



Deliverable Report

Deliverable No:	D1.7	Delivery Month:	36	
Deliverable Title	Mid-term evaluation of progress.			
WP No:	1	WP Lead beneficiary:	P1. HCMR	
WP Title:	Project management			
Task No:	1.5	Task Lead beneficiary:	P1. HCMR	
Task Title:	Mid-term evaluation of progress.			
Other beneficiaries:	P2. FCPCT	P3. IRTA	P4. IOLR	P5. UNIABDN
P6. DLO	P7. IMR	P8. IEO	P9. UL	P10. TU/e
P11. AU	P12. APROMAR	P13. UNIBA	P14. IFREMER	P15. ULL
P16. FUNDP	P17. NIFES	P18. CTAQUA	P19. CMRM	P20. SARC
P21. DTU	P22. SWH	P23. ARGO	P24. ITICAL	P25. DOR
P26. GEI	P27. FORKYS	P28. CANEXMAR	P29. ASIALOR	P30. CULMAREX
P31. IRIDA	P32. MC2	P33. FGM	P34. BVFi	P35. MASZ
P36. ANFACO	P37. EUFIC	P38. HRH		
Status:	Delivered/delayed		Expected month:	30

Lead Scientist preparing the Deliverable: Mylonas, C.C. (HCMR),

Other Scientists participating:

Objective: According to the DOW (Amendment 3, Nov 2016), a mid-term progress evaluation would be undertaken at the completion of the mid-term evaluation by the EC. The achieved work will be evaluated vis-à-vis the Technical Annex and any deviations will be addressed. We will examine if there is a need to modify the planned work and take any corrective measures.

Description: An external review was undertaken on the 14 September 2016, after the submission of the 2nd Period Report (**Fig. 1**). The results of the review were sent to the Project Coordinator (PC) at the beginning of October 2016. Based on the overall assessment of the external reviewer “Significant progress and achievement has been by DIVERSIFY in key areas of Aquaculture ...” and “...the project has achieved most of its objectives and technical goals for the period with relatively minor deviations” (**Fig. 2**). As can be seen, no major problems with the implementation of the project were identified by the external referee necessitating any modification by the consortium, while some recommendations for the enhancement of the project were proposed (**Fig. 3**).

The external review was forwarded to all Steering Committee (SC) members, who were asked to consider its conclusions and then based on their experience with the progress of the project and any difficulties phased, to propose any modifications that need to be implemented for the remaining period of the project. In addition, the SC members were presented with the modifications that would be requested in the Amendment 3 that the PC was preparing for submission in November 2016, which was necessitated by the exit of some partners and the need to invite new partners to take their responsibilities. In addition to the above consortium changes, there are other modifications in the DOW or in the budget that have been requested by



some partners over the past year, and have been presented in the 2nd Periodic Report and/or have been discussed with, and tentatively approved by, the EU Scientific officer.

Review Report

General Information

Grant Agreement number:	603121
Project acronym:	DIVERSIFY
Project title:	Exploring the biological and socio-economic potential of new/emerging candidate fish species for the expansion of the European aquaculture industry
Funding Scheme:	FP7-CP-TP
Project starting date:	01/12/2013
Project duration:	60
Name of the scientific representative of the project's coordinator and organisation:	Dr. Constantinos Mylonas HELLENIC CENTRE FOR MARINE RESEARCH
Project web site:	
Type of technical review:	Unforeseen Technical Review
Period covered - from:	01/12/2014
Period covered - to:	31/05/2016
Date of review meeting (if applicable):	
Type of review report:	Individual
Name of expert drafting the report:	Martin FLANIGAN
Name of the Project Officer:	Ms Marta IGLESIAS

Figure 1. An external review was undertaken at the Mid-term point (Mo 30), based on the 1st and 2nd Periodic Reports submitted to the EU by the consortium.

Below is the letter sent to the SC members:

Dear members of the Steering Committee,

As we have received the Mid-Term evaluation report, it is time to make an evaluation of what has been done so far in the project and to make any adjustments considered necessary, for the successful implementation and completion of the project. This internal evaluation was scheduled to take place at our ACM meeting that would have taken place at Mo30. As we did not have an ACM at that time, and I do not want to wait until the next ACM (Mo 38), I would like to do it over the email.

As you will see from the Mid-term report (sent to you this morning), there are no suggestions for any major changes in the already proposed and implemented DOW. I highlight the recommendation to:

1. increase our dissemination efforts to target more relevant stakeholders, including final consumers
2. involve more farmers/commercial operations in our work, to provide them with dissemination material but also to obtain criticism and suggestions.

I believe we will be able to do the above anyway, as the project moves into the final 2 years of its life, and we will have in mind the recommendations of the external referee.

We do have, however, the need to amend the consortium and the DOW, as two partners have exited the consortium (ITTICAL and ASIALOR) and we found two new partners to take their position. Fish 2 Be (F2B) is a company in Belgium working with pikeperch, and Galaxidi Marine Farms (GMF) is a company in Greece working with greater amberjack. The latter has been working with us from the beginning of the project and they have been attending our



meetings, since they have "donated" their broodstock to our work even it they are not members of the consortium, and they have provided us with eggs when we needed in the past.

In addition to the above consortium changes, there are other modifications in the DOW or in the budget that have been requested by some partners over the past year. Some of these modifications have been known and have been mentioned and approved in the 2nd Periodic Report, while others have been presented now for the first time. Some modifications are currently being considered, but perhaps we may not include them in this amendment and wait for another year to see if we will be "forced" to make any modification. I am referring specifically to the problems we face in implementing some experiments in WP 18 Larval husbandry -wreckfish, due to the difficulty in obtaining large numbers of eggs. I know that the people involved (Nikos Papandroulakis and Blanca Alvarez) are in contact and they are going to discuss this issue in the near future, and then decide how to proceed.

So, I am sending you the Amendment request that I am preparing, for your evaluation and comments. If there is anything else that you feel you want to raise at this time, please do so. I would like to complete this process in the next couple of weeks, so that we can move forward with the official application of the amendment.

Best regards,
 Constantinos Mylonas,
 PC DIVERSIFY

1. Overall Assessment

a. Executive summary: Comments, in particular highlighting the scientific/technical achievements of the project, its contribution to the State of the Art and its impact:	
Significant progress and achievement has been made by DIVERSIFY on the key area for Aquaculture, of larval hatchery production. By studying a range of species at different stages of current knowledge and development they have gained significant knowledge in the fields of a firmer control over reproduction, better nutrition and larval husbandry issues.	
Much of DIVERSIFY’s work in this Review Period is seeking to develop a predictable process to obtain good quality eggs (and thus a more predictable supply of juveniles). The high cost of hatchery produced fish is always a drawback for Aquaculture. Progress is being achieved in this area, technical achievements have been made in reducing the more expensive stage for meagre, this could have a significant reduction in the cost of production of meagre juveniles.	
Different species are at different stages of development, and knowledge. A new species like wreckfish with no Aquaculture specimens available is going to be continually breaking new ground in terms of our understanding of this deep-water finfish. Greater knowledge on this area could have commercial Aquaculture benefits or conservation Aquaculture knowledge that could be applied to other deep-water species. This species in particular could be of interest to engage the interest of the general public in the work of DIVERSIFY.	
Good progress is also being made in areas that are difficult to carry out such as experiments with grow out husbandry. In grey mullet, fishmeal substitution at the weaning diet stage has still been able to produce good growth performance. This could have significance in terms of reducing costs and for environmental sustainability and therefore its attractiveness as a selling point to the market.	
Fish Health is a key bottleneck in the development of meagre, new data and understanding is being established that could lead to better knowledge of how to approach reducing mortality losses from SG and CUD. Halibut which is more established in its development as a commercial species progress has been brought further onto the next stage to produce an antigen for the development of a vaccine against nodavirus.	
The Socio-economics of the projects fish species will also be making new ground. Some of the DIVERSIFY species of the study are relatively unknown to the broader European market place with little current market presence. This is a bottleneck as it can be difficult, costly but still possible (e.g. river cobbler), to develop a market demand. The segmentation study of DIVERSIFY has identified a clear group of consumers that could be ‘early adapters’ of the study species. This could be a ‘gateway’ for fish species into the market leading to other consumers to try and buy the product and develop sales in that way.	
Progress	Good progress (the project has achieved most of its objectives and technical goals for the period with relatively minor deviations)

Figure 2. The evaluation of the external review regarding the progress achieved by the consortium.



b. Overall recommendations (e.g. on overall modifications, corrective actions at WP level, or re-tuning the objectives to optimise the impact or keep up with the State of the Art, or for other reasons, like best use of resources, re-focusing...).

At this stage of the project month 30 out of a total of 60 months, there are no crucial recommendations to be made, as the work is in full progress and obviously running well with good co-operation between beneficiaries. The scientific and technical achievements that can be made in hatchery larval production are the forte of RTD science networks. The purpose of this stage of work is to come up with a predictable and affordable source of juveniles to be available in order for juveniles to be sold on and grown.

As a rule, the Aquaculture of any species, is made up of a small number of specialist technical hatcheries – supplying a larger number of on-grower units. Investment in the 6 DIVERSIFY species could bring them to a commercial reality and expand Aquaculture. On-grower interest in the future

will be focussed on the price of juvenile and the logistics of the Grow out stage in particular. Creating knowledge on the Grow out stage by DIVERSIFY is an area that can optimise the project's impact to the Aquaculture sector. Any further encouragement of close co-operation with the Aquaculture grow out sector would be beneficial at this forthcoming point of the project.

However, as the project goes into the second half there is a greater emphasis planned on Socio-economic work. It could be noted that the wild fisheries has an effect on supply and demand, and thus in setting the price of all the species in the market place. This could be taken into account during the Socio-economic studies as it affects the feasibility of species for Aquaculture. Furthermore, the closer that the WPs of DIVERSIFY are to commercial retail propositions (e.g. prototypes of fish products for the market), the more the project would benefit from the experience and input from processor / retail SMEs. To always try and make sure that DIVERSIFY is market led and giving the market the type of product it wants to buy.

Figure 3. The recommendations of the external review regarding the remaining duration of the project.

So, based on our internal review of the progress of the project, the problems that were created due to the exit of two partners and the need to improve the implementation of the experiments and impact of the study, the modifications requested in the amendment are related to (A) modifications in the implemented work, as well as (B) modifications related to specific partners, as described below. These modifications were included in the application for the 3rd Amendment of the DOW, submitted in November 2016.

A. Modification in the implemented work

1. **WP 2 Reproduction and genetics – meagre.** Due to recent technological and research advances concerning molecular methods to genotype and genetically characterize fish (or organisms in general) and some constraints that are related to the biology of the meagre (*Argyrosomus regius*), we propose to modify the DOW for Task 2.5, in terms of (a) the method to be used and (a) the time-schedule. No change in budget allocation, staff effort or the number of deliverables will result from this modification. This has already been reported in the 2 Periodic Report, and discussed and approved by the EU Scientific Officer (Dr Marta Iglesias, 14 April 2015).
2. **WP 3 Reproduction and genetics – greater amberjack.** Task 3.2. Development of an optimized spawning induction protocol for captive greater amberjack in the Mediterranean (led by HCMR) will not be implemented as planned in the DOW. Originally, it was proposed that a number of spawning performance experiments were going to be undertaken in Y2-4 with 2 broodstocks maintained in tanks by P1. HCMR, in order to determine (a) the best time of administration, (b) the method and (c) the dose



of the GnRHa treatment. The main deviation from the DOW regards the failure to implement the spawning induction experiment comparing GnRHa injections and implants in the tank-reared tank of P1. HCMR, as planned for Y2 of the project. This was not completed due to failure of the breeders to reach the appropriate reproductive stage to be treated with the hormonal therapy. An attempt was made again during this Reporting Period (Mo 30-31), considering that after 3 years of acclimation to the tank system, the fish may perform better. However, again the fish at the P1. HCMR tank facilities, as well as at the P27. FORKYS facilities failed to undergo gametogenesis to the point that they could be induced to spawn with exogenous hormones. A contingency plan included the implementation of the same experiment using the sea cage-reared fish maintained in P23. ARGO, which last year matured well and responded adequately to the hormonal therapy. So, this experiment was indeed implemented during Mo 31-32 with great success, and was reported briefly in the 2nd Periodic Report. A full report will be included in the 3rd Periodic Report. No negative impact on the success of the project is foreseen from this deviation. With the addition of P40. GMF, some spawning induction experiments will also be implemented there. This has already been reported in the 2 Periodic Report, which has been approved by the EU Scientific Officer.

Also, Task 3.4 Development of an optimized spawning induction protocols for F1 greater amberjack in the eastern Atlantic (led by IEO) is not implemented as planned in the DOW, due to a significant loss of a large part of the original broodstock during Y1. In the DOW, it was proposed to study the reproductive performance of an F1 broodstock treated with different doses of GnRHa in a controlled – release delivery system (implants) in a dose-response experiment during Y2. Due to the loss of a large number of breeders, this is no longer possible due to a small number of available fish. Instead, one GnRHa dose was tested in Y2 (50 µg kg⁻¹) and another is currently being tested in Y3 (75 µg kg⁻¹) during Mo 30 – 33. A third dose will be examined in Y4, (25 µg kg⁻¹) in the same broodstock, under similar rearing (*e.g.* tank, treatment method and sampling) and environmental conditions (*e.g.* treatment time, water quality, etc.). We believe this approach is also valid, albeit not the optimal, to address the objectives proposed in the DOW. Already, the second dose used in Y3 (2016) has been producing very good results, as reported in the 2nd Periodic Report. This has already been reported in the 2 Periodic Report, which has been approved by the EU Scientific Officer.

3. **WP 24 Fish Health – meagre.** In Task 24.4 we had anticipated that we would isolate *Nocardia* from cultured meagre. *Nocardia* has been considered a possible threat since it was connected with SG. However, the pathogen has not been found or isolated from any of the fish examined. The isolation of *Nocardia* is a prerequisite for the development of the autogenous vaccine in the same task and for the vaccine to be tested in subsequent trials in P3. IRTA. Since we have been unable to culture *Nocardia* from infected fish (in subtask 24.4.1), we now plan to go forwards with optimisation and evaluation of a *Vibrio* (*V. anguillarum*) vaccine for meagre. Fish will be vaccinated and 8 weeks later challenged. Immune tissue samples will be collected post-challenge for gene expression analysis and histology. We will also determine the pathogen load in the samples by PCR, in addition to evaluating the degree of protection seen in parallel tanks of fish. This work will result in the modification of **Deliverable 24.12**, which will now be “Determination of the efficacy of vaccination of meagre against Vibriosis”, and **Deliverable 24.13**, which will now be “Description of immune gene expression post-immunisation and challenge of meagre with a *Vibrio* vaccine”. This has already been reported in the 2 Periodic Report, which has been approved by the EU Scientific Officer.

B. Modifications related to specific partners

4. **P1. HCMR.** An increase of the budget of HCMR will result from a shift from the budget allocated to one of the exiting partners (P24. ITTICAL), as more experiments in Task 3.2 Spawning induction of greater amberjack in the Mediterranean, have been planned for the remaining two years, to be done at the facilities of P23. ARGO. This has already been reported in the 2nd Periodic Report, which has been approved by the EU Scientific Officer.



5. **P6. SRW (previous DLO).** For embedding the project results in marketing plans and feasibility output, more sector knowledge is necessary. Therefore SRW needs more money to support TU/e in this task. A small increase in budget has been requested and agreed by the PC.
6. **P8. IEO.** On 26 May 2016, we were informed that there was a change in the P.I. of the partner, from Dr. Jose Benito (Tito) Peleteiro who retired on 30 June 2016, to Dr (Mrs) Montserrat Perez. The official letters required for the change have been forwarded to the EU Legal and Scientific Officers, with an email from the PC on 2 June 2016. Also, the position of Dr. Peleteiro as the Species Leader for wreckfish will be taken by Dr (Mrs) Blanca Alvarez from IEO, who is also going to be the WP Leader of WP 6 Reproduction and Genetics –wreckfish and WP 18 larval husbandry - wreckfish. This has already been reported in the 2nd Periodic Report, which has been approved by the EU Scientific Officer.
7. **P11. AU.** Due to the fact that Prof. A. Krystallis, the PI of P11. AU will relinquish his position at AU, the partner has requested a change in the PI to Professor Klaus Grunert that some of its tasks in WP 29 (Sub-tasks 29.3.2 and Task 29.4) be transferred to P38. HRH, along with the appropriate budget of 28,335 plus overheads (EU contribution). This has already been reported and approved in the 2nd Periodic Report. We include official letters from both P11. AU, P38. HRH, Prof. A. Krystallis and Prof. K. Grunert, indicated their approval of the above changes. This has already been reported in the 2nd Periodic Report, which has been approved by the EU Scientific Officer.
8. **P18. CTAQUA.** This partner requests a budget shift among WPs. At the middle of the project, most of the work within WP28 Socioeconomics-New Product development (R&D activity), is finalized. However, there are other WPs responsibilities of this partner that will need further economic support. One of these cases is Task 23.4 "Compare the effect of feeding an improved grey mullet diet on the grow-out in monoculture of wild juveniles at two different densities in ponds in Spain", which is still running and will last for a while longer. It is foreseen that more support will be needed to finalize the task properly, since there is quite some analytical work involved from the final samples to be taken at the end of the grow-out period. Likewise in sub-task 13.3.5 "Comparison of vegetable oil-no fish meal grow-out diet with an n-3 HUFA rich fish meal finishing diet on the nutritional and organoleptic values of fish flesh and bottarga quality", the budget will not be sufficient to correctly cover the obligations of the partner within this task. So the partner requests a shift from WP28 to WPs 23 and 13.

Also, in the case of WP 31 Dissemination, there are important activities to come in the next reporting periods. Tasks 31.5 and 31.6 will require a considerable amount of travels and staff dedication to the correct organizations of these events, which we find out will not be covered sufficiently with the budget allocated in the DOW for WP31. So the partner requests a transfer from WP28 to WP31. The total EU contribution for P18. CTAQUA will not be changed with the proposed activities, but the allocation of the budget between RTD and DISSEMINATION activities, and among WPs will be modified. This has already been reported in the 2nd Periodic Report, which has been approved by the EU Scientific Officer.

Another aspect to be commented about this partner, is the fact that the PI Rocio Robles will work for the partner as consultant from November 2016 onwards. Her role in the project will remain as described in the DOW, but her contractual relation with the partner will be established on a consultant basis, in accordance to the conditions established in the Financial Guidelines for FP7 projects (p 61).

9. **P19. CMRM.** Due to the fact that the wreckfish stock of this partner did not mature the first year of the study (although they were of the right size, so we did not expect this development), they had to put much more staff effort to this Task (WP 6). As a result, they had to dedicate more staff effort (from existing personnel), but they will not need any additional budget (they will use lower cost personnel). So, in essence they will not require any more money, but they will claim more staff effort (from 13.6 in the original DOW to 18.8 PM now). This has already been reported in the 2nd Periodic Report, and discussed and approved by the EU Scientific Officer (email of 21 Dec 2015).
10. **P23. ARGO.** To address some of the problems that we faced in Task 3.2. Development of an optimized spawning induction protocol for captive greater amberjack in the Mediterranean (described above in



Item 2. WP 3) we have planned to be implemented a number of spawning performance experiments using the sea cage-reared fish maintained in P23. ARGO, which last year matured well and responded adequately to the hormonal therapy. A slight increase in the budget of this partner has been made to allow them to contribute further to this work. This has already been reported in the 2nd Periodic Report, which has been approved by the EU Scientific Officer.

11. **P24. ITTICAL.** On 11 January 2015 Dr Fulvio Cepollaro (P.I.) informed us of his leaving the company, and that a new person (Mr. Stefano Carbonara) is taking over his duties in DIVERSIFY. On 19 July 2016 (Mo 31) during the final compilation of the 2nd Period Report, the PC received an email message from Mr Andrea Novelli, the CEO of P24. ITTICAL (SME), notifying the consortium of the intention of this partner to exit the consortium. The reasons presented were problems with the implementation of the assigned tasks, due to inadequate environmental conditions at the land-based facilities of the company. This has already been reported and approved in the 2nd Periodic Report. We have already been in contact with the EU financial (Mrs Paula Wahlman Dakhiland) and legal officers (Mrs Maria-Valeria Iliadou) about this consortium modification, and have obtained all the necessary documents and have taken the required actions.

A contingency plan for the exit of P24. ITTICAL includes the transfer of this partner's activities to a combination of existing and new partners. Regarding WP 3 Reproduction and Genetics – greater amberjack, the spawning induction tasks (Task 3.2) will be allocated to a new partner SME (Galaxidi Marine Farms, GMF), which is not a member of the consortium, but has so far dedicated their greater amberjack broodstock and facilities to the experiments of WP 3 for no charge to the Consortium, and has also performed exceptionally so far. This company also runs a marine hatchery and sea-cage grow out sites, and if needed it will be able to participate also in the implementation and the industrial trials on the larval rearing and grow out.

Regarding WP 7 Reproduction and Genetics – grey mullet, the Task 7.4 of rearing wild grey mullet fingerlings to reproductive maturation for the evaluation of “bottarga” production under complete captivity can be implemented by P4. IOLR and P26. GEI, who have already acquired wild fingerlings during Y1 of the project, in order to implement other tasks. They have already been contacted and they are willing to undertake this responsibility.

12. **P26. GEI.** This partner is involved in WP 23 Grow out husbandry – grey mullet, and with a small increase in budget has accepted to take the responsibility of maintaining a number of fish until reproductive maturation for the evaluation of “bottarga” production under complete captivity.
13. **P29. ASIALOR.** In May 2016 (Mo 31) we were informed that the company has filed for bankruptcy and they are going to exit the consortium. The company has fulfilled so far their obligations and has been a valuable partner. Efforts have already been initiated to find another SME that could take on their remaining tasks. The pikeperch Species Leader Dr.Pascal Fontaine (P9. UL) has made some contacts and we have identified a potential company that is able and willing to participate in the project. The company is called Fish 2 Be NV, and has contacted the PC with their interest to join. If we agree, we will transfer the remaining budget of P29. ASIALOR to this new partner. The negotiations will continue and as soon as we complete the 2nd Periodic Report will try to finalize them. We have already been in contact with the EU financial (Mrs Paula Wahlman Dakhiland) and legal officers (Mrs Maria-Valeria Iliadou) and have obtained all the necessary documents and have taken the required actions.
14. **P34. BVFi.** This partner has been involved in the dissemination activities of the consortium and is very interested in contributing more effort towards this direction. We have increased slightly its budget to allow the partner to contribute more to the project.
15. **P38. HRH.** Due to the fact that Prof. A. Krystallis, the PI of P11. AU will relinquish his position at this Partner (see above at P11. AU), it has been requested that some of its activities in WP 29 (Sub-tasks 29.3.2 and Task 29.4) be transferred to P38. HRH, along with the appropriate budget. HRH has accepted this transfer and this has already been reported and approved in the 2nd Periodic Report.
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In addition, P38. HRH made a formal request to the PC to increase its EU budget in order to address some higher than expected costs, involved in the implementation of Tasks 28.1 and 29.2 in the five selected countries. The higher costs are due the following reasons:

- a. It was decided by the GWP Socioeconomics participants in the 1st ACM (Bari, Italy) to conduct 2 Focus Groups (per country) instead of 1, and 3 Expert Interviews (per country) instead of 5 for Task 28.1. This decision was based on budget constrains and it was also decided that the local partners would help in Germany and Spain, in order to reduce the cost of subcontracting. However, the additional expenses for 1 more Focus Group were much higher than the savings from the 2 less Expert Interviews,
 - b. Regarding the hedonic sensory tests of Task 29.2, it was decided by the GWP Socioeconomics participants in the 2nd ACM (Nancy, France), to increase the sample of consumers to 100, instead of 80 that is mentioned in DOW, in order to improve the validity of the results. This change created higher recruiting and lab rental expenses, as well as hosting and processing higher, at the level of 25% more than budgeted,
 - c. Regarding the experimentation with product mock-ups in the five countries investigated (Tasks 29.6 and WP29.7) and the identification of the optimal intrinsic-extrinsic product quality profiles, based on the sensory testing results across the 5 countries, there was a decision to increase the sample size to 300 per country instead of the original 200. This increase will give the opportunity to accommodate for three products deemed as promising in the previous tasks in the currently running of Task 29.3 (same 3 across all five countries). This is a different product number from the initially planned number of two products per country, which has been the plan on which the initial budget was estimated upon. WP-29 partners (i.e. AU, HRH, IRTA, CTAQUA) strongly believe that testing 3 products would be ideal for the project, since it would be a sub-optimal practice to waste useful findings from the very expensive sensory part against a request for a rather small budget. In particular, assuming that the decision is that three products are going to be developed in Task 29.3, each product should be evaluated by 100 consumers, so three products would command 300 participants in total (per country). So, to cover the extra costs of using more consumers and more mock-ups, a budget increase was allocated to this Partner.
16. **P39. F2B.** The company Fish 2 Be NV, is taking over the remaining responsibilities of P29. ASIALOR, which exited the consortium at the end of the 2nd Period. It will take most of the remaining available budget from this partner.
17. **P40. GMF.** The company Galaxidi Marine Farms (GMF) is taking over the responsibilities of P24. ITTICAL related to WP 3 Reproduction & Genetics – greater amberjack, which exited the consortium at the end of the 2nd Period. The company will implement the spawning induction protocols developed by HCMR. It will take some of the remaining available budget from this partner.

Most of the above modifications in the DOW (as indicated above in each item), both scientific and financial, were either first discussed and got the tentative approval of the scientific officer of the project (Dr Marta Iglesias) or have been reported in during the 2nd Periodic Reporting, which have been approved by the European Commission. We are now making an official request, through an amendment session in the NEFF platform of the ECAS.

Reports and Deliverables

P24. ITTICAL

According to the DOW 1st Amendment, this Partner was to be involved in WP3 Reproduction and Genetics – greater amberjack, and WP 7 Reproduction and Genetics – grey mullet, undertaking some rearing trials in commercial conditions.



The obligations of the partner in WP3 Reproduction and Genetics – greater amberjack were to acquire a mature broodstock of greater amberjack from the wild, maintain in it captivity and use it to study the reproductive cycle of the species (Task 3.1), and also to induce spawning using hormones (Task 3.2). As the partner failed to complete Task 3.1, an amendment was requested (2nd Amendment), in which this task was transferred to another partner, together with the relevant budget. Then, the only obligation of this partner for this task was to implement the spawning induction trials planned in Task 3.2. For this reason the partner maintained a small broodstock in recirculation aquaculture systems (RAS). The Deliverable from this task is “*D3.9 Development of a spawning induction therapy for captive reared broodstock in the Mediterranean Sea based on the use of GnRHα...*” that is due on Month 54 (June 2018).

The obligations of the partner in WP7 Reproduction and Genetics – grey mullet were to obtain juvenile grey mullet from the wild and maintain them in captivity until they mature reproductively, in order to examine the potential of producing bottarga in captivity (Task 7.4). The partner obtained a number of juveniles, and maintained them in a concrete tanks during the course of the project. The Deliverable from this task is “*D7.6 Culture procedure that identifies the on-growing period for the production of grey mullet row “bottarga” from wild and hatchery juveniles*” that is due on Month 54 (June 2018).

All the remaining responsibilities of this partner will now be undertaken by other partners from the consortium, as well as a new partner that has been invited to join (GMF), as indicated in the Amendment 3 application. So, apart from what has been so far reported and approved in the 1st and 2nd Periodic Reports, ITTICAL has **nothing to report or deliver** at the time they decided to terminate their participation to the project (31 May 2016). As the coordinator of the project, I declare that this is acceptable.

In terms of the payment distribution, a pre-financing to the amount of 67,726.40€ was transferred to ITTICAL on the 23/12/2013. No payment was made in relation to the 1st Periodic Report validation. An additional payment of 7,361.60€ is due as a result of the validation done for the 2nd Periodic Report. So, the total amount transferred to ITTICAL is 75,088.00€, which is equal to the amount validated by the EU for the 1st and 2nd Periodic Reports.

P29. ASIALOR

According to the DOW, this Partner was to be involved in WP 10 Nutrition – pikeperch, WP 16 Larval husbandry – pikeperch and WP 22 Grow out husbandry – pikeperch, having a number of responsibilities. ASIALOR contributed to scientific research by providing data and feedbacks on pikeperch farming at every stage. They participated to meetings and discussed about the planned work in the above WPs. They produced and provided pikeperch juveniles for experiments. Finally, they built and prepared a line in their grow-out site especially dedicated to welcome experiments from the other partners.

Specifically, the obligations of the partner in WP 10 Nutrition – pikeperch were to evaluate the protocols for optimal early enrichment with various nutrients, on the commercial farm condition production of pikeperch, planned for Y 4 of the project (2017). The Deliverable from this WP is “*D10.3 Formulation for a diet better adapted to pikeperch*” that is due on Month 48 (November 2017).

The obligations of the partner in WP 16 Larval husbandry – pikeperch included the evaluation of combinations of selected rearing parameters on farm conditions at an SME, based on the results obtained by the RTD partners during the first years of the project. These trials are planned for year 4 (2017), and will concern protocols for larval rearing and weaning. The Deliverables from this WP include “*D16.5 Evaluation of selected rearing combinations of pikeperch on farm condition*” that is due on Month 57 (August 2018), and “*D16.6 Proposition for an industrial protocol for pikeperch rearing*” that is also due on Month 57 (August 2018).

The obligations of the partner in WP 22 Grow out husbandry – pikeperch included participation to Tasks 22.1 and 22.2. In Task 22.1, the effect of husbandry practices and environmental factors on pikeperch growth, immune and physiological status is examined. Based on physiological and immunological variables as outputs, an optimal combination of environmental and husbandry factors will be tested at commercial



farm conditions by an SME as a validation step. The Deliverable from this Task is “D22.1 Effects of multiple variables on stress, immune response and growth performances and recommendations of optimal conditions for pikeperch grow out” that was due on Month 24 (November 2015). This deliverable has been submitted through the ECAS system on 17/5/2016 (Ares(2016)2292078).

In Task 22.2, the growth and physio-immunological status of 2 or 3 batches of pikeperch at different developmental stages (from 10 g to 1.5 kg) would be compared, in farm conditions by an SME, between standard husbandry conditions usually applied in routine by the SME and the best rearing conditions identified in Task 22.1. The Deliverable from this Task is “D22.2 Validation of optimal rearing variables under commercial farm conditions” that is due on Month 42 (June 2017).

All the remaining responsibilities of this partner will now be undertaken by a new partner that has been invited to join the consortium (F2B), as indicated in the Amendment 3 application. So, apart from what has been so far reported and approved in the 1st and 2nd Periodic Reports, ASIALOR has **nothing to report or deliver** at the time they decided to terminate their participation to the project. As the coordinator of the project, I declare that this is acceptable.

In terms of the payment distribution, a pre-financing to the amount of 40,567.01€ was transferred on the 24/1/2014. An additional payment of 41,895.50€ was done on the 23/4/2015 as a result of the validation of the 1st Periodic Report. An amount of 7,909.49€ is due as a result of the validation done of the 2nd Periodic Report. So, the total amount transferred to ASIALOR is 90,371.00€, which is equal to the amount validated by the EU for the 1st and 2nd Periodic Reports.

Deviations: The deviation from the DOW was that this Mid-term review did not take place during the SC meeting at an Annual Coordination Meeting, since there was no meeting held at the mid point of the project. Instead, it took place “distantly”, through email interaction of the SC members. In addition, this deliverable was not delivered as proposed at Mo 30, but at Mo 36. This was done on purpose, as we waited for the external review to take place, so that we would discuss any criticism and incorporate any suggestions of the EU officer and external reviewer in our internal, Mid-term report of progress.



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