



### Deliverable Report

<b>Deliverable No:</b>	D31.30	<b>Delivery Month:</b>	59
<b>Deliverable Title</b>	Greater amberjack “Know-how Transfer” seminar for the aquaculture industry presenting the progress achieved through DIVERSIFY in the production technology.		
<b>WP No:</b>	31	<b>WP Lead beneficiary:</b>	P18. CTAQUA
<b>WP Title:</b>	Dissemination		
<b>Task No:</b>	31.5	<b>Task Lead beneficiary:</b>	P18. CTAQUA
<b>Task Title:</b>	Full-day seminars on “Know-how Transfer” of the aquaculture of each of the DIVERSIFY species.		
<b>Other beneficiaries:</b>	P1. HCMR		
<b>Status:</b>	Delivered	<b>Expected month:</b>	58

**Lead Scientist preparing the Deliverable:** Papandroulakis, N. (HCMR),

**Other Scientists participating:** Mylonas, C.C. (HCMR), Robles, R. (CTAQUA)

**Objective:** The objective of this Deliverable was to organize a “Know-how Transfer” seminar for the aquaculture industry, presenting the progress achieved through DIVERSIFY in the production technology of greater amberjack (*Seriola dumerili*). The seminar will include 30 min presentations on selected aspects (e.g., reproduction and spawning induction, final product diversification and quality, socioeconomic issues and marketing, etc.), given by DIVERSIFY Partners, but also from any authorities in the species, whose work was not part of the project. Aquaculturists (mainly), but also European aquaculture support companies (feed, pharmaceutical, equipment, engineering, etc.), researchers and educators, government organizations and other important institutions (FAO, Globefish) will be invited to attend these meetings.

**Description:** A full-day seminar was held on September 18, 2018, at Electra Metropolis Hotel, Athens, Greece (**Fig. 1**). The meeting was attended by 84 persons, coming mainly from the Aquaculture industry in Greece (Nireus SA., Selonda SA and Andromeda SA), but also Spain, France and Turkey, as well as from feed companies (INVE SA, BIOMAR) and national funding organizations. A number of presentations were given and the most important results from the DIVERSIFY project (**Fig. 2 and 3**) were presented by the project partners and one presentation was given by Dr Gavin Partridge (invited speaker) from the Australia Center for Applied Aquaculture Research, Fremantle, who gave a very informative presentation on the aquaculture industry of the congener of the greater amberjack the yellowtail kingfish (*Seriola lalandi*) (**Fig. 4**).

A number of participants from outside the consortium were from companies that have used eggs or juveniles produced by the DIVERSIFY project, in an effort (a) to validate the rearing methods developed or (b) to test the production performance of this new species.



**Figure 1.** The Project Coordinator (Dr Constantinos C Mylonas, left) and the Dissemination leader (Dr. Rocio Robles, right) with the workshop banner at the entrance of the meeting room (Electra Metropolis Hotel)

Agenda	
8:30 – 9:30	<b>Welcome and registration</b>
9:30 – 9:45	The DIVERSIFY project ( <b>Constantinos C. Mylonas</b> , Coordinator, Hellenic Centre for Marine Research, Greece)
9:45 – 10:00	The greater amberjack as a potential new species for the Mediterranean aquaculture ( <b>Nikos Papandroulakis</b> , Species leader, Hellenic Centre for Marine Research, Greece).
10:00-10:30	Broodstock management and reproduction in captivity ( <b>Constantinos Mylonas</b> , Hellenic Centre for Marine Research, Greece)
10:30-11:00	Hatchery production in different rearing systems ( <b>Nikos Papandroulakis</b> , Hellenic Centre for Marine Research, Greece)
11:00-11:30	<b>Coffee break</b>
11:30-12:00	Greater amberjack nutrition: advances in different life stages ( <b>Daniel Montero</b> , University of Las Palmas de Gran Canaria, Gran Canaria, Spain).
12:00- 12:30	Optimum husbandry practices for greater amberjack grow out: stocking density and feed management strategy ( <b>Salvador Jerez</b> , Instituto Español de Oceanografía, Tenerife, Spain)
12:30-13:00	Grow out of greater amberjack in sea cages ( <b>Nikos Papandroulakis</b> , Hellenic Centre for Marine Research, Greece)
13:00-15:00	<b>Lunch (compliments of DIVERSIFY)</b>
15:00-15:30	Health issues and management ( <b>Pantelis Katharios</b> , Hellenic Centre for Marine Research, Greece)
15:30-16:00	Consumer attitudes and acceptance of new fish products: the case of greater amberjack ( <b>Athanasios Krystallis</b> , Hellenic Research House, Greece)
16:00-16:30	Sensory analysis of greater amberjack and product development ( <b>Kriton Grigorakis</b> , Hellenic Centre for Marine Research, Greece)
16:30-17:00	The aquaculture industry of yellowtail kingfish ( <i>Seriola lalandi</i> ) in Australia ( <b>Gavin Partridge</b> , Australian Center for Applied Aquaculture Research, Freemantle, Australia)
17:00-18:00	Round table discussion on bottlenecks to improved production and defining the farmer's needs ( <b>Rocio Robles</b> , Dissemination leader, CT-AQUA, Spain)



**Figure 2.** Agenda of the greater amberjack workshop (left), view of the audience (top right) and greater amberjack species leader Dr. Nikos Papandroulakis during his talk.



Figure 3. Representative slides from the presentations of DIVERSIFY researchers.

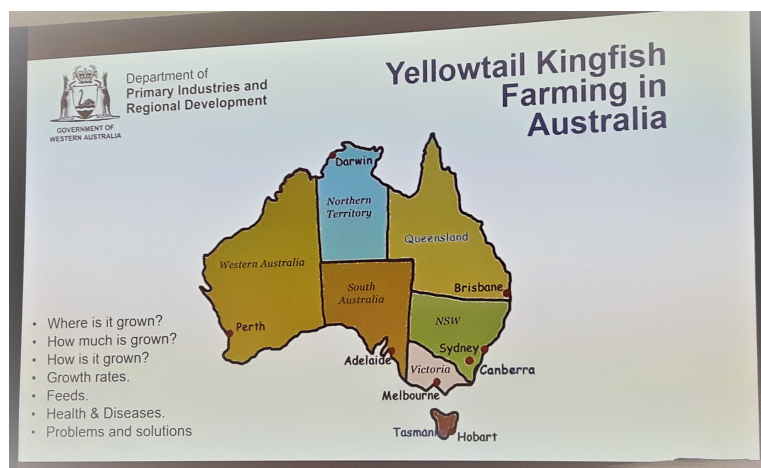


Figure 4. Slide from the presentation of Dr. Gavin Partridge (invited speaker) to document the farming of yellow king fish in Australia per region.

For the lunch break, the participants had the chance to taste farmed-raised greater amberjack, provided by the partner of the project ARGOSARONIKOS Fishfarms S.A (Fig. 5). Greater amberjack have been sent to the market in Greece and abroad, since December 2017, as a result of the research effort of DIVERSIFY, demonstrating the relevance of the research carried out and the readiness degree of the methods developed for the aquaculture industry.

At the end of the meeting, the Dissemination leader Dr. Rocio Robles coordinated a discussion. The session allowed the participants to ask questions regarding the work presented. In addition, it provided the opportunity to the technical staff of the companies that have started the production of greater amberjack, using eggs and juveniles from DIVERSIFY, to express their opinion on the performance of this species and the problems that they have encountered.



**Figure 5.** Greater amberjack harvested from the sea cages of ARGOSARONIKOS Fishfarms S.A. and provided to the workshop for degustation.

The debate started by asking the audience their opinion on the needed information on the amberjack culture and about the market/marketing needs for the species. The audience commented on the price of the final product and on production costs. A representative from the industry, Mr. Panos Kolios from ANDROMEDA S.A. (Greece), commented that the production cost is now around 5 €/Kg for a fish of 5 Kg. Dr Nikos Papandroulakis (P1. HCMR), greater amberjack species leader, indicated that production cost based on an analysis from Wageningen University (P6. SWR/DLO partner in DIVERSIFY) was estimated at 7-8 €/Kg at the moment. The market price is relatively high although as it happens with any other products, production volumes and market demand will determine the final market cost. Dr Nikos Papandroulakis also indicated that it is difficult to estimate market demand for the moment and that market development should have a parallel development with the rearing methodology in order to support production increase.

Dr Kriton Grigorakis (P1. HCMR) mentioned how important would be to learn from previous mistakes such as the case of meagre: it is essential to use the right marketing approach for the introduction of the species. He suggested that the involvement of fishmongers on the supply of ready-to-eat products at their counter would facilitate consumer adoption of the new species and products. Consumers usually rely on their local fish supplier, so if the fish product is prepared and offered by the trusted fish supplier there would be more chance for a successful market introduction.

Other industry representatives present in the room such as Dr Carlos Mazorra (Sonrionansa, Spain) pointed out the need to have a specific marketing strategy for this species and avoid the easy/traditional selling of amberjack as whole fish, which it will limit the market expansion and profitability of culturing the species.

Dr Thanasis Krystallis (P38. HRH) agreed with this statement and strongly advised producers to follow a more consumer-centric approach, realizing that they do not produce just bulky “first material”, but essentially, they provide the protein basis for the creation of a modern, multi-functional, need-satisfying and value-delivering new generation of farmed-fish products. As such, the development of producers’ own-branded end-products (up to the level of complete meal solutions) and the endorsement of a holistic farm management approach to enforce sustainability production protocols are deemed as necessary next steps. The Project Coordinator also supported the relevance of “branding” in different ways so to offer a specialty fish product (Atlantic halibut





example). Dr Daniel Montero from P2. FCPCT mentioned that farmers have to reinvent themselves and look at amberjack as a completely different and new species. It is well accepted, that the species has superior taste/hedonic characteristics and the processing potential for the production of high added-value end products. Greater amberjack can be used in a multitude of formats, raw or (mildly/heavily) processed, plain or as a basis for more sophisticated ready-made recipes.

Concerning the biological/technical aspects of greater amberjack culture, Mr Panos Kolios from ANDROMEDA S.A. (Greece) pointed out how important is feed management in greater amberjack culture, considering that there is still room for improvement in specific feed formulation. Feed cost nowadays is not high 1.5 €/kg with an FCR of ~1.6 approximately (economic FCR 2). There are other aspects of the culture that present some barriers, such as the need of off-season egg production and reproduction in land-based facilities in the Mediterranean, and the control of the size variability and improvement of husbandry practices during larval rearing and on-growing phases.

Another relevant aspect indicated by the audience was the necessity to learn from the past once more and from the salmon industry to establish coordinated programs to promote collaboration among producers concerning site selection and promotion of the product at local, national and international markets.

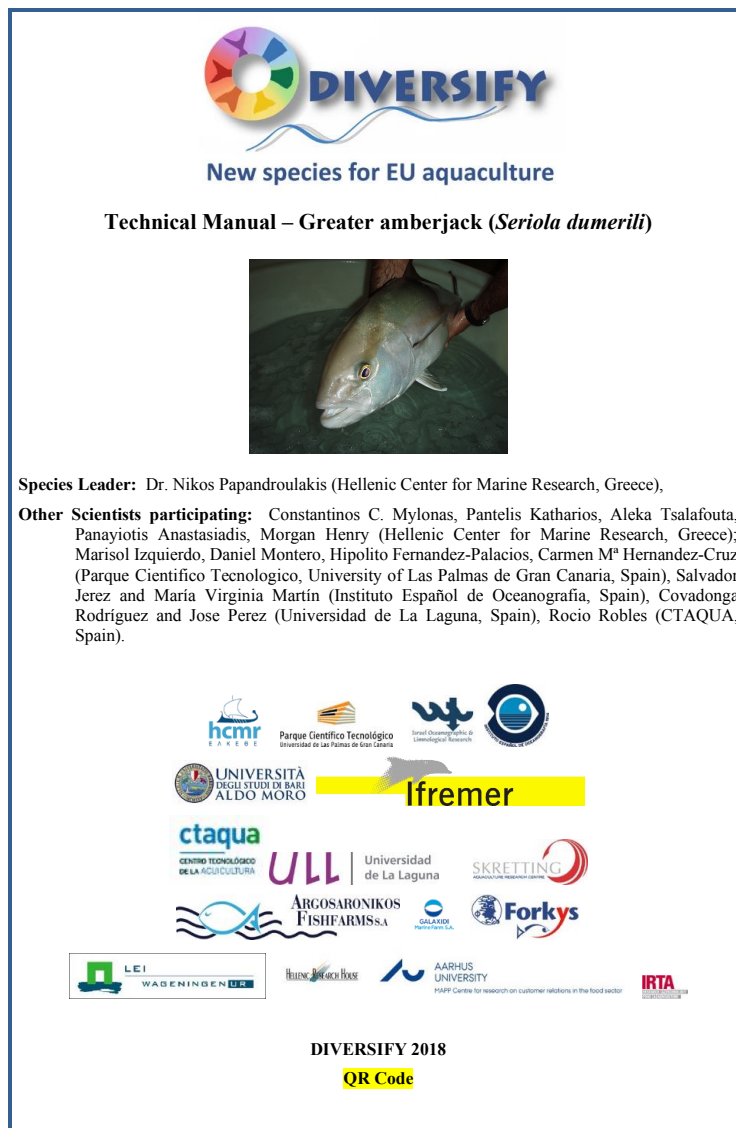
Fish products from greater amberjack produced through a DIVERSIFY-type of protocol are seen as ideal to meet the criteria of fish consumer choice, and mainly convenience, tastiness and sustainability. Accordingly, it is important to emphasise that contemporary consumers across the EU, when they think about new, high added-value fish-based products have in mind not a plain, whole fish, but a complete fish consumption “experience” based on a delicious, sustainable and nutritious fish-based meal solution that can deliver to them a range of values for a reasonable cost (*i.e.* affordable cost, wide availability and convenient preparation).

As close-up conclusions, the priorities for the species communicated by the audience, would be ordered as follows:

1. Improve and control health issues in cage grow out, and biosecurity in general
2. Optimization of larval nutrition, husbandry and on-growing nutrition
3. Deeper research in branding and marketing of the species
4. Availability of larvae all year around with land based broodstock facilities

For this event a technical manual (**Fig. 6**) has been produced and it is available in the project webpage, <https://www.diversifyfish.eu/halibut-workshop.html>, with the results and advances in the study of the species within the DIVERSIFY project.





**Figure 6.** First page of the Technical Manual for the greater amberjack, available in the project web <https://www.diversifyfish.eu/amberjack-workshop.html>.

**Deviations:** There were no deviations from the DoW.



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