DIVERSIFY: An EU-project exploring the biological and socioeconomic potential of new/emerging candidate fish species for the expansion of the European aquaculture industry

Co-funded by the Seventh Framework Programme of the European Union

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50% of seafood worldwide from Aquaculture (vs wild Fisheries)

10% of seafood in the EU from Aquaculture

65% of seafood in the EU imported!!!!

Strong interest by the European Commission to increase EU aquaculture production (marine)

Production of current species cannot be increased a lot (not enough demand)
Problems with Mediterranean species

- Consumers prefer fillets, steaks, ready-to-cook
- Small, plate size (difficult to prepare, bones)
- Larger fish more expensive to grow (3 y !!!!)
Choice of new/emerging species

- Greater amberjack
- Pikeperch (fw, RAS)
- Meagre
- Grey mullet (herbivorous, extensive)
- Wreckfish
- Atlantic halibut
Bottlenecks of the six species

- **meagre** *(variable growth, limited genetic variation, nutrition, health)*
- **greater amberjack** *(reproduction, juvenile production, parasites)*
- **wreckfish** *(broostock availability, reproduction, juvenile production)*
- **Atlantic halibut** *(reproduction, juvenile production, health)*
- **grey mullet** *(reproduction, larval rearing, nutrition)*
- **pikeperch** *(juvenile production)*
Partnership of DIVERSIFY

37 partners:
Greece, Spain, Netherlands, France, Italy, Israel, Belgium, Denmark, Norway, UK, Germany and Hungary

20 Research/Universities
9 Small Medium Enterprises
2 Large companies
5 Professional associations
1 NGO
Reproduction & Genetics (21%)

- Successful spawning in greater amberjack, Atlantic halibut, wreckfish and grey mullet
- Genetic description of captive broodstocks of meagre and pikeperch
- Paired-spawning and *in vitro fertilization* methods in meagre and wreckfish
Nutrition (16%)

- Development of enrichment media for live feeds, and weaning diets in meagre and greater amberjack
- Nutrient content of wild wreckfish and their gonads
- Effect of Taurine in larval feeds for grey mullet
- Relation between nutrition and Systemic Gramulomatosis in meagre
Larval husbandry (16%)

- Production of greater amberjack and grey mullet larvae, and establishment of rearing protocols
- First wreckfish larval rearing studies (Spain, Greece)
- Effects of various environmental factors (light intensity, water renewal rate, water flow direction and tank cleaning timing) on larval rearing of pikeperch
Growout husbandry (20%)

- Study of meagre feeding behavior in response to physical/optical stimuli
- Multifactorial study on pikeperch production (growth, immune and physiological status)
- Effect of cage depth on the behavior of meagre during growout
Fish health (13%)

- Study of the ontogeny of the immune system in meagre
- Production of VNN capsid protein for vaccine development in Atlantic halibut
- Identification of important parasites in greater amberjack
Identification of the institutional and organizational context in which the new species can be introduced

Identification of consumer segments for the candidate fish species

Production of ideas for development of value added products

Socioeconomics (20%)
Dissemination - initial brochure

PARTNERS

The DIVERSIFY consortium integrates a multidisciplinary group of partners from 12 European countries. It is made up mainly of research and academic institutions, and also includes nine small or medium-sized enterprises (SMEs), three large enterprises, five professional associations and one consumer non-governmental organisation (NGO).

Athens University (AU), Greece
Aquaculture Forkeys Al (FORKY), Greece
Argostoliou Fish Farms S.A. (ARGUF), Greece
Asilair SARL (ASIAR), France
Asociacion Empresarial de Productores de Cultivos Marinos (AFROMAR), Spain
Asociacion Nacional de Fabricantes de Conservas de Peces y Mariscos Centro Tecnico Nacional de Conservacion de Productos de la Pesca (JANACOS), Spain
Ayuntamiento de A Coruna (ACG), Spain
Azienda Agricola Ittica Cadioli (ATTCIA), Italy
Bundesverband Der Deutschen Flachland- und Des Fischereihandel e.V. (BDFF), Germany
Canarias Explorespira Marines S.L. (CEXEMAR), Spain
Conselleria de Mar - Xunta de Galicia (EMME), Spain
CTACUA, Aquaculture Technological Center of Andalusia (CTACUA), Spain
Guinurex Group (GU-MAR), Spain
Danmarks Tekniske Universitet (DTU), Denmark
Dar Dgy Yar Ltd (DDY), Israel
European Food Information Council (EFIC), Belgium
Federation of Greek Aquaculture (FGA), Greece
Fundacion Canaria Parque Cientifico Tecnologico de la Universidad de Las Palmas de Gran Canaria (FCTP), Spain
Heriot-Watt Center for Marine Research (HMR), Greece
Icteric Research House (IRH), Greece
Hungarian Aquaculture Association (MAA), Hungary
Instituto Español de Oceanografía (IEO), Spain
Instituto de Reserca i Desenvolupament del Pesc de Catalunya (IRDRP), Spain
Istituto di Ricercare per l’Ambiente (IRMA), France
Institute of Marine Research (KMM), Norway
IOLH-National Center for Mucicuture (IOLH), Israel

www.diversifyfish.eu

PROJECT COORDINATOR

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Exploring the biological and socioeconomic potential of new/emerging candidate fish species for the expansion of the European aquaculture industry.

www.diversifyfish.eu

RESEARCH AREAS

Studies will be carried out in the six selected species across a number of different scientific disciplines.
Dissemination – www.diversifyfish.eu

SPECIES SELECTION FOR DIVERSIFY

DIVERSIFY focuses on amberjack (Seriola dumerili), meagre (Argyrosomus regius), pike perch (Sander lucioperca), Atlantic halibut (Hippoglossus hippoglossus), and wreckfish (Polyprion americanus). These species were selected based on their potential for wide-scale cultivation and to cover the different aquaculture systems (marine cage culture, fish farming in recirculating systems, and cold-water herbivore for warmer and temperate waters).

PERT DIAGRAM SHOWING THE STRUCTURE OF THE RESEARCH UNDER EACH WORK PACKAGE AND THEIR INTERACTIONS

To facilitate the work in DIVERSIFY, the research tasks designed to address the identified bottlenecks in each selected species have been separated by scientific discipline, so separate WPs address work in a specific discipline and species. The WPs were then organized in Groups of WP (GWP) according to Research Area first, and then according to species. This was done in order to bring together researchers with similar expertise (e.g., reproduction, nutrition, larval rearing, etc.), but working in different species, thus increasing the potential for problem solving in each area of research.
Dissemination - magazine articles

Publish two species-articles every year
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