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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4th Promotional Workshop DIVERSIFY
Athens, 11th JULY, 2018
Seafood consumption in the world/EU: some figures

- 50% of seafood worldwide from Aquaculture
- 10% of seafood in the EU from Aquaculture
- 65% of seafood in the EU imported

Strong interest from the European Commission to increase EU aquaculture production via DIVERSIFICATION
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
- meagre
- Pikeperch (fw, RAS)
- grey mullet
- wreckfish
- Atlantic halibut
Partnership of DIVERSIFY

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

20 Research/Universities
9 Small Medium Enterprises
2 Large companies
5 Professional associations
1 NGO
Bottlenecks of the six species

**Meagre:** Limited genetic variation, nutrition, health

**Greater amberjack:** Reproduction, juvenile production, parasites

**Wreckfish:** Broodstock availability, reproduction, juvenile production

**Pike perch:** Larval survival and juvenile production

**Halibut:** Reproduction, juvenile production, health

**Grey mullet:** Reproduction, larval rearing, nutrition
Socioeconomic bottlenecks

- Perception of aquaculture products
- Aquaculture growth barriers
- Market demand, buyer preferences
- New product development, value adding
- Market development
1-MEAGRE

- Description of the genetic variability of the broodstock
- Paired-spawning control and in vitro fertilization methods
- Successful spawning protocols
- Protocol for enrichment of live food in larviculture (DHA)
- Grow out: response to physical stimuli
- Day and night distribution in sea cages

2- GREATER AMBERJACK

• Successful hormonal control of reproduction (implants). First spawning of F1 stocks
• 500,000 juveniles obtained → grow out cages
• Main challenge: control of parasites in grow out
3- ATLANTIC HALIBUT

• **F1 fish** could be hormonally induced to spawn earlier with higher fecundity than controls

• Larval rearing using on-grown Artemia, early weaning and improvement of juvenile quality

• Development of a VNN vaccine: capsid replicated
4-GREY MULLET

- Important knowledge generated on herbivorous sps.
- Controlled reproduction by hormonal treatment
- Effect of Taurine in larviculture
- Effect of salinity on DHA requirements
- High number of juveniles obtained
- Grow out systems under evaluation
5-PIKEPERCH

• Genetic variability of cultured broodstock and comparison with wild populations for future breeding selection programs

• Relevant role of HUFA and vitamins in larviculture.

• Prevention high cannibalism in larviculture

• Effects of various environmental factors (light intensity, water renewal rate, water flow direction and tank cleaning timing) on larval rearing of pikeperch (RAS).
6- WRECK FISH

- Most challenging species
- *In vitro* fertilization protocol.
- Development of broodstock diet
- Limited *larviculture* period (35 and 60 days)

- High larval mortality.
- Survival up to 60 dph.
Socioeconomics

- Identification of consumer segments for the candidate fish species
- Organoleptic characterization
- Production of ideas and value-added products, and testing them with consumers
- Online supermarket trials
Production of ideas and value-added products, and testing with consumers

41 ideas for new product development of value added products.

12 ideas selected for checking production feasibility and shelf-life.

6 ideas selected for consumer evaluation in Spain, UK, Germany, France and Italy.
Fresh frozen **greater amberjack** filet

**Grey mullet** in olive oil

Smoked **grey mullet**

**Hamburguer fish shape** (pike perch)

Ready to eat **meagre** salad

**Fish paté** (pike perch)
Access to

➢ Presentations from this workshop
➢ Technical Leaflets (species specific)
➢ Presentations from all annual meetings
➢ Scientific articles

The event started with an update of the project achievements in all the research areas, presented by the Dissemination leader. Five more presentations provided the background for the following debate. Among the presentations, the director of API, Andrea Fabris, gave an overview of the aquaculture production in Italy. During the debate, production costs and marketing of Diversify species were important discussion points. Consumer attitudes towards aquaculture products and the culture of
Articles in Aquaculture Europe:

- MEAGRE
- PIKEPERCH
- AMBERJACK
- HALIBUT
- WRECKFISH
DIVERSIFY in 3 minutes!
https://youtu.be/49EZKkBkiaQ
THANK YOU
www.diversifyfish.eu

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This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration (KBBE-2013-07 single stage, GA 603121, DIVERSIFY).