Deliverable Report

Deliverable No:	D1.6		**Delivery Month:**	29
Deliverable Title	Annual Coordination Meeting for Y3			
WP No:	1		**WP Lead beneficiary:**	P1. HCMR
WP Title:	Project Management			
Task No:	1.3		**Task Lead beneficiary:**	P1. HCMR
Task Title:	Annual Coordination meeting			
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		**Expected month:**	25
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Other Scientists participating: Fakriadis, Y. (P1. HCMR), Duncan, N. (P3. IRTA), Monero, D. (P2. FCPCT), Koven, W. (P4. IOLR), Papandroulakis, N. (P1. HCMR), Secombes, C. (P5. UNIABDN), Tacken, G. (P6. DLO), Robles, R. (P18. CTAQUA)

Objective: The objectives of the Annual Coordination Meeting (ACM) were to

(a) present Scientific Discipline-specific summaries of the accomplished work during Y2 to the consortium members, as well as to a number of invited guests,
(b) closely review and evaluate the work carried out in each of the six Scientific Disciplines
(c) plan the work to be implemented in the following year,
(d) present the dissemination activities of the consortium,
(e) organize the preparation of the Deliverables and Dissemination activities, as well as begin the process for the preparation of the 2nd Periodic Reporting (Scientific and Financial).

Description: The ACM 2016 was hosted by Dr. Pascal Fontaine of the University of Lorraine (P9. UL) and was held at the Museum-Aquarium of Nancy (Day 1) and the Brabois Campus of the University of Lorraine (Day 2 & 3) on 2-4 February 2016. The 3-day meeting was attended by 87 persons: 78 coming from the DIVERSIFY consortium and 9 invited guests from outside the consortium. No representative attended from three Beneficiaries (P26. GEI, P28. CANEXMAR and P37. EUFIC). Beneficiary P10. TU/e was unable to attend the first day of the meeting, but attended the second and third day.

As for the kickoff meeting, information regarding the meeting was uploaded continually on the project's web site (www.diversifyfish.eu/INTRA/Meetings & Activities/2016 Annual Coordination Meeting) to ensure that all participants had access to the most updated information. The Agenda (**Tables 1 and 2**) was developed with assistance from GWP leaders and consisted of:

(a) DAY 1: a common session for all participants during DAY 1 (including invited guests) presenting summaries of the work implemented in all six Scientific Disciplines, specific presentations from various WPs or tasks, and presentations from invited guests,

(b) DAY 2: Six (6) Scientific Discipline-specific workshops running in three parallel sessions during DAY 2, and

(c) DAY 3: a common session dealing with Dissemination, Scientific and Financial Reporting, and Management. A meeting of the Steering Committee was also held at the end of the ACM. In addition, a special 2-hour meeting was held with all the Partners being involved in work with greater amberjack (*Seriola dumerili*) under any Scientific Discipline, in order to address some issues related to the grow-out experiments.

Table 1. Agenda of DAY 1 of the Annual Coordination Meeting 2016, which took place on the 2-4 February 2016, at the Museum-Aquarium of Nancy, Nancy, France.

DAY 1		2 Feb	Tuesday (Open Day - Summary presentations)		
Start	End		Title	Presenter	Details
8.00	9.00		Registration	U of Loraine Staff	Register, receive badge, submit presentations
9.00	9.30		Welcoming	Constantinos Mylonas (HCMR), Pascal Fontaine UL)	Meeting logistics, agenda, welcoming from UL
9.30	10.00		GWP presentation - Repro & Genetics	Neil Duncan (IRTA)	
10.00	10.15		Dysfunctional reproductive maturation in captive greater amberjack	Aldo Corriero (UNIBA)	Reproduction & Genetics
10.15	10.30		Population genetic analysis of wild and domesticated pikeperch populations and their application to future breeding programs	Costas Tsigenopoulos (HCMR)	Reproduction & Genetics
10.30	11.00		GWP presentation - Nutrition	Daniel Montero (FCPCT)	
11.00	11.30	coffee			
11.30	12.00		GWP presentation - Larval husbandry	Bill Koven (IOLR)	
12.00	12.15		The nutrient profile of Artemia is greatly improved by ongrowing naulii for 3 days on Ori-Green	Kristin Hamre (NIFES)	Larval rearing
12.15	12.30		First larval rearing efforts with wreckfish	Tito Peleteiro-Nikos Papandroulakis-Antonio Vilar	Larval rearing
12.30	13.00		GWP presentation - Grow out husbandry	Nikos Papandroulakis (HCMR)	
13.00	14.00	Lunch	Lunch at a Restaurant "Cesar" at Place Stanislas		
14.00	14.15		The effect of different stimuli on meagre feeding behaviour	Ioannis Papadakis (HCMR)	Grow out husbandry
14.15	14.30		Multifactorial approach to identify rearing conditions optimising growth, physiological status and immune defense in pikeperch	Patrick Kestemont (FUNDP)	Grow out husbandry
14.30	15.00		GWP presentation - Fish Health	Chris Secombes (UNIABDN)	
15.00	15.15		Pathologies of fish not included in the DIVERSIFY DOW	Pentelis Katharios	Fish health
15.15	15.45		GWP presentation - Socio economics	Gemma Tacken (LEI/DLO)	
15.45	16.00		Consumer value perceptions and attitudes towards farmed fish products in top-five EU markets	Marija Banovic and Thanassis Krystallis (AU)	Socieconomics
16.00	16.30	coffee			
16.30	16.45		Selection of new products and product development	Kriton Grigorakis (HCMR)	Socieconomics
16.45	17.00		Breeding selection in aquaculture fishes, with emphasis on the meagre	Pierric Hafray, SYSAFF	Invited guest
17.00	17.15		Capture of wild fish for aquaria and research	Joao Coreia (Flying Sharks)	Invited guest
17.15	17.30		European eel breeding, larval culture and first-feeding attempts	Jonna Tomkiewicz (DTU)	Invited guest
17.30	17.45		Greeting from the EU Officer of DIVERSIFY	Marta Iglesias (EU DG RTD)	EU Scientific Officer
17.45	18.00		Wrap up	Constantinos Mylonas (HCMR)	Agenda for next day
18.00	19.00		Visit the Aquarium	Pascal Fontaine	
20.00			Dinner at "Grande Salons Hotel De Ville, Stanislas Place"		

DAY 1 – Summary presentations of implemented work and invited guests

The morning session started with a welcoming presentation (**Fig. 1**) by the Project Coordinator (PC), Dr. C.C. Mylonas, presenting the Agenda for the meeting, welcoming the invited guests from outside the consortium and explaining the intentions of the consortium (as presented in the DOW, WP1 Project Management) for including other scientists and stakeholders in these ACMs. The invited guests included Dr. Pierrick Haffray and Mrs Anastasia Bestin from the Syndicat des Sélectionneurs Avicoles et Aquacoles Français (SYSAF, an animal breeding company), Dr. Joao Correia and Mr. Mauricio Francisco from Flying Sharks (a fish capture and transport company), the secretary of the European Aquaculture Society Dr. Alistair Lane, Prof. Jonna Tomkiewicz from the Danish Technical University and members of the technical staff of four aquaculture production companies (**Andromeda SA** from Greece/Spain, **Le Poisson du Soleill** from France, **Isidro de la Cal** from Spain and **Galaxidi SA** from Greece).

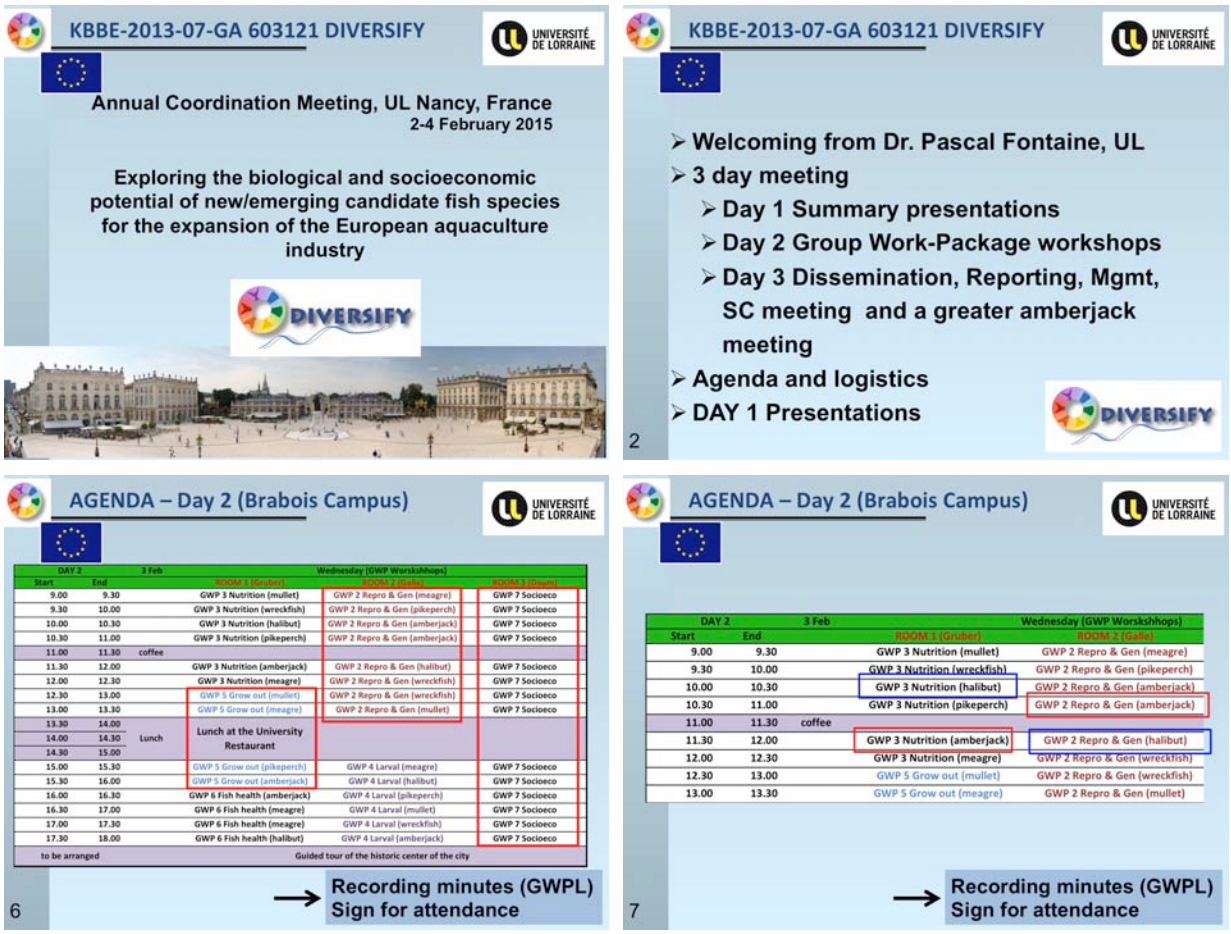

Figure 1. The opening slides for the Annual Coordination Meeting 2016, held by P9. UL, Nancy, France, explaining the Agenda of the meeting (upper right slide) and the slides explaining the organization of DAY 2 with the three parallel sessions, and the effort to organize the discussion in a way to allow most researchers to attend all sessions dealing with the species of their interest (lower slides).

The presentations from the invited guests, which followed the presentations from consortium GWP leaders and Partners, demonstrated both the interest of other organizations to participate in our ACMs and the interactions DIVERSIFY is trying to encourage with relevant researchers. Of great interest were the

presentations of Dr. Pierrick Haffray (SYSAF, France) on the development of breeding programmes in aquaculture fish and of Prof. Jonna Tomkiewicz (DTU, Denmark) on the breeding and larval rearing research of Atlantic eel (*Anguilla anguilla*). Both presentations are extremely relevant to work undertaken in DIVERSIFY and we hope that we will establish further contacts with these researchers. The participation of four commercial aquaculture companies is also a clear indication of the relevance of DIVERSIFY to the EU industry, and the interest of their technical management to be updated with the current developments in the project. The connection with these companies also provides a means for DIVERSIFY to obtain relevant feedback from the sector, as well as having the potential to try some of the developed methodologies before the completion of the project and the release of the results. Some of these companies, such as Andromeda SA and Galaxidi SA, continue to provide access to their facilities and fish stocks, and collaborate with DIVERSIFY as non-partners at no cost to the project. This ensures that expensive infrastructures and resources from outside the consortium are available to DIVERSIFY at no extra charge.

Figure 2. The opening slides from some of the presentations of some of the GWP leaders on DAY 1, including one presentation from an invited guest from outside the consortium (Prof. Jonna Tomkiewicz, DTU and Dr. Pierrick Haffray, SYSAF).

All presenting partners and invited guests agreed to have the presentations of the ACM 2016 available for the wider public, and they **have already been uploaded on the website** of the project, and are available to all interested stakeholders.

During the meeting, a professional company was hired to make a promotional video for the ACM 2016 of DIVERSIFY, which will be uploaded on our website and also examine the possibility of disseminating to various audiences (**Fig. 3**). Special 3-5 min interviews were given by the PC (Dr. C.C. Mylonas), the WP 31 Dissemination leader Dr. Rocio Robles, the host of the meeting from P9. UL Dr. Pascal Fontaine and the secretary of the European Aquaculture Society (EAS) Dr. Alistair Lane.

Figure 3. The crew video taping the proceedings of the meeting and Dr. Pascal Fontaine interviewing WP 31 Dissemination leader Dr. Rocio Robles for the preparation of a promotional video.

After the completion of the presentations in DAY 1, all participants had dinner together at the beautiful hall of the Hotel de Ville (Municipality building), where they were treated to French cuisine and wine, with special dishes made with pikeperch (*Sander lucioperca*) and wreckfish (*Polyprion americanus*), two of the species of DIVERSIFY (**Fig. 4**).

Figure 4. The beautiful building and dinner hall of the Hotel de Ville (Municipality building), where a great dinner was offered by our host Dr. Pascal Fontaine and the University of Lorraine (P9).

DAY 2 – Scientific Discipline-specific workshops

During the second day of the meeting, six Workshop Sessions were organized according to Scientific Disciplines with the objective of (a) reviewing and evaluating the work carried out and (b) planning the work to be implemented in the various scientific WPs during the third year (2016) of the project (**Table 2**).

Table 1. Agenda of DAY 2 & 3 of the Annual Coordination Meeting 2016, which took place on the 2-4 February 2016, at the Museum-Aquarium of Nancy, Nancy, France.

DAY 2		3 Feb	Wednesday (GWP Worskshhops)		
Start	End		ROOM 1 (Gruber)	ROOM 2 (Galle)	ROOM 3 (Daum)
9,00	9,30		GWP 3 Nutrition (mullet)	GWP 2 Repro & Gen (meagre)	GWP 7 Socioeco
9,30	10,00		GWP 3 Nutrition (wreckfish)	GWP 2 Repro & Gen (pikeperch)	GWP 7 Socioeco
10,00	10,30		GWP 3 Nutrition (halibut)	GWP 2 Repro & Gen (amberjack)	GWP 7 Socioeco
10,30	11,00		GWP 3 Nutrition (pikeperch)	GWP 2 Repro & Gen (amberjack)	GWP 7 Socioeco
11,00	11,30	coffee			
11,30	12,00		GWP 3 Nutrition (amberjack)	GWP 2 Repro & Gen (halibut)	GWP 7 Socioeco
12,00	12,30		GWP 3 Nutrition (meagre)	GWP 2 Repro & Gen (wreckfish)	GWP 7 Socioeco
12,30	13,00		GWP 5 Grow out (mullet)	GWP 2 Repro & Gen (wreckfish)	GWP 7 Socioeco
13,00	13,30		GWP 5 Grow out (meagre)	GWP 2 Repro & Gen (mullet)	GWP 7 Socioeco
13,30	14,00				
14,00	14,30	Lunch	Lunch at the University Restaurant		
14,30	15,00				
15,00	15,30		GWP 5 Grow out (pikeperch)	GWP 4 Larval (meagre)	GWP 7 Socioeco
15,30	16,00		GWP 5 Grow out (amberjack)	GWP 4 Larval (halibut)	GWP 7 Socioeco
16,00	16,30		GWP 6 Fish health (amberjack)	GWP 4 Larval (pikeperch)	GWP 7 Socioeco
16,30	17,00		GWP 6 Fish health (meagre)	GWP 4 Larval (mullet)	GWP 7 Socioeco
17,00	17,30		GWP 6 Fish health (meagre)	GWP 4 Larval (wreckfish)	GWP 7 Socioeco
17,30	18,00		GWP 6 Fish health (halibut)	GWP 4 Larval (amberjack)	GWP 7 Socioeco
to be arranged			Guided tour of the historic center of the city		

DAY 3		4 Feb	Thursday (dissemination-reporting-administration)		
Start	End		Title	Presenter	Details
9,00	9,30		WP31 Dissemination	Rocio Robles	
9,30	10,00				
10,00	10,30		Amendments (2nd), Reporting	Constantinos Mylonas	
10,30	11,00				
11,00	11,30	coffee			
11,30	12,00		Deliverables, Participants Portal	Constantinos Mylonas	
12,00	12,30				
12,30	13,00		Steering Committee meeting	Coordinator, GWP leaders, SME representatives (ARGO, ASIALOR) APROMAR	
13,00	14,00	Lunch	Lunch at the University Restaurant		
14,00	14,30		Greater amberjack meeting (Room Cuenot)	Species Leader (Nikos Papandroulakis) & greater amberjack partners	Address issues related to the implementation of the large scale grow-out experiments
14,30	15,00				
15,00	15,30				
15,30	16,00				
18,00	22,00		Social event (to be arranged)	Pascal Fontaine	

The workshops of DAY 2 were running in parallel (3 Scientific Disciplines at a given time) in an attempt to minimize the potential time conflict for most Beneficiaries. The duration of each session was decided by the GWP leader based on the number of WP included in the Scientific Discipline, as well as the amount of work that needed to be presented and discussed, and the workload expected for the upcoming year. Therefore,

GWP Socioeconomics requested a full-day Workshop, so a room was dedicated to their work. In addition, the Workshops were organized in a way that the WPs dealing with the same species were planned at different times during the Workshops, to allow all scientists attending all the WPs of the same species (**Table 2)**. This was also achieved, to a degree, by the participation to the ACM 2016 of more than one scientist from some of the beneficiaries that are involved in many GWPs. For example, P3. IRTA was represented by eight researchers and P1. HCMR by nine researchers.

The minutes prepared by the GWP leader of each Scientific Discipline from the different Workshops (**Fig. 5**) were provided to the EU Scientific Officer (Dr. Marta Iglesias), together with the minutes of the whole meeting. A brief description on the progress is provided below.

Figure 5. Photos from the DAY 2 Workshops of the GWPs Reproduction & Genetics (upper left), Socioeconomics (upper right) and Larval husbandry (bottom).

PROGRESS ON THE WORK FROM DIFFERENT GROUP WORK PACKAGES (GWP)

GWP Reproduction & Genetics

Progress has been made on the reproduction and genetics tasks for all six species. Meagre is a species for which genetic improvement programmes need to be established. The genetic variation of breeders in the industry indicates that although the status of the existing stocks is healthy, care is needed in forming base populations and managing crosses to produce families. Families can be produced using paired spawning, and a large number of genetic markers (microsatellites and SNPs) are now available. When these are associated with phenotypes they will facilitate breeding programmes. Similarly, pikeperch held for aquaculture have similar genetic variation compared to wild populations and careful management can use these stocks to form breeding programmes. Greater amberjack have been successfully spawned in facilities in both the Mediterranean and the Canary Islands. In the Mediterranean, gonadotropin releasing hormone agonist (GnRHa) has induced spawning in cages, but not in tanks, as females never reached an appropriate maturation stage (**Fig. 6**). In the Canary Islands, natural and GnRHa induced spawning was obtained in tanks. The reproductive dysfunction of wild greater amberjack held in captivity for 4+ years in the Mediterranean has been described and compared to wild fish that were sampled at the moment of capture. Captive greater amberjack stocks had smaller gonads (GSI), higher incidence of atresia (females), higher incidence of germ cell apoptosis (males) and lower contents of polar lipids, docosahexaenoic (DHA) and arachidonic acid (ARA).

Figure 6. Greater amberjack maintained in sea cages in Greece and induced to spawn during the reproductive season using GnRHa delivery systems (top). Collection of eggs from sea cages after spawning induction (bottom).

Atlantic halibut hatched and reared in captivity had smaller and more frequent batches of eggs with poorer percentage fertilisation compared to captive wild halibut. The use of GnRHa implants synchronised egg batches and increased the size of the egg batches. Wreckfish exhibited advanced stages of maturation and some spontaneous spawning in captivity. Especially, sperm production was good from males and sperm management (sperm characteristics, cryopreservation and cool storage) protocols were developed. Application of GnRHa was successful in inducing ovulation. However, egg quality has been variable with many incidences of unviable eggs being collected and just a few fertilised spawns. The combination of induced ovulation and *in vitro* fertilisation is an approach that has given some success and that will be developed. Grey mullet sperm characteristics and management were described. The production of grey mullet recombinant gonadotropins (r-GtH) was developed and r-follicle stimulating hormone (r-FSH) induced a greater proportion of grey mullet to mature to the late stages of gametogenesis. The fish induced to more advanced stages of gametogenesis also gave higher responses and egg quality to induced spawning with GnRHa and dopamine antagonists. The DIVERSIFY project is on track to provide solutions to the identified bottlenecks in the area of Reproduction and Genetics for the six species.

GWP Nutrition

Progress has been made for all six species, at enrichment, weaning and broodstock diets. The rearing of on-grown *Artemia* for three days gave increased concentrations of protein, free amino acids, taurine, phospholipids, and decreased concentrations of glycogen and lipid. However, Atlantic halibut larvae showed no difference in larval performance when fed either nauplii or on-grown *Artemia* until 28 days post first feeding. One hundred % pigmentation and good eye migration were obtained in both groups. For warm water species, rotifers enriched (3h) with a polar lipid rich emulsion containing a natural marine lecithin (LC60) and ARA, combined with 10 ppm of Naturose, resulted in a significant advantage for greater

amberjack larval growth, survival and welfare. Optimum DHA and eicosapentaenoic (EPA) in enrichment products for live preys for greater amberjack was determined. For DAH, 1.5 g 100 g^{-1} DW was determined to be sufficient to promote fast growth in greater amberjack larvae, whereas increased levels were associated to skull anomalies. The optimum levels and ratios of essential fatty acids and combined PUFA-carotenoids in greater amberjack enrichment products were determined as follow: DHA and EPA in enrichment products for *Artemia* should be 10-17% and 14-20% TFA, respectively, whereas optimum DHA/EPA should be 1.5. The DHA and EPA in enrichment products for rotifers should be 14% and 6% TFA, respectively, whereas DHA/EPA was determined to be 2.3. Carotenoid levels in enrichment products have been determined as 10 ppm.

Otohime, a commercial diet for marine larvae, has been shown to have beneficial effects on Atlantic halibut larvae in terms of feed intake and quality of the water in experimental tanks. Taurine in starter diets promote growth of grey mullet fry, 0.5 % DW diet improved juvenile growth. However, addition of Taurine had no effect on meagre larvae. High soy lecithin (19%) plus high DHA and EPA (3.04 and 0.75% DW, respectively) increased growth of pikeperch larvae after 30 dph, and resulted in different level of phosphatidylethanolamine. Furthermore, a decrease of trypsin activity and an increase of peptidase, phosphatase and pepsin were also found. For meagre, 0.4% dietary HUFA was not enough to cover the essential fatty acid requirements of larvae. This species has shown to have high vitamin E and vitamin C requirements (higher than 1500 and 1800 mg kg^{-1} for vitamin E and vitamin C, respectively), and seems to be very sensitive to hypervitaminosis D and, to a lesser extent, to hypervitaminosis A. Vitamin K must be supplemented as 2.4 mg kg^{-1}. The fatty acid profile of wreckfish larvae showed little variations in the first 10 days of life and underlined the importance of ARA in this species.

At the broodstock level, cultured wreckfish had higher lipid content in muscle and liver, whereas values of PUFA were higher in wild wreckfish than in cultured fish. Furthermore, supplementation of ARA in the broodstock diets induced an increase of n-6 PUFA, especially ARA, in the oocytes of cultured fish. Better spawning quality has been found when supplementing greater amberjack broodstock diets with histidine.

GWP Larval husbandry

The weaning of meagre larvae at 20 dph compared to the current protocol of 30 dph resulted in significantly poorer growth and survival suggesting that the presence of undefined nutritional factors in *Artemia* continue to give live food an advantage. Studies on pikeperch found that in order to obtain homogenously sized pikeperch larvae with the best weight gain, light intensity should be 50 lux with a water renewal rate of 100%/h entering at the surface. In Atlantic halibut, flow through (FT) rearing systems gave better survival in yolk-sac and first feeding larvae than recirculating aquaculture systems. In addition, no differences were found between feeding *Artemia* nauplii or on-grown *Artemia* to metamorphosing larvae, in terms of eye migration, pigmentation and growth. These results are at odds with the striking nutritional differences between these different aged *Artemia*. Research on 2-15 dph grey mullet demonstrated that an optimal level of algal turbidity significantly increased rotifer consumption independently of the algal species used. Moreover, rotifer consumption in early development markedly influences juvenile survival much later on. During larval rearing of wreckfish, larval growth was documented from 2-24 dph as well as tentatively identifying blue sac disease (BSD) and swollen sac syndrome (SYSS). High larval mortality, resulting in complete loss of the population by 30 dph remains a stumbling block to the successful larval culture of this species. In greater amberjack, intensive rearing systems gave significantly better larval growth than in the semi-intensive mesocosm approach. In addition, 24 h of continuous light produced the fastest growing 2-29 dph larvae, while green tanks gave better larval performance than black or white tanks. In addition the ontogeny of greater amberjack visual and digestive systems reared in mesocosm and intensive rearing systems was determined. Results until now showed that intensive rearing conditions favor amylase, alkaline protease and pepsin activities in 30 days post hatching (dph) larvae, while in earlier stages (12 dph) amylase activity was also higher, in contrast to alkaline protease and lipase activities (**Fig. 7**). We also successfully designed primers for determining somatotrophic axis protein and hormone gene expressions, which will be a major tool to investigate the endocrine and autocrine regulators for skeletal muscle growth.

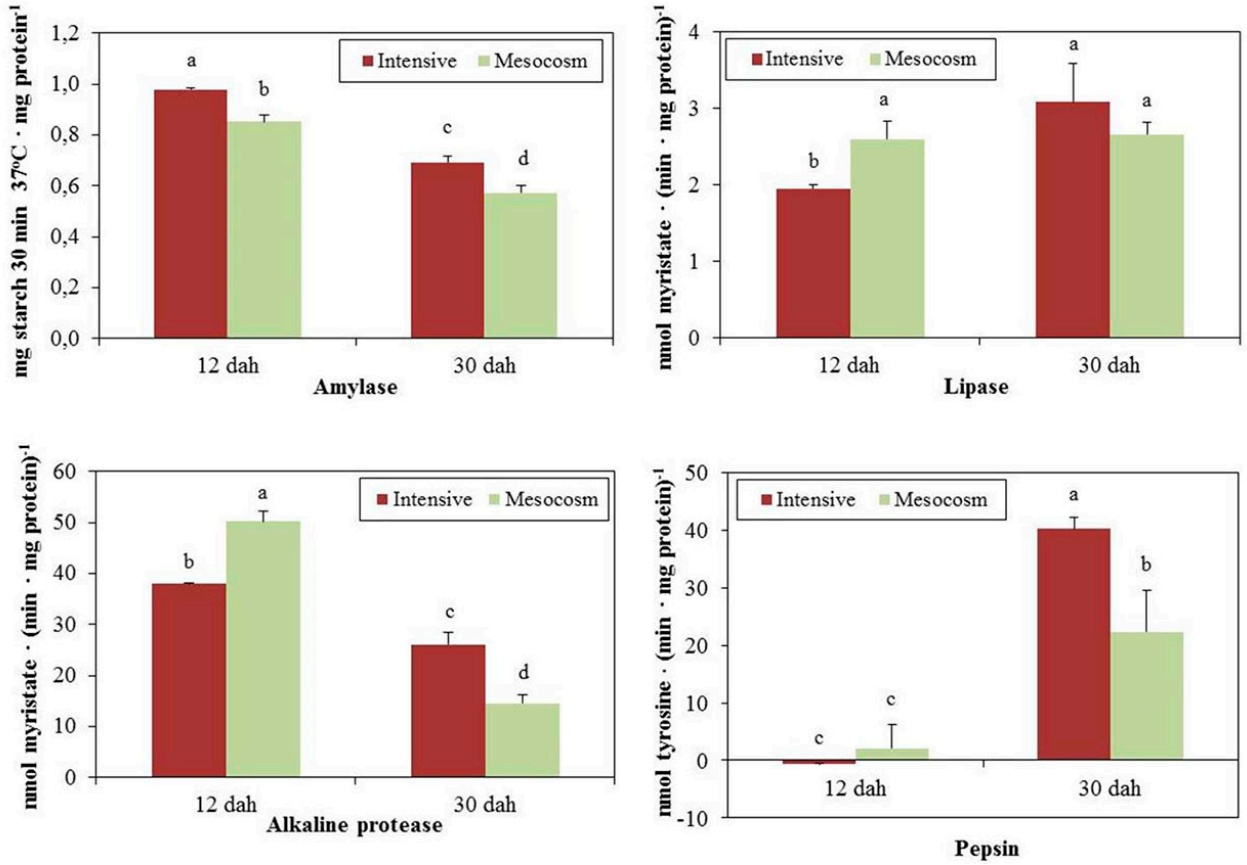

Figure 7. Comparison of digestive enzyme activities in greater amberjack larvae reared using intensive and Mesocosm protocols.

GWP Growout husbandry

Meagre: Juveniles present high size variability and after selection no compensatory growth is observed. The SGR remains higher for groups with large individuals compared to groups with small ones. For on-growing, evidence exists that (a) cage depth is an important parameter for rearing of individuals between 200 g and 1 kg and that deeper nets result in better feed utilization and better survival; and (b) meagre exhibit feeding behavior during night. Meagre is able to learn and be trained to feeding stimuli (**Fig. 8**).

Greater amberjack: Feeding frequency is important and 7 meals per day promote better feed utilization and growth. Stocking density at juvenile stages (5 g) affects significantly the growth performance. The species perform better at 26°C compared to 22 or 17°C presenting also morphological differences (elongated body shape at 26°C).

Pikeperch: From a multifactorial experiment 3 combinations of husbandry parameters (related to light, density, temperature, feed type and handling) were selected for further evaluation towards industrial application.

Grey mullet: A weaning diet has been developed with high level of FM substitution with plant protein sources that has been successfully tested, as it did not affect any of the performance and conditioning parameters tested.

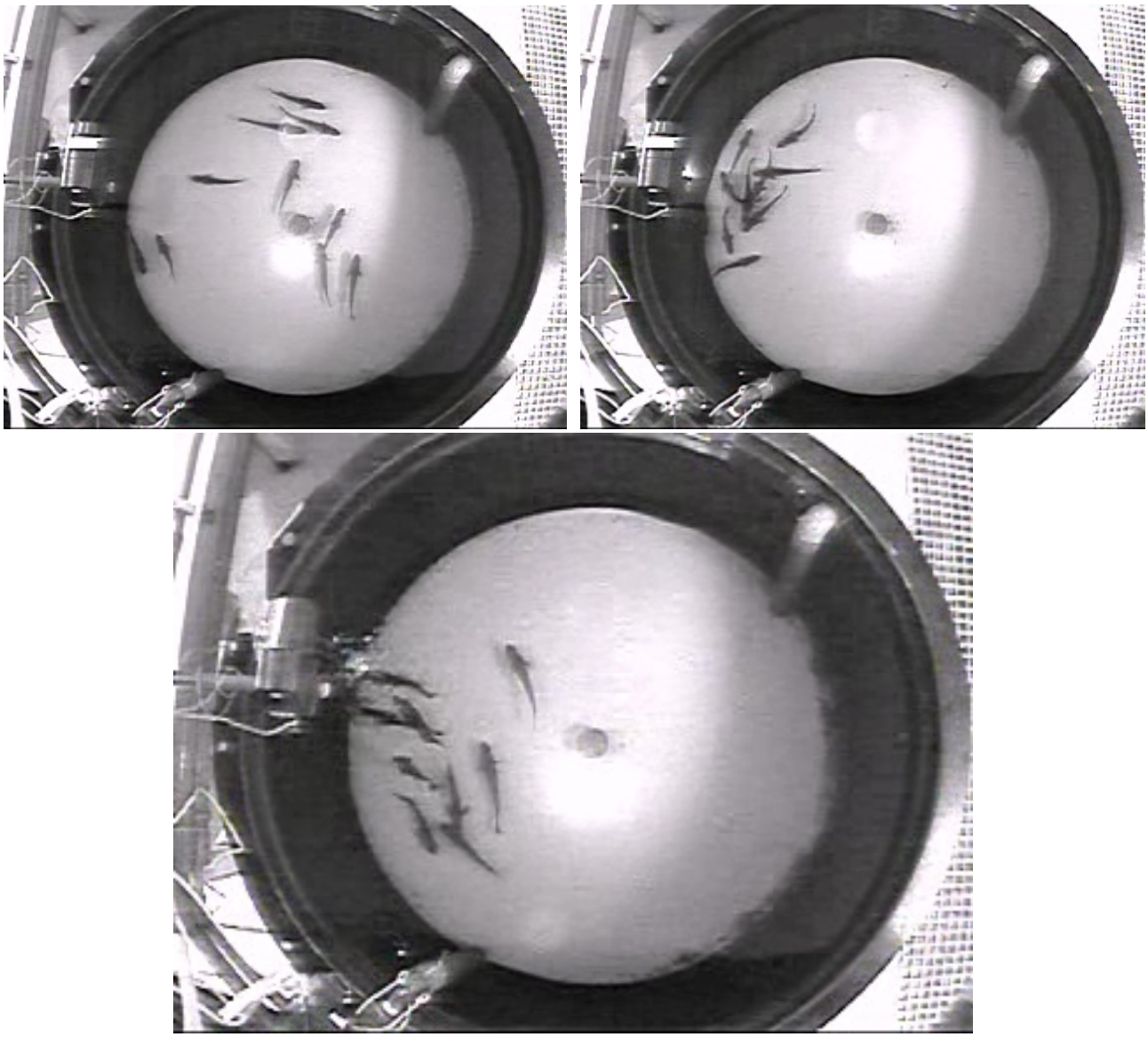

Figure 8. Feeding behavior experiments with **meagre** juveniles. The fish were usually distributed randomly throughout the tank (top), but when a light stimulus was given (bottom left) they gathered around the light source and consumed immediately the feed that was provided from an electric feeder in the same area (bottom right).

GWP Fish health

In meagre, the first diet trials attempting to ameliorate the effects of Systemic Granulomatosis have been performed, using three levels of vitamin E, C and D supplementation. All the samplings were performed successfully and the analysis is on going. A first experiment has also been made to characterize the ontogeny of the immune response in meagre, with samples collected at various times post-hatch. Samples of different tissues from juveniles have been also provided for analysis of immune gene expression, with primers to relevant meagre and greater amberjack immune genes designed and currently being tested. First attempts to develop a challenge model have been performed with *Photobacterium damselae* subsp. *piscicida* in meagre and greater amberjack.

Attempts have been made to isolate pathogens from cultured meagre and greater amberjack, and several parasite and bacterial species have been isolated and identified. In addition, attempts to isolate the etiological agent of *Epitheliocystis* in greater amberjack have been made during larval rearing trials. The most important bacterial infections were caused by *Vibrio harveyi*, which causes typical vibriosis and may result in high mortality, especially above 20°C water temperature. The monogenean parasite *Zeuxapta seriolae* was the most prevalent and important parasitic pathogen (**Fig. 9**). Apart from *Zeuxapta seriolae*, we have also identified the blood fluke *Paradeontacylix* sp. to be present in greater amberjack reared in Greece (**Fig. 9**). This digenean parasite resides within the blood vessels of the fish and releases its eggs into the blood stream. The eggs and encysted metacercariae obstruct the gill capillaries, causing severe inflammation and damage of the gill tissue. There is scarce information on the biology of this parasite and almost nothing is known about its life cycle.

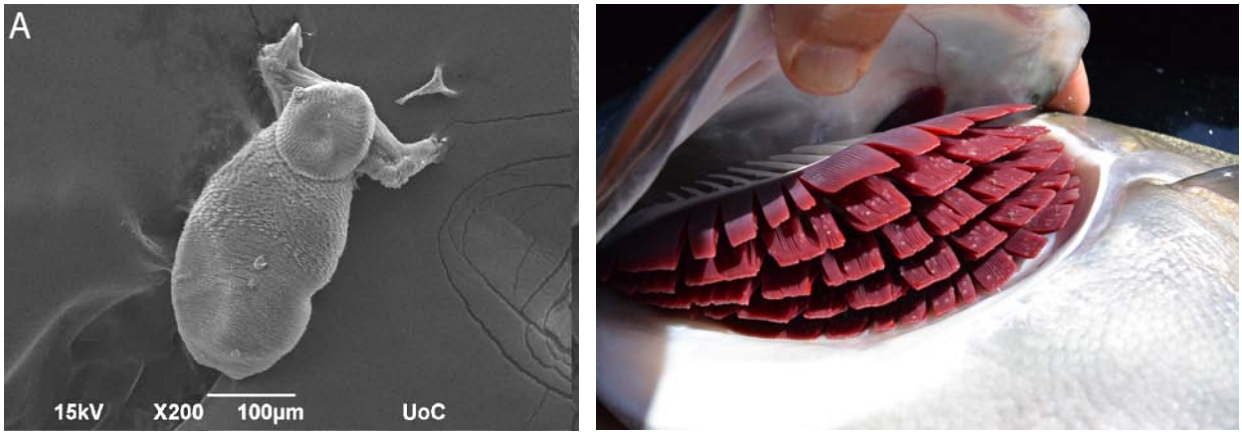

Figure 9. *Diplectanum sciaenae* from meagre broodstocks (left) and an infection of *Paradeontacylix spp.* on the gills of a greater amberjack broodstock from sea cages (right).

A passive collector device has been designed and tested as a method to detect and quantify the level of infestation of monogenean parasites in greater amberjack during rearing in tanks. The method has been used to control and estimate the level of infestation by monogeneans in tanks of broodstock maintained in our facilities. With regards to Atlantic halibut, production of Viral Neural Necrosis (VNN) capsid protein has been progressing well, and successful expression in *E. coli*, tobacco plants and *Leishmania* has been achieved. The technique is currently being optimized prior to larger scale production for vaccination.

GWP Socioeconomics

Besides the technical improvement of the selected species, the socio-economic research in DIVERSIFY includes solutions on perception of aquaculture products, market demand, buyer preferences, new product development, value adding and market development. These outcomes will help the EU aquaculture sector and the supply industry in targeted marketing and improvement of its international competitive position. The image of the aquaculture sector has to be improved, and new and high value-added products must be developed and SMEs have to be more innovative for the introduction and market development of these new species. The socioeconomics work included tasks to identify (a) external environmental factors that affect or will affect the production chains of the new species, (b) trend mapping for the European aquaculture and fisheries sector, and protein market in the near future, (c) industrial buyers' attitudes and perceptions regarding cultured fish and (d) consumers' attitudes, willingness to buy/pay, and value perceptions towards the DIVERSIFY species.

The macro-environmental context analysis indicated that most EU countries have a policy to increase fish consumption, and seafood consumption is increasing in most EU countries. This growth can only be realized at the expense of other protein sources, since the protein market has been stabilized in the last few years. However production costs are expected to rise in the next 10 years, due to increasing electricity costs and commodity prices. On top of that, water quality and sustainability certification are required increasingly in most countries and by more buyers. In sustainability certification, several schemes can be identified in the market: (1) internationally recognized schemes such as HACCP, BRC and GLOBALGAP, (2) privately owned certification schemes such as CARREFOUR standards, (3) NGO-developed standards such as ACC and ASC and (4) country-specific supply chain certification schemes, such as LABEL ROUGE and CRIANZA DEL MAR.

Seafood is increasingly bought fresh at supermarkets across the EU, due to better logistics and preservation methods. The preferred consumption is fresh fish, and species with good filets and soft bones. The southern countries eat more fresh whole fish, while northern countries prefer processed fish. Consumer preferences concerning farmed fish seem to converge to convenience and fresh standardized products, such as fish fillets, portioned meals and processed foods. Industrial buyers in northern EU work closely with their trusted suppliers to develop new products, while the southern EU can be determined as seller markets, meaning that suppliers often initiate new product offerings. In approaching industrial buyers, farmers should be able to provide full information on their entire production process.

The consumer survey identified three consumer segments: (1) involved traditional consumers (29%): who know relatively more about fish and buy traditional fish products; (2) involved innovators (36%): who know relatively more about fish and who have a more open mind to buy new fish products and (3) ambiguous indifferent (35%): who know relatively less about fish and who are less open to buy new fish products. Based on the first findings, more than one third of the consumers in the five selected countries belong to the segment of 'Involved innovators' and could therefore potentially be open to buy new species.

The technical characteristics and muscle composition of greater amberjack were studied in two different size groups, in order to define both the range of these quality characteristics and the effect of fish size on them (**Fig. 10**). The main difference between the two groups was the much higher fillet fat contents in big fish. Trained panelists have examined the sensory characteristics of the fillet analytically with descriptive sensory analysis. In summary, the great amberjack fillet exhibits homogenous color, laminar structure, high juiciness and acid and butter flavors, while its texture is characterized by high teeth adherence and chewiness but of medium hardness (when compared to other fish species).

Figure 10. Processing of farmed-raised greater amberjack for organoleptic evaluation.

A series of ideas for value-added products from the fish included in DIVERSIFY have been produced through creative sessions with consumers and a thoroough selection on the basis of market knowledge built up in this project (**Fig. 11**). From these products, six have been selected for the production of prototypes for

sensory test, based on the nutritional and organoleptic characteristics of the different species, and will be tested in 2016. From greater amberjack, the products include (a) frozen fish fillet that is seasoned or marinated, (b) ready-made fish tartar with additional soy sauce and (c) fresh fish steak for grilling in the pan. Similar work is being completed with the other fish species of the project.

Overall, the project has been making good progress in studying the six species and acquiring important knowledge for the development of culture methods, while in the area of socioeconomics DIVERSIFY has contributed to the identification of solutions to improve perception of aquaculture products, market demand, buyer preferences, new product development and market development. The results obtained so far have been presented in scientific conferences, as well as in the annual coordination meetings and are available at the project's website (http://www.diversifyfish.eu/2016-annual-coordination-meeting-feb.html).

Figure 11. Value-added products from greater amberjack fillets using a honey/soya marinate.

DAY 3

During this day the agenda included a presentation by Dr. Rocio Robles on WP 31 Dissemination, presentations by the PC on Scientific Reporting and Financial Reporting, and a meeting of the Steering Committee (**Table 2**).

Dissemination

The presentation of WP 31 Dissemination begun with a brief reiteration of the WP's many objectives, emphasizing the need for all Partners to participate actively in the preparation of dissemination materials and activities (**Fig. 12**). Then there was a presentation of the various dissemination activities carried out in the last 2 years (2014-2015), which included the publication of four semester Newsletters that are uploaded at the website of the project and three species-focused articles published at the quarterly magazine of the European Aquaculture Society (for greater amberjack, meagre and pikeperch). A special "DIVERSIFY" session was held at the annual conference of the European Aquaculture Society (Deliverable 31.10). The Special Session was titled "New/emerging finfish species (EU Diversify project)" and was organized in the order of the species' work in the DOW. The session opened with a summary presentation for DIVERSIFY, given by the PC of the project -see *Deliverable 31.9 Annual presentation of DIVERSIFY (Y2) at a relevant conference.* Following each of the six Species Leaders summary presentations, presentations were also given by DIVERSIFY researchers on specific Tasks of the DOW. The Special Session lasted for the whole day (10:30 to 17:00) and an estimated of 30-120 persons were present at the different presentations in the designated room. The Species Leaders' presentations have been uploaded on the DIVERSIFY website.

Figure 12. Photos from the presentation of WP31 leader Rocio Robles on Day 3.

As mentioned in the first ACM 2014, dissemination activities started as early as October 2013 (two months before the official starting date of the project) and so far the project has produced 120 Dissemination actions (from 48 as of the previous ACM 2014), which include (**Fig. 13**):

1. Magazine articles for the Aquaculture industry, and magazines addressing Politics, Policy and People (The Parliament Magazine, Paneuropean Network, CommNet, etc.),
2. Newspaper and magazine articles, press releases and media briefings,
3. Interviews in newspapers, radio or TV,
4. Web articles and movies of DIVERISFY research (www.ytube.com)
5. Oral presentations (18) and posters (17) in scientific conferences/meetings, including the dedicated Special Session "New/Emerging Finfish Species (EU DIVERSIFY Project) at the European Aquaculture Society's (EAS) "Aquaculture Europe 2015" conference,
6. Distribution of the project's flyer and bookmark to aquaculture professionals, regulators and administrators.

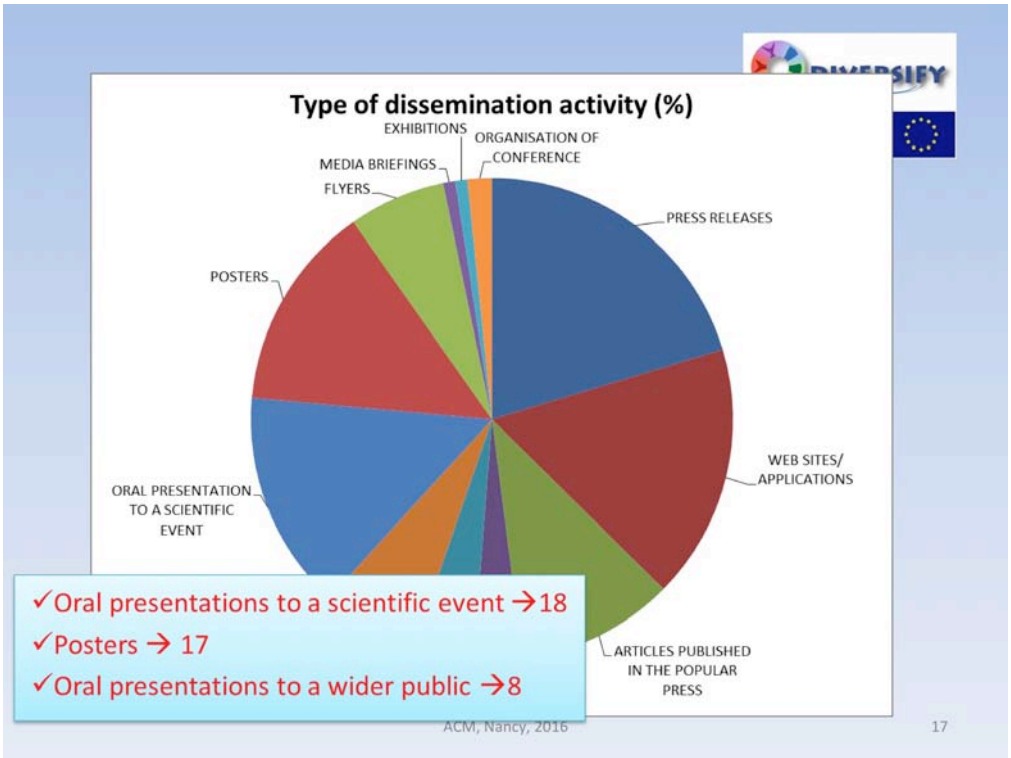

Figure 13. A pie chart showing the various dissemination activities of the project.

The vast majority of these dissemination activities have been already registered in the Participants Portal, though it has become apparent that not all Partners have been active in uploading their activities in the Participants Portal, especially presentations and posters in scientific conferences. AS pointed out, most of the dissemination activities were undertaken by P1. HCMR (the PC) and P18. CTAQUA. This is understandable to a large extend as these two partners have a major involvement and budget for WP 31 Dissemination, but the other Partners need to also dedicate some effort in this area. Dr. Robles encouraged the members of the consortium to pay more attention into uploading their activities on time, and a presentation of the Participants Portal was made to familiarize the partners again with the use of the site for uploading dissemination material. As before, dissemination material was mainly produced in English, but some material has been produced also in Greek, Spanish, German and Italian. It has also become known that some researchers have already started submitting their work for publication in scientific magazines. For these publications there is a special page in the Participants Portal, and Dr. Robles introduced this page to the attendants of the meeting. She emphasized that it is time to start producing some scientific articles, in order to comply with our contractual obligations. Also, in order to make the work that will be coming out of DIVERSIFY more prominent and to increase the visits to our website, it was decided to modify the organization of the website. The modification will include moving the "scientific articles" page to the home page of the website. This will make this page more prominent and will make it easier for the visitors to see and access the work published in scientific journals.

As regards the DIVERSIFY website, the partners were informed that the website of the project (www.diversifyfish.eu) is averaging 250 visitors per day, a number that has not increased from the last ACM 2014, and needs to be increased. In order to facilitate the production of short reports on implemented work and acquired results to be uploaded in our site, the Dissemination leader prepared in 2014 a format file to be used by all scientists to prepare dissemination materials, in a way that would be easy for the partners to fill. The format file is available in the INTRA page of the DIVERSIFY website. Unfortunately, not many such

reports have been produced so far, and more effort must be dedicated to encourage DIVERSIFY scientists to start preparing these short dissemination material from their activities. Invitations must be sent personally to the participating scientist from now on, as opposed to using the project's distribution list.

In terms of upcoming events, it was mentioned that oral presentations will be made in the EuroTier Trade Fair (http://www.eurotier.com/home-en.html), which is "the world's leading trade fair for animal production" to be held in November 2016 in Hanover, Germany. The invitation to present DIVERSIFY at the Aquaculture section of this Trade Fair (**Fig. 14**) was achieved through the actions of Dr Matthias Keller, from the German Association of Seafood Processors (P34. BVFi). It was agreed that DIVERSIFY will be represented with oral presentations by the WP 31 Dissemination leader and by Task leaders for Socioeconomics from IRTA (Spain) and University of Aarhus (Denmark).

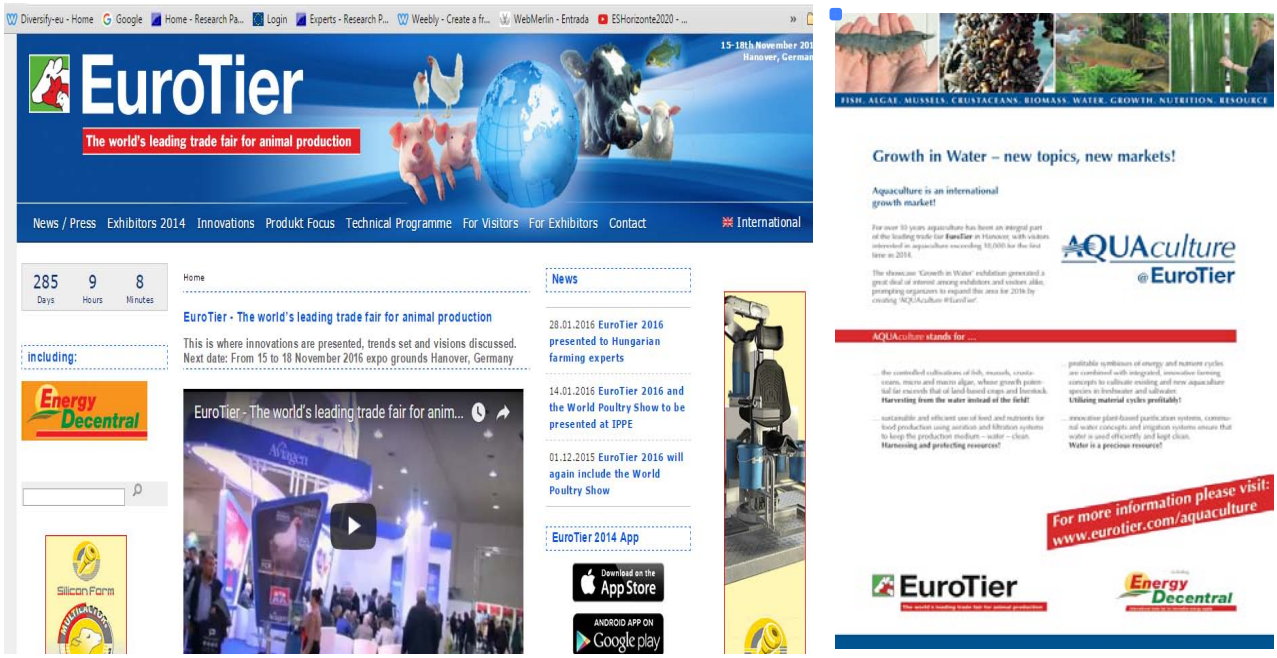

Figure 14. The home page of **EuroTier** (the world's leading trade fair for animal production) and the advertisement of the Aquaculture section.

An oral presentation is also going to be given by the PC at the upcoming Offshore Mariculture Conference 2016 (http://www.offshoremariculture.com/europe), which will be held in Barcelona, Spain (6-7 April 2016). Dr. C.C. Mylonas was invited to give a presentation on DIVERSIFY, as well as prepared a small article about the project that will be distributed to the attendants in a Book of Abstracts. The chair of the conference is Dr. Alessandro Lovatelli, Aquaculture officer, FAO-UN and it has been supported by the leading aquaculture organizations – e.g. EAS, EATIP, GAA, FEAP, APROMAR, SEA. Regarding our participation to other conferences, no special session associated with the DIVERSIFY project is planned for the EAS 2016 conference, though any partner interested in presenting their work at the conference was encouraged to do so. A special DIVERSIFY associated conference will be prepared for the EAS 2017 conference to be held in Dubrovnik, Croatia (October 2017), for which the PC Dr. C.C. Mylonas is the president of the Scientific Program committee. As in 2014, the Species leaders will be asked to make oral presentations summarizing the work achieved.

The project was also considering the participation to the upcoming Seafood Expo organized in Brussels in April, and arrangements will be made with the commercial partners. The promotional workshops (Task

31.6) planned for the four strategic countries will start in Year 4 as planned in the DOW. However, Deliverable 31.16 (1st Workshop) was listed erroneously to be delivered on Mo 37.

In agreement with the intentions of the consortium to be as open as possible and to disseminate the results as promptly as possible, all the presentations of the ACM 2016 will be uploaded on the website of the project, to be available to all interested stakeholders. In addition, it was agreed that all GWP leaders will submit a paragraph with the major highlights of the work implemented so far in their Scientific Disciplines, in order to prepare a 1-2 page flyer, which will then be translated to various languages by our Professional Association partners and disseminated to their members (*e.g.* in Greece, Spain, Hungary and Germany).

Management (Amendment, Deliverables and Scientific Reporting)

The Partners were informed of the submitted 2nd Amendment to the Annex I (**Fig. 15**). The reasons for the amendment were explained (loss of greater amberjack broodstock in P.24 ITTICAL and transfer of activities to P23. ARGO; exit of P30. CULMAREX and modification of work carried out in WP20, etc.).

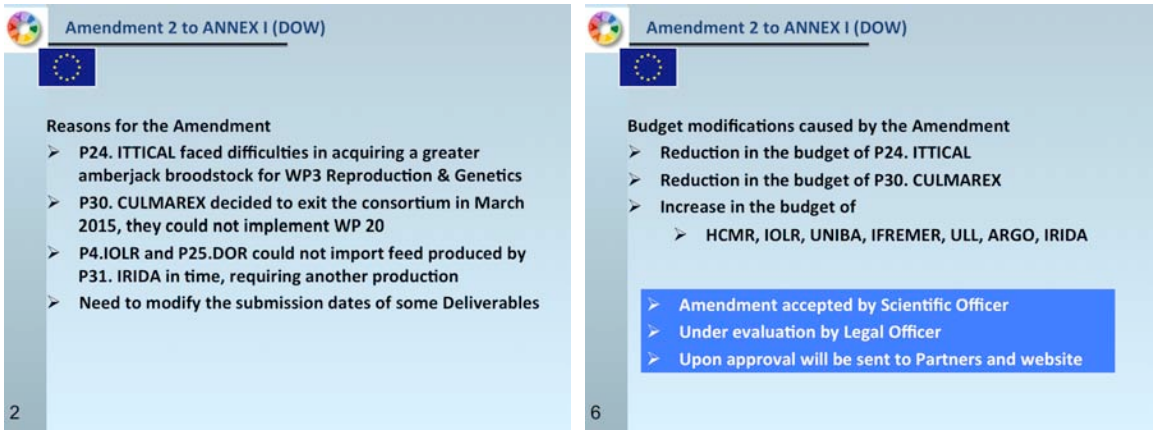

Figure 15. Explanation of the reasons for the 2nd amendment and the changes it will bring to the budget.

As in the previous ACM 2014, a presentation was given by the PC to explain how the scientific reporting needs to be done for the project. This included both Deliverables and Periodic Reports. The presentation had begun with a reiteration of the roles of the PC, the Species Leaders (SL) the GWP leaders and the WP leaders (Lead Beneficiaries), in an effort to clarify their responsibilities and to remind the information that must be provided by the rest of partners to the WP leaders and GWP leaders.

Regarding the Deliverables, it was emphasized again to the Partners that they must be uploaded **on time** electronically in the Participants Portal. To ensure that all Deliverables are uniform throughout the consortium –in terms of appearance, format, and content quality and extent--, the PC has prepared a specific format file (**Fig. 16**), as well as explicit instructions on the preparation of the Deliverables, which are included in the website (http://www.diversifyfish.eu/2016-annual-coordination-meeting-feb.html). The Participants were also reminded of the Participants Portal and its functions that are relevant to the uploading of the Deliverables.

Then the PC discussed the status of the Deliverable submission, making a summary of the number of Deliverables that have been submitted so far and the ones that have requested a delay (**Fig. 17**). So far only 80% of the expected Deliverables have been submitted, but it is expected that as time goes on less delays will be faced and by the time of the Mid Term evaluation we will have almost all due Deliverables submitted. To ensure that the all Deliverables are not only uniform throughout the consortium in terms of appearance, but also that they are of high scientific quality, the PC has explained and emphasized the procedure that has been employed so far for the preparation and submission of the Deliverables (**Fig. 18**).

Figure 16. Instructions on the format file created by the PC for the preparation of the Deliverables of the project (available at www.diversifyfish.eu/INTRA/Forms & Protocols) and presentation of the Participants Portal section where Deliverables are listed and can be uploaded and downloaded by consortium members.

Figure 17. A summary of the Deliverables due and submitted so far and a presentation of the DIVERSIFY web page where all the submitted Deliverables are available to the consortium members, in the INTRA section of the website (http://www.diversifyfish.eu/deliverables.html).

The session continued with a brief discussion dealing with the upcoming Periodic Report (Period 13-30 months, due July 2016). As for the Deliverables, special format files have been produced by the PC for each Work Package and will be sent to the Lead Beneficiaries of each Work Package (in April 2016) to help them compile the results and data from each Task (**Fig. 18**). It was stressed that the Periodic Report must include the work carried out during the reporting period with enough detail, but without excessive and unnecessary information, as it has been done for the 1st Periodic Report. This will allow the Consortium members to follow the major achievements as well as problems encountered during the 2nd period, and will enable both the EU Scientific Officer and the Mid-Term Evaluation committee to evaluate the work in relation to the DOW, and be able to make any necessary recommendations. A question must be made to the EU Scientific Officer regarding the inclusion in the report of the data obtained in the 1st Reporting Period (1-12 months).

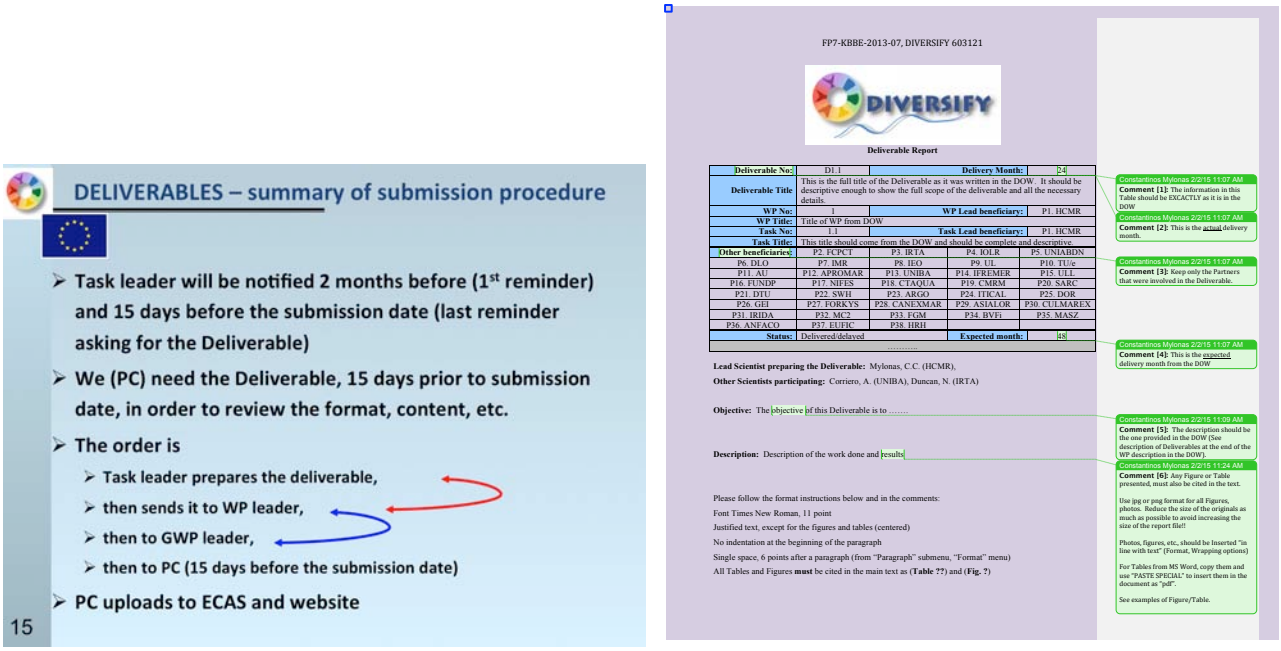

Figure 18. Explanation of the procedure that has been employed for the preparation and submission of the Deliverables, in order to ensure high quality and uniform presentation of all Deliverables, and the format document to be used by all Partners.

As before, to speed up the process of preparing the report, while at the same time ensuring that a uniform and high quality document is presented (both in terms of format and content), the work has been delegated to all Consortium members as follows (**Fig. 19**):

a. The Lead Beneficiaries for each Work Package (WP leaders) will request the text/figures/tables for each Task from the Task leaders, who are responsible to coordinate their writing with all scientists participating in their task. This process has already begun to some extent, in preparation for the ACM 2016, but must be updated with work that will take place in the next 3 months and completed by **20 May 2016**,
b. The Lead Beneficiaries then will compile all the information into a single document for each Work Package, review it for content/format/editorial errors and submit it to the GWP leader (**30 May 2016**),
c. The GWP leaders will then compile all the Work Packages into a single document for each GWP, review it for content/format/editorial errors and submit it to the PC (**10 June 2016**),
d. The PC will then compile all the GWPs into a single document to prepare the 2nd Periodic Report and review it for content/format/editorial errors (**30 June 2016**),
e. The GWP leaders will also have to prepare following information (**20 June 2016**):
    i. 3.1 Publishable Summary (0.5 page per GWP),
    ii. 3.2.1 Project objectives for the period (0.5 page per GWP),
    iii. 3.2.2 Project progress and achievements for the period (1 page per GWP).

This information will then be submitted to the PC for incorporation in the Periodic Report. The PC will prepare the remaining sections required (e.g., 3.2.3 Project management for the Period, Deliverables and Milestones, etc.) and will complete the 2nd Periodic Report by the end of June 2016 and upload it in the Participants Portal. **All Partners agreed to the procedure and time schedule, and will do their utmost to complete the documents as requested and within the proposed deadlines.**

Then the PC made a special mention to the work and effort of the GWP and Species Leaders, who are responsible for coordinating the work in their respective discipline or species, and thanked the six GWP leaders and six Species leaders. A change in one of the GWP leaders (Nutrition) had to be done in the few months prior to the meeting, due to the retirement of Dr. Hipolito Fernández Palacios from P2. FCPCT. The new GWP leader for Nutrition is Dr. Daniel Montero from the same Partner.

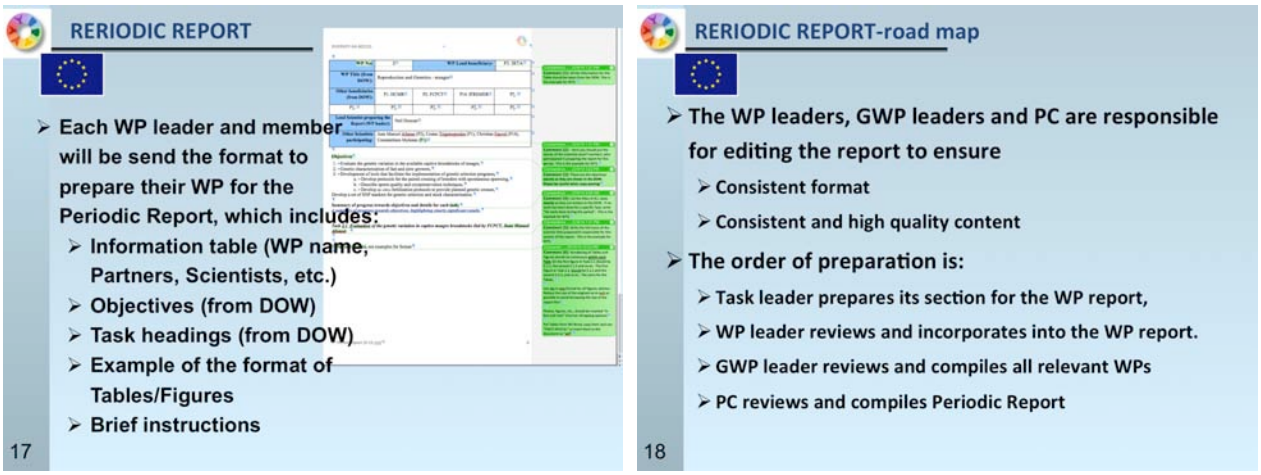

Figure 19. Representative slides from the instructions provided in the presentation for the procedure for the preparation of the Periodic Report for 13-30 Months, due in July 2016 (the whole presentation is available at http://www.diversifyfish.eu/2016-annual-coordination-meeting-feb.html).

The PC then discussed the issue of preparing the work done in DIVERSIFY for submission to scientific magazines. Already 4 manuscripts have been submitted for publication and many more researchers expressed their intention to start submitting their work. The PC encouraged the Partners to publish their work as soon as possible (**Fig. 20**), not only to abide by the contractual requirements of the DIVERSIFY (2 articles per GWP per year, for a total of 60 articles), but in order to disseminate the work done and have as rapid an impact to the stake holders as possible. A change was agreed on the project's website, by moving the "Scientific Publications" page to the main menu bar, so that visitors will have a more rapid and direct access to the scientific work of the Consortium.

Figure 20. Representative slides from the discussion on Scientific Publications.

Financial Reporting

Then, the PC discussed briefly some Financial Issues, regarding the payments received and the need for all Partners to **abide by the budget allocation as described and agreed in the DOW**, as much as possible (**Fig. 21**). Partners were reminded that each Partner has requested a specific budget, and allocated the EU support to clearly defined and described types of expenses, such as Personnel, Subcontracting, Travel, Consumables, Durable Equipment and Other types of expenses. The objective is to avoid unnecessary modifications that would require transfer of budget between types of expenses, or spending of the money in items not indicated in the DOW. Of course, it is recognized that there is always the possibility of unforeseen costs, but the Partners were encouraged to keep this to the absolute minimum. The PC mentioned that so far a number of minor modifications have been made, always after the agreement of the EU Scientific Officer, who has so far always accepted such requests, provided a reasonable explanation and justification has been provided.

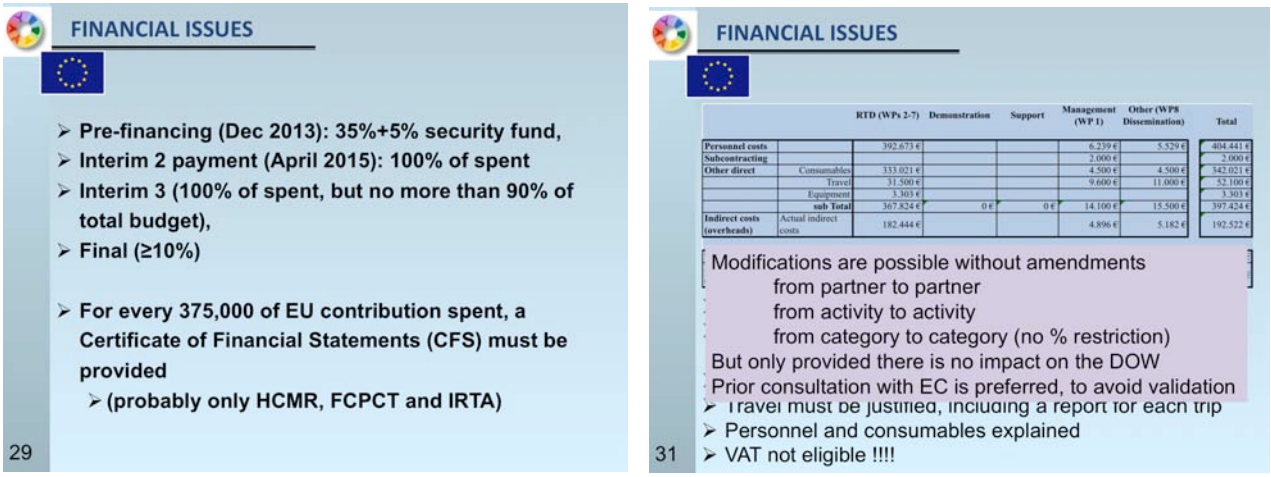

Figure 21. Representative slides from the discussion on Financial Issues, which included the payments received so far and an urge to the Partners to respect as much as possible their budgets and resource allocation (the whole presentation is available at http://www.diversifyfish.eu/2016-annual-coordination-meeting-feb.html).

It was agreed that **Form C would be submitted to the PC by all Partners before 15 June 2016**, so that the PC would have time to review and ask for corrections (if necessary) to complete the process by the end of the year. It was emphasized that in the previous reporting, all Form Cs were submitted to the PC except from one Partner, thus delaying the submission of the Financial Report by almost 1 month (still it was submitted before the official deadline!).

At the end of the presentation, the date and location of the **next ACM meeting** was discussed. The next ACM has been proposed for **Dec 2016 – Jan 2017** and **will be hosted by IRTA (P3. UL) either in San Carles de la Rapita or in Barcelona, Spain**. The local organizers will examine the best alternative both in terms of time and place and will inform the PC of their decision in early March 2016, at which time we will begin the process of preparing for the meeting. As this time no Periodic Report is due, the PC suggested that the format of the meeting is modified slightly. It was suggested that we hold 2 Open Days, where instead of summary presentations of the GWP leaders, we allow as many Partners as possible to present their work in 20-30 min presentations. This will allow the consortium members to have a more detailed view of the work carried out and will encourage the Partners to prepare their work for presentation and then publication.

Finally, the Partners were presented with a slight modification of the project's logo that we used recently for the new t-shirts. The new logo provides some information as to the objective of the project and the PC thinks it is more informative (**Fig. 22**). Still, the decision was not to modify all the DIVERSIFY documents with this "new" logo, but to use it only in our new t-shirt and some of our new activities and presentations.

Figure 22. The modified logo for the new t-shirts.

Steering Committee meeting

At the end of the third day, a meeting of the Steering Committee (SC) was held, as planned in the DOW. The SC members are the PC, the six GWP leaders, two representatives of SMEs (since P30. CULMAREX that was the third industry representative has exited the consortium) and the representative from a professional organization. The people attending this meeting were Mylonas, C.C. (PC, P1. HCMR), Duncan, N. (GWP leader, P3. IRTA), Montero, D. (GWP leader, P2. FCPCT), Koven, W. (GWP leader, P4. IOLR), Papandroulakis, N. (GWP Leader, P1. HCMR), Secombes, C. (GWP leader, P5. UNIABDN), Tacken, G. (GWP leader, P6. DLO), Daniil, M. (P23. ARGO), Deves, K. (P29. ASIALOR) and Ojeda, J. (P12. APROMAR).

No official agenda was prepared for the meeting, but the PC addressed the following issues:

1. 2nd Amendment – The PC explained in more detail the major aspects of the amendment, especially the budget reallocation amounts to the various Partners.
2. Some discussion was made on possible changes of Partners and a further Amendment to the Annex 1. Specifically, it was mentioned that the PI from one Partner may be moving to another organization and would like to continue his involvement in DIVERSIFY. The PC will contact the EU Scientific Officer and examine the procedure for this. Secondly, one organization may be changing its structure, which would involve a change in name but also of legal documents (e.g. VAT registration number). As above, they would still like to be in the consortium, so we need to address the procedure for their validation and then joining of the consortium.

3. Also, two of the commercial partners may also be changing legal status or stopping their activities, so the consortium must already start examining the potential of other partners joining the consortium to undertake the work planned for these Partners.
4. Management - Substitution of the leader for GWP Nutrition Dr. Hipolito Fernandez by Dr. Daniel Montero, due to the retirement of Dr. H. Fernandez has been requested by P2. FCPCT and has been reported and approved by the SC.
5. The PC mentioned that he is encouraging the participation/collaboration of more commercial operations outside the consortium, and introduced Isidro de la Cal as one company interested in having more collaborations with the consortium in the area of wreckfish reproduction and larval rearing. The company has a large stock of wreckfish breeders (more than 30!) and would be a very valuable collaborator.
6. Next ACM 2016b or 2017a will be held in the end of December or beginning of January in Spain, organized by P3. IRTA and hosted by Alicia Estevez - The location of the meeting and the time will be determined by the host organization in the next month and will be announced to the consortium. The GWP leaders were encouraged once again to invite relevant scientists from the international community to attend this meeting.

Special session on greater amberjack

The following researchers were present from the various Partners:

P1. HCMR: N. Papandroulakis, CC. Mylonas, P. Katharios, I. Papadakis, I. Fakriadis

P2. FCPCT: D. Montero, F. Acosta

P4. IOLR: H. Rosenfeld

P8. IEO: S. Jerez, V. Martin

P13. UNIBA: A. Corriero

P14. IFREMER: C. Fauvel

P15. ULL: C. Rodriguez, J. Perez

After a brief overview of the work carried out and some of the problems encountered, the following was decided:

1) Reproduction
   i. Spawning experiments will continue as planned in the DOW and implement corrective actions where required to improve egg quality and availability. Spawning for the acquisition of eggs will concentrate in the sea cage broodstocks, which showed the best performance so far.
   ii. Egg transportation from FCPCT to IEO and HCMR should be done during the next spawning period in order to allow comparison of methods/quality of eggs (particularly in case of natural spawnings). The problems regarding import of eggs have been resolved.
   iii. Genetic analyses should be done to see the differences, if any, between Mediterranean and Atlantic broodstock at IEO and FCPCT, given the significant differences in reproductive biology and performance in captivity between broodstocks from the two regions. Fin clips must be taken in the following samplings and sent to HCMR for analysis.
2) Larval rearing
   i. The main objective of the next year will be to produce juveniles to implement on-growing trials, as most of the larval experiments have been concluded.

ii. Trials already implemented, but with inadequate results related to husbandry (e.g low survival) may be repeated without performing the associated sampling or reducing it to two points (start – end), in order to be able to match the results with previous trials.

iii. However trials not completed or without covering the deliverable requirements will be repeated (e.g. samples have to be sent to ULL from FCPCT to complete the analyses from the density trial).

iv. IEO-ULL will provide the info available for rotifer enrichment in order to be implemented in next year's larval rearing trials (as additive to already available commercial diets)

v. FCPCT will provide the available info on *Artemia* enrichment as previously.

3) Growout

i. CANEXMAR has to solve the issue regarding license very soon, otherwise measures regarding experiments have to be taken (these can include change of a partner or abandoning the task).

ii. FORKYS should be ready to receive the juveniles, if available, otherwise the possibility to purchase juveniles from the market should be considered (the administrative and budgeting issues are to be discussed). The PC expressed the opinion that there should be no problem to transfer budget from consumables to the purchase of juveniles.

iii. A "handling protocol" of the species has to be established, with compiled knowledge of different sources (HCMR, FCPCT, IEO) containing also up to date information regarding juveniles and growout.

iv. A diet with increased content of protein is used in FCPCT, so the same could be used by other partners.

4) Establish a more close and "solid" collaboration with Dr. Robert Vassalo-Agius from Malta, as an expert in greater amberjack larval rearing.

5) Implementing the tasks as described in the DOW will require a better sharing of information among partners, as it is needed to implement the best practices and knowledge, even if they are still at experimental level.

Actions to be taken:

1) D. Montero (FCPCT) will send email at the end of February regarding points 3.i and 1.ii (and also the opinion of his colleagues on the decisions),

2) S. Jerez (IEO) will collect fin clips from their stocks (May 2016),

3) N. Papandroulakis (HCMR) will handle point 3.iii together with P. Katharios (HCMR),

4) N. Papandroulakis will handle point 4.

Deviations:

The ACMs were planned in the DOW to consist of 2-days of open presentations and 1 for consortium activities. Instead, as for the previous ACM 2014 (Bari, Italy), the ACM 2016 contained only 1 open day and 2 days reserved for consortium activities. This was considered again necessary because of the large number of Work Packages in the project, and the need for as much time as possible to be allocated to the discussion of obtained results and future planning of the work.

For the next ACM (2016b or 2017a), which will be held between December 2016 and January 2017, we are considering having a 2-day Open Session, where all Partners will be allowed to present their work, instead of

presenting only summary presentations. This will provide to all Partners a detailed view of the progress of the project after 3 years and will disseminate the information to a larger invited guest audience. Then we will have a full day of Scientific Discipline-specific Workshop (as of DAY 2 of the ACM 2014 and 2016) and a SC meeting in Day 3 and we will not have any other organizational/management session, since there will not be any Reporting Period associated with this meeting. The next Reporting Period ends in month 48 (November 2017), and just prior to this time we will have another ACM to coordinate the preparation of the Scientific and Financial Reports.

There were no other major deviations from the DOW at this time. Some delays in the uploading of the Deliverables have been discussed (and mentioned in the minutes of the GWP Workshops), but they are not considered major in kind. Also, there are a number of expected delays in some of the upcoming deliverables, but so far there is no expectation of any Deliverables not been completed within the lifespan of the project. These expected delays have been mentioned within the minutes of the specific GWP workshops reported in the previous pages.

A group photo of some of the participants of DIVERSIFY ACM 2016 at the building "Presidence" of the University of Lorraine, Campus Brabois, Nancy, France.

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