countries currently operate 70 hatcheries with the majority of them producing between 10 to 20 mil fry each. Only Greece and Turkey have hatcheries with yearly production capacity of above 50 mil fry. The consolidation of the sector is leading to the decrease of the number of the operational hatcheries in the Med key countries (23% decrease in 3 years), while at the same time there is a trend to move towards large scale hatcheries. Large scale hatcheries offer economies of scale and therefore reduced production costs.

The medium term fry production targets require research related to genetics, malformations, pathology and new species. FINEFISH, an EU FP6 Collective research project targeting the fry malformations has been evolving since 2005 with valid intermediate results.

Short Bio

Pavlina Pavlidou has an MSc in Aquaculture (University of Stirling, Scotland) following a BSc. in Biology (Aristotle University of Thessaloniki, Greece). She has worked for 13 years in various positions in the Hatcheries Division of Selonda Group, in Greece and abroad. Since 2005 she is the Hatcheries' Division Manager of Selonda SA.

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SESSION 4: RTD NEEDS AND SUSTAINABLE DEVELOPMENT

GIORGIA BRESSANI

Effluent treatment in aquaculture: science and practice - (AQUAETREAT Project)

Abstract

Land-based fish farms produce effluents that may have, if not properly handled, a negative impact on the quality of water courses and rivers. AQUAETREAT, "Improvement and innovation of aquaculture effluent treatment technology", is a 3-year SME collective research project, funded under the Sixth Framework Programme, looking at the need for fish farms to improve the management of wastewater and solids, to minimise pollution and optimise the recovery, disposal and re-use of solid waste. It has started in May 2004 and since then developed effluent treatment systems, applicable to all types of land-based fish farms, open and closed systems, fresh water and marine operations, regardless of species, which have been tested at three sites in Italy, France and Denmark. Research institutes in Italy, France and the United Kingdom act as the project's RTD performers and are supported by an Italian engineering SME that is expert in treating effluents. The systems designed have proven to be cost-effective and allow efficient solid removal and sludge thickening. The first step is a mechanical filtration, in which all large settleable or suspended particles, both organic and inorganic, are removed; this step produces a high flow of filtered water, where the reduction of solid concentration varies between 30 and 70 %, and a very low flow of concentrated waste water containing 1 to 3 g of solids per litre. The latter flow, also called wet sludge, needs further treatment with additional concentration systems (settling and flocculation-coagulation) to obtain on one hand a concentrated sludge (10-30 % of dry matter content) and on the other hand an effluent containing high concentrations of mineral and organic soluble substances (in particular nitrogen and phosphorus). The final sludge dewatering and thickening process occurs through the employment of different devices, as settling tanks, geotubes and belt filters, while further soluble substances removal from the filtered and the nutrient enriched waste water, occurs through packed biofilters, wetlands, both natural or constructed, and algal ponds. The composition of all flows has been characterised and protocols and methods have been set up for the re-use and/or disposal of waste and by-products. The quality of the recycled water has been tested by rearing sea bream juveniles in it; preliminary results have shown higher growth rates and less mortality, confirmed by the measurements of some welfare indicators, as well as a comparable quality of the flesh, which has been certified by a panel of experts. An agriculture test, whereby tomatoes were grown using marine stabilised sludge, has also shown promising results. It has to be noted here that to avoid high transport costs, it is advisable to find a way to reuse sludge inside or in the area of the fish farm. As to the sludge composition, nitrogen and phosphate might be limiting factors, but the presence of potential pollutants such as heavy metals, poly-aromatic hydrocarbons and PCBs, has been also excluded. The effluent treatment systems developed in this project will enable fish farmers not only to reduce the amount of waste they produce, thereby lowering disposal costs, but also to create commercial products as the waste might be used as soil amender or compost for agriculture, or find uses in other sectors, with benefits to the aquaculture industry and the environment. Within the project, an extensive dissemination and training plan, including four regional workshops and four training courses, allowed the formation of updated and skilled managers and technical staff of the European aquaculture SMEs. A manual on effluent treatment in aquaculture has been also delivered.

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Project supported by EU, under the Horizontal Research Activities involving SMEs (Collective Research); Contract n° COLL-CT-2003-500305; EC Project Officer: Marta Iglesias.

Short Bio

Dr. Giorgia Bressani work in the Laboratory of Comparative Physiology of the University of Salento. She is a biologist and she has worked in the field of management and treatment of aquaculture marine effluent. She is involved in several project on the experimental feed for aquaculture and on the fish response at stress by catching.

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SESSION 5: SUPPORT FOR DEVELOPMENT

GIORGOS KOUMOUNDOUROS

Morpho-anatomical abnormalities in reared fish: An important issue of product quality, consumer perception, production cost & management, and animal welfare.

Abstract

As any departure from the normal structure or function of an animal is described in the broad sense by the term “disease”, morpho-anatomical abnormalities are usually considered as non-infectious diseases, thus been clearly differentiated from acute morphological defects caused by contaminants and related facultative pathogens. However, to avoid the a priori determination of the responsible causative factors, the term morpho-anatomical abnormality should be used to describe any irreversible deviation of external morphology, which is usually -but not always- associated with defects of internal anatomy. The presence of morpho-anatomical abnormalities in reared fish is an important problem for the aquaculture sector. In the past, European finfish aquaculture was characterized by an impressive progress in rearing methods, nutrition and disease control of reared fish, but rarely with the product quality. As a result, morpho-anatomical abnormalities continue nowadays being a frequent and important problem in finfish aquaculture with high economical consequences, as they downgrade both the image of the product and the biological performances of reared fish, with direct negative effects on both the market value and the production cost. Given that abnormalities develop in a non species-specific way, their importance is further underlined in the profitable species-diversification of the European marine fish culture. Moreover, the successful coping with the morpho-anatomical abnormalities will assist in complying aquaculture with the common sense of animal welfare. To cope with the market and legislation demands, as well as with the need for cost-efficiency improvement, production and research have to enhance the quality not only of the final product, but also of production methodology. Nowadays the industry copes with the problem of morpho-anatomical deformities mainly by applying removal procedures at high cost (ie manual sorting of deformed fish), and therefore low quality products rarely reach the marketplace. However, in the years ahead, efforts should be directed towards increasing cost efficiency by following the strategy of improved rearing conditions, quality assessment and mass selection. This study is a short review on the development of morpho-anatomical abnormalities in reared fish, especially addressing their relationship with the issues of product quality, consumer perception, production cost and management, and animal welfare. Relevant research projects, future trends and potential directions are also discussed.

Short Bio

Dr. George Koumoundouros (BSc in Biology, MSc & PhD in Marine Biology) is currently an Assistant Professor in the Biology Department of the University of Patras. He has worked for 15 years in fish biology and aquaculture, with special emphasis on larval rearing, fish quality and environmentally-induced phenotypic plasticity. He has participated in 16 European and national research projects, as a main researcher or scientist in charge (i.e. ORCIS & FINEFISH EU projects).

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**What future for Mediterranean Mariculture?
22-23rd November 2007 – Athens (Greece)****SESSION 5: SUPPORT FOR DEVELOPMENT****GIORGOS KOTOULAS****AQUAGENOME – how genomics can help the fish and shellfish sectors*****Abstract***

AQUAGENOME “Genomic in fish and shellfish: from research”, is a 6th Framework - Scientific Support to Policy- EU Program, which runs from January 2007 to December 2008. The aims of the project are: a) to bring together research groups in the field of aquaculture genomics for exchanges of knowledge, resources, methodologies, b) to achieve a critical appreciation of achievements in genomic research and identification of further research needs to support industrial exploitation and c) to transfer of the knowledge to the European aquaculture production sector. In the presentation will be shortly introduced different aspects of Genomics and their relevance to aquaculture and will be presented the main lines of AQUAGENOME project.

Short Bio

Dr. Georgios Kotoulas, is Researcher A' in the Institute of Marine Biology and Genetics (IMBG) at the Hellenic Centre for Marine Research (HCMR), Crete. He coordinates the Genomics research at IMBG which mainly comprises Aquaculture and Comparative Genomics of Mediterranean fish species. At the IMBG there are facilities and expertise for Population Genetics, Genetic and genome mapping, QTL mapping and Functional genomics. One major goal of the team is the integration of different approaches to address biological questions related to Aquaculture and to adaptation of organism in their natural environment.

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SESSION 5: SUPPORT FOR DEVELOPMENT

CONSTANTINOS MYLONAS

Tuna: Closing the cycle - A dream or reality?

Abstract

Fueled by the increasing demand for bluefin tuna (*Thunnus thynnus*) for the sashimi-sushi market, a booming "capture-based aquaculture" industry has been developing in the Mediterranean Sea. The recent expansion of this industry is threatening to the wild population, and there is a great interest in developing broodstock management, spawning and larval rearing methods for bluefin tuna. In the framework of an EU-funded project, mature migrating bluefin tuna were obtained using a purse seine and transported to floating cages near shore. Fish were implanted with gonadotropin releasing-hormone agonist (GnRH_a)-implants and after 2-8 days, all fish were sacrificed and their gonads removed for maturity evaluation. Males implanted with GnRH_a were in spermiating condition and all but one GnRH_a implanted females had undergone ovulation. Fertilized eggs were collected from one of the cages after GnRH_a treatment, and the hatched larvae were identified as bluefin tuna. Ovulated eggs were also collected from two females and were fertilized in vitro, producing viable larvae. This first success in the control of reproduction of bluefin tuna gives substantial hope for making the "dream" of closing its cycle a "reality", by culturing fish produced from eggs released from a controlled number of brood fish maintained in captivity.

Short Bio

Dr. Costantinos Mylonas is a Research Director at the Institute of Aquaculture, one of the five (5) institutes of the Hellenic Center for Marine Research, and is located in the island of Crete, Greece. He obtained his B.Sc. degree in Aquaculture from Texas A&M University. During his M.Sc. degree at North Carolina State University, and his Ph.D. degree at the Center of Marine Biotechnology, Maryland, he studied the reproductive endocrinology of cultured fishes, and developed hormone-release devices for the control of maturation and spawning. His recent work involves the control of reproduction in species such as the dusky grouper, greater amberjack and bluefin tuna.

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SESSION 5: SUPPORT FOR DEVELOPMENT

JON ARNE GRØTTUM**Knowledge on the professional sector– Data collection*****Abstract***

Collection of data is often experienced as a burden by the industry. However, as long as the aquaculture production is controlled by legislation, the authorities will impose the companies to report the information required. Through cooperation between the authorities and the industry, the reporting routines have been considerably simplified. This was obtained by co-coordinating the reporting activities to different administrative authorities and by adapting legislations to eliminate unnecessary reporting. Use of electronic communication and software adaptations used by the industry to control production reduced the reporting to a few keystrokes. After submission, figures do not have to be punched from fax with unreadable handwriting, and the data system is always updated with the most recent information. The companies also have the possibility to automatically forward a copy of the report to their business partners, such as banks and consultancy firms. Because all companies have reporting obligations, updated statistics over the production situation is continuously available. The system is now under further development, to additionally include information from the entire value chain as well as environmental and health data. Some prevailing challenges are standardisation related to terminology, methodology of measurements and information exchange, and traceability through the value chain. The information is expected to be a highly valuable tool for the research community.

Short Bio

Jon Arne Grøttum has a doctoral degree in fish physiology, with a thesis related to reduced water quality in marine fish aquaculture. He has practise from the industry, working at different smolt-production plants. Through the project “Aquarius”, he has experience with use of different electronically tools to improve exchange of information between universities. Today he is employed by the Norwegian Seafood Federation, responsible for statistics- and marked-analyses.

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SESSION 5: SUPPORT FOR DEVELOPMENT

IOANNIS KARAKASSIS

Interactions with the Environment – a review of current knowledge

Abstract

During the past decade, a series of projects have addressed complementary aspects of the aquaculture-environment interactions ranging from local effects such as benthic enrichment in the vicinity of fish farms, to mesoscale and large scale effects such as the effects on sea grass meadows and wild fish. Similarities and differences among regions, types of mariculture and affected ecosystem processes should be taken into account in the context of environmental impact assessment. Ecosystem level approach should consider impacts of and on aquaculture, which is now an integral part of many marine ecosystems and local economies. The Mediterranean in particular is an interesting example for addressing these issues at the regulatory level since it comprises a variety of different approaches in regulation but also a considerable variation in production characteristics, physical and socioeconomic environment. Recent initiatives by FAO/GFCM and IUCN have attempted to bring together scientists and stakeholders to reach an inter-Mediterranean harmonization.

Short Bio

Dr. Ioannis Karakassis is Associate Professor at the Biology Department of the UoC, director of the Marine Ecology Laboratory. He has coordinated or participated in 15 national and 10 EU funded projects 9 of which are relevant to Aquaculture-environment interactions (AQUAENV-GR, MARAQUA, AQCESS, BIOFAQs, MERAMED, MedVeg and ECASA,SAMI, AQUAGRIS). Member of various international scientific working groups such as the Benthic Indicators Group (BIG) of the IOC-UNESCO, coordinator of the GFCM/CAQ working group on site selection for the Mediterranean. Research interests include anthropogenic effects on marine ecosystems and development of indicators for the assessment of biodiversity and level of health/disturbance of ecosystems. Author and co-author of more than 40 peer reviewed papers.

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SESSION 6: FUTURE RESEARCH NEEDS

DAVID MURPHY

Skill Development and technology transfer mechanisms

Abstract

The European aquaculture technology platform presents an exciting opportunity for the industry to promote its united vision for the sector. Whilst much of the focus will be placed on research priorities, “Knowledge management” has appropriately been identified as a key issue and as such a Working Group has been created. Horizontal pillars have also been created to deal with education and training, technology transfer and communication. This presentation will explore the challenges associated with “knowledge management” and the horizontal pillars in order to stimulate discussion on the area. It is important to remember that the horizontal challenges are not unique to aquaculture but are occurring across all scientific and technological fields, thus the solutions and methodology may exist elsewhere.

Key Questions for European Aquaculture;

- How can we successfully exploit knowledge to remain competitive in the face of increasing global competition?
- How can we raise public awareness of a sustainable aquaculture industry in a way that leads to informed policy making?

Short Bio

AquaTT is an international foundation which provides project management and training services to support the sustainable development of Europe’s aquatic resources. David Murphy has been the general manager of AquaTT since 2000 and has led initiatives to help AquaTT meet its objectives including; coordinating the European thematic network on Education and Training for Aquaculture Fisheries and Aquatic Resource Management (www.aquatnet.com) (120 partners, >70 training institutes), dissemination (Training News 3,500 recipients per month), event management (workshops, exhibitions), education and outreach programmes (www.planetaqua.ie), vocational pilot projects (www.waveproject.com) and the design, development and delivery of state-of-the-art training programmes (Aqualabs).

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AquaTT is an international foundation which provides project management and training services to support the sustainable development of Europe's aquatic resources

Read more @ <http://www.aquatt.ie>

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SESSION 6: FUTURE RESEARCH NEEDS

MARIO LOPES DOS SANTOS

7th Framework Programme—impact on and opportunities for aquaculture

Abstract

Aquaculture is a self-sustainable industry that demonstrates a high potential for innovation and technology development, and should thus cater for its own R&D needs, aided by national research programmes and general Community incentives such as those supporting SME research. There is also a clear need for scientific support of EU-wide aquaculture aspects within the CFP, including health and environmental issues. This presentation gives an account of the possibilities for aquaculture research under FP7. Under the Seventh Framework Programme, research in aquaculture is covered mostly by the Cooperation Programme, in particular Theme 2 "Food, Agriculture, Fisheries and Biotechnology", and the Capacities programme, in particular the SMEs specific measures. Under Theme 2, a number of topics related to the improvement of health and environmental standards, whilst assuring the quality and safety of aquaculture products, in fully controlled and integrated production systems, will be covered. The SME-specific research actions are designed to solve technical problems of SMEs by means of research and innovation and are therefore very appropriate for aquaculture, in particular for areas such as new species and technologies.

Short Bio

Mario Lopes dos Santos, works for the Unit "Agriculture, Forestry, Fisheries and aquaculture" of DG Research of the European Commission, where he is responsible for fisheries and aquaculture research under the EC Seventh Framework Programme for Research. He has a degree in general aquatic sciences and an MSc in "Applied Fish Biology" as well as past experience at DG Fisheries and as a researcher and lecturer in Portugal.

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SESSION 6: FUTURE RESEARCH NEEDS

NIKOS MARGARIS

Short Bio

N.S. Margaris is professor of the Environmental Department of the Aegean University and Director of the Greek Edition of National Geographic Magazine. He has published more than 150 articles in scientific magazines of the international bibliography as well as various books on both scientific issues and popularized issues in Greek, German and English. He has been honored with many international and national distinctions.

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