University of Bari Aldo Moro,
Bari, Italy
4-6 November 2014

Minutes of the Annual Coordination Meeting for Y2

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Objectives

The objectives of the Annual Coordination Meeting (ACM) 2014 were to:

(a) present Scientific Discipline-specific summaries of the accomplished work during Y1 to the consortium members, as well as to a number of invited guests,
(b) review closely and evaluate closely 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 Periodic Reporting (Scientific and Financial).

Description

The ACM 2014 was hosted by Dr. Aldo Corriero from the University of Bari Aldo Moro, Bari, Italy (P13. UNIBA) and was held at the Palazzo Ateneo, Salone Degli Affreschi on the 4-6 November 2014. The 3-day meeting was attended by 73 persons: 65 coming from the DIVERSIFY consortium and 8 invited guests from outside the consortium. No representative attended from four Beneficiaries (P26. GEI, P27. FORKYS, P35. MASZ and P37. EUFIC). Beneficiaries P12. APROMAR and P36. ANFACO were unable to attend the first two days of the meeting, but attended the 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/2014 Annual Coordination Meeting) to ensure that all participants had access to the most updated information. The Agenda (**Table 1**) 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 Work packages or tasks, and presentations from invited guests,
(b) DAY 2: Six (6) Scientific Discipline-specific workshops running in parallel during DAY 2, and
(c) DAY 3: a common session dealing with Dissemination, and Scientific and Financial Reporting. A meeting of the Steering Committee was also held at the end of the ACM.

Throughout DAYs 2 and 3, there were also one-on-one training sessions of interested Partners on the use of the Participants Portal, provided by the Project Manager (Mr. Yanis Fakriadis, HCMR). This was done to ensure that all partners were familiar with the Participants Portal, its various functions and the way both Scientific and Financial reporting must be done. This was especially useful to Partners with no previous experience with EU Framework Program funding (e.g., some of the SMEs), but was also very useful to more experienced Partners that did not have to use the Participants Portal before in their EU projects.

DAY 1 – Summary Presentations and invited quests

The morning session started with a brief welcoming from Professor Antonio Felice Uricchio, Rector of the University of Bari Aldo Moro, who expressed his great satisfaction for the hosting of this very important EU project in Bari. Then a welcoming presentation (**Fig. 1**) was given by the Project Coordinator (PC), Dr. C.C. Mylonas, presenting the Agenda for the meeting, and 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.

After the introductory, the summary presentations started with the one from Dr. Neil Duncan (P3. IRTA), the Group Work Package (GWP) leader for Reproduction & Genetics, presenting the overall objectives of the six (6) Work Packages (WP) in this Scientific Discipline, highlighting the important data obtained this first year of the project from each of the different WPs (**Fig. 2**). After the summary presentation (30 min) there

Table 1. Agenda of DAY 1 of the Annual Coordination Meeting, which took place on the 4-6 November 2014, at the University of Bari Aldo Moro, Bari, Italy.

DIVERSIFY
7FP-KBBE-2013-603121
Meeting Agenda | 2014 Annual Coordination Meeting | Bari 4-6 November 2014 | Palazzo Ateneo

DAY 1 Start	End	4-Noε	Tuesday Title	Salone degli Affreschi Presenter	Details
9,00	9,30		Welcoming	Constnantinos Mylonas (HCMR), Aldo Corriero (UNIBA)	Meeting logistics, agenda, welcoming from U Bari rector
9,30	10,00		GWP presentation 2 Repro & Genetics	Neil Duncan (IRTA)	
10,00	10,15		Greater amberjack spawning in Greece	Constantinos Mylonas (HCMR)	Reproduction & Genetics
10,15	10,30		Atlantic halibut spawning	Birgitta Norberg (IMR)	Reproduction & Genetics
10,30	11,00		GWP presentation 3 Nutrition	Marisol Izquierdo (FCPCT)	
11,00	11,30	coffee			
11,30	12,00		GWP presentation 4 Larval husbandry	Bill Koven (IOLR)	
12,00	12,15		The effect of dietary taurine on grey mullet larval performance at different stages of development	Bill Koven (IOLR)	Larval rearing
12,15	12,30		Effect of feeding regimes and probiotics in larval rearing of greater amberjack	Marisol Izquierdo (FCPCT)	Larval rearing
12,30	13,00		GWP presentation 5 Grow out husbandry	Nikos Papandroulakis (HCMR)	
13,00	13,30	Lunch	Catering at the site of the meeting		
13,30	14,00	Lunch			
14,00	14,15		Meagre growout problems	Marilo Lopez (Culmarex)	Grow out
14,15	14,30		Presentation of Andromeda and potential for collaborations	Mr Costas Tsokas	Andromeda S.A. (Greece, Spain)
14,30	15,00		GWP presentation 6 Fish Health	Chris Secombes (UNIABDN)	
15,00	15,15		Epitheliocystis and parasites in greater amberjack	Pantelis Katharios (HCMR)	Fish Health
15,15	15,30		Meagre Production and Selective Breeding	Mr Remi Ricoux	Le Poisson du Soleil (France)
15,30	15,45		Presentation of GMF and Involvement in DIVERSIFY	Mr Nikos Papaioannou	Galaxidi Marine Farms (Greece)
15,45	16,00		Amberjack Aquaculture Research in Malta - Advances and Bottlenecks	Dr Robert Vassallo-Agius	Malta Aquaculture Research Center (Malta)
16,00	16,30	coffee			
16,30	17,00		GWP presentation 7 Socio economics	Gemma Tacken (LEI/DLO)	
17,00	17,15		Consumer behaviour in fish consumption	Athanasios Krystallis (AU)	Socioeconomics
17,15	17,30		Buyer preference at retail and foodservice	Michel v.d Borgh (TU/e)	Socioeconomics
17,30	18,00		Wrap up	Constantinos Mylonas (HCMR)	Agenda for next day
20,00			Dinner at Local Restaurant		

** The presentation of Culmarex was given by Jordi Comas.

were two 15 min presentations on the results obtained from WP 3 Reproduction & Genetics – greater amberjack (Dr. C.C. Mylonas, P1. HCMR) and WP 4 Reproduction & Genetics – Atlantic halibut (Dr. B. Norberg, P7. IMR). Similarly, all the presentations from the GWP leaders explained the objectives of the WPs in each Scientific Discipline and provided an extensive summary of work implemented during the first

year of the project, and the significant results that were obtained. The specific presentations from various other WP Lead Beneficiaries or Task leaders, allowed a more detailed presentation of the work that was carried out, for example the "Consumer Behavior in Fish Consumption", presented by Dr. A. Krystallis (P11. AU) and the "Buyer Preference at Retail and Foodservice" presented by M. v.d. Borgh (P10. TU/e).

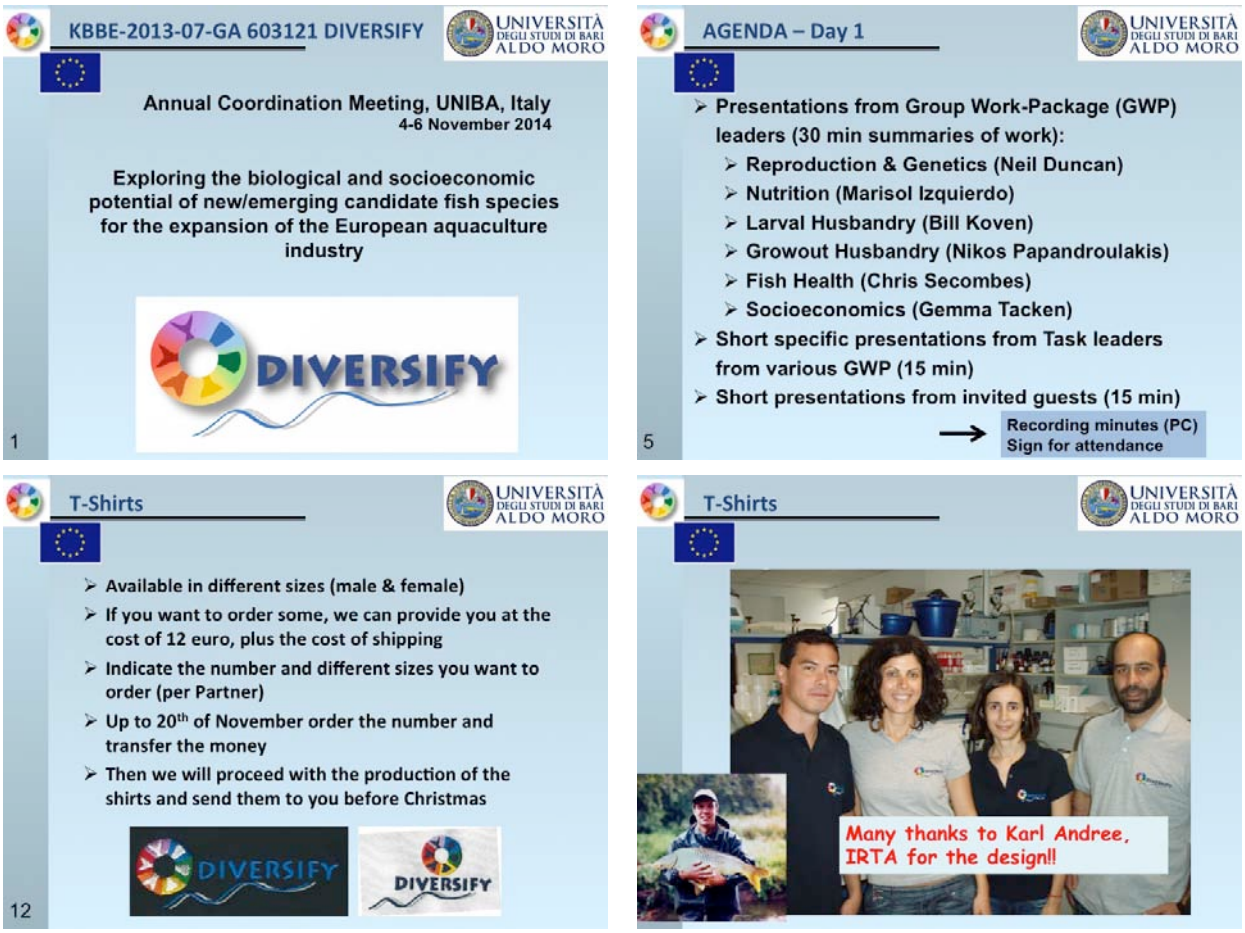


Figure 1. The opening slides for the Annual Coordination Meeting 2014, held at P13. UNIBA, Bari, Italy, explaining the Agenda of the meeting (upper right slide) and the slides showing the DIVERSIFY t-shirts that have been produced by the PC, and will be available to partners to purchase (lower slides).

The presentations from the invited guests, which followed the presentations from consortium GWP leaders and Partners, demonstrated the involvement of other companies in the implementation of DIVERSIFY, such as the provision of tissue samples from the commercial operations of Galaxidi Marine Farms (Greece), Les Poissons du Soleil (France) and Andromeda Group (Greece and Spain) for the study of genetic diversity of captive broodstocks of meagre, which is implemented in WP 2 Reproduction & Genetics – meagre (Dr. J. M. Afonso, P2. FCPCT). In addition, Galaxidi Marine Farms (Greece) provided their valuable broodstocks for the successful implementation of Task 3.2 Development of optimized spawning induction protocol for captive greater amberjack in the Mediterranean (WP3) and Task 5.5 Spawning induction of greater amberjack and egg collection in cages (WP3).

The eagerness of these three very important EU aquaculture companies to collaborate in DIVERSIFY as non-partners and at no cost to the project, underlines the relevance of the proposed tasks of DIVERSIFY to the EU Aquaculture industry, and the important contribution the project can make to the enhancement of the Aquaculture industry in the coming years. In addition, it ensures that expensive infrastructures and resources

from outside the consortium may become available to DIVERSIFY at no extra charge, and dissemination of the results obtained to the relevant stakeholders will be prompt and effective.

Figure 2. The opening slides from some of the presentations of DAY 1 of the ACM 2014, including one presentation from an invited guest from outside the consortium (Andromeda Group, Greece).

All presenting partners and invited guests agreed to have the presentations of the ACM 2014 available for the wider public, and they **have already been uploaded on the website** of the project, and are available to all interested stakeholders.

After the completion of the presentations in DAY 1, all participants had dinner together at a local restaurant (La Pignata), where they were treated to the fine cuisine of Italy, and especially of Bari.

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 second year of the project (**Table 2**).

The workshops of DAY 2 were running in parallel (**Fig. 3**) in an attempt to minimize the potential time conflict for most Beneficiaries. This was also achieved by the participation to the ACM of more than one scientist from some of the beneficiaries that are involved in many GWPs. In this ACM, three sessions were

running in parallel, with the Socioeconomics group having a session throughout the day (**Fig. 4**). This allowed more time to this and the Reproduction & Genetics groups to discuss the implementation of the DOW, and address issues that have arisen and which are reported in detail in the minutes of the ACM.

Table 2. Agenda of DAYs 2 and 3 of the Annual Coordination Meeting, which took place on the 4-6 November 2014, at the University of Bari Aldo Moro, Bari, Italy.

DAY 2 Start	End	5-Noε	Wednesday Salone degli Affreschi	ROOM 2	ROOM 3
9.00	9.30		GWP 4 Larval husbandry	GWP 2 Repro & Genetics	GWP 7 Socioeco
9.30	10.00		GWP 4 Larval husbandry	GWP 2 Repro & Genetics	GWP 7 Socioeco
10.00	10.30		GWP 4 Larval husbandry	GWP 2 Repro & Genetics	GWP 7 Socioeco
10.30	11.00		GWP 4 Larval husbandry	GWP 2 Repro & Genetics	GWP 7 Socioeco
11.00	11.30	coffee			
11.30	12.00		GWP 3 Nutrition	GWP 2 Repro & Genetics	GWP 7 Socioeco
12.00	12.30		GWP 3 Nutrition	GWP 2 Repro & Genetics	GWP 7 Socioeco
12.30	13.00		GWP 3 Nutrition	GWP 2 Repro & Genetics	GWP 7 Socioeco
13.00	13.30		GWP 3 Nutrition	GWP 2 Repro & Genetics	GWP 7 Socioeco
13.30	14.00	Lunch	Catering at the site of the meeting		
14.00	14.30	Lunch			
14.30	15.00	Lunch			
15.00	15.30		GWP 5 Grow out	GWP 6 Fish health	GWP 7 Socioeco
15.30	16.00		GWP 5 Grow out	GWP 6 Fish health	GWP 7 Socioeco
16.00	16.30		GWP 5 Grow out	GWP 6 Fish health	GWP 7 Socioeco
16.30	17.00		GWP 5 Grow out	GWP 6 Fish health	GWP 7 Socioeco
17.00	17.30	coffee			
17.30	18.00		Wrap up in Auditorium	Wrap up in Auditorium	
DAY 3 Start	**Auditorium End**	**6-Noε**	**Thursday Title**	**Presenter**	**Details**
9.00	9.30		WP31 Dissemination	Rocio Robles	
9.30	10.00			Constantinos Mylonas	
10.00	10.30		Reporting, Participants Portal, Deliverables	Constantinos Mylonas	
10.30	11.00				
11.00	11.30	coffee			
11.30	12.00		Reporting, Participants Portal, Deliverables	Constantinos Mylonas	
12.00	12.30				
12.30	13.00		Financial issues, web site, communications, amendments	Constantinos Mylonas	
13.00	13.30				
13.30	14.00	Lunch	Catering at the site of the meeting		
14.00	14.30	Lunch			
14.30	15.00	Lunch			
15.00	15.30		Steering Committee meeting	Coordinator, GWP leaders, SME representatives (ARGO, ASIALOR, CULMAREX), APROMAR	
15.30	16.00				
19.00	22.00		Visit Eataly, Bari	Eataly is a high-end Italian food market/mall chain comprising a variety of restaurants, food and beverage stations, bakery, and retail items.	A bus will transport all interested to the site and bring them back at a predetermined time

The Socioeconomics workshop began with a 2-h workshop (**Fig. 4**) coordinated by P10. TU/e in order to jointly evaluate the current business models used by the SMEs participating in the Diversify project and exploring changes that need to be implemented when adopting the new species under development. A business model concerns the relationship between (i) the resources SMEs and their partners in the supply chain use, (ii) the customer value they create, (iii) and the way they make money for each partner. During the workshop the Business Model Canvas approach was used to identify critical success factors to sell farmed fish in general and for the 6 fish species included in DIVERSIFY in particular. The current business models were compared, versus those required for successfully selling the new species. Insights derived from market descriptions and qualitative interviews from buyers were taken into account.

Following this workshop, the partners discussed the work implemented during the first year of the project, addressing issues relevant to the prompt preparation of the deliverables, summarizing the accomplished work

and planning the next steps in the DOW. Each GWP leader was responsible for producing the more detailed minutes of the session (see later), which were circulated among the participants for approval the week after the meeting, before being submitted to the PC for compilation of the ACM 2014 minutes, which were also sent to the Beneficiaries for approval by the end of November 2014.

Figure 3. Photos from the DAY 2 workshops of the GWPs Reproduction & Genetics (upper left), Larval Husbandry (upper right), Fish Health (bottom left) and Grow out Husbandry (bottom right).

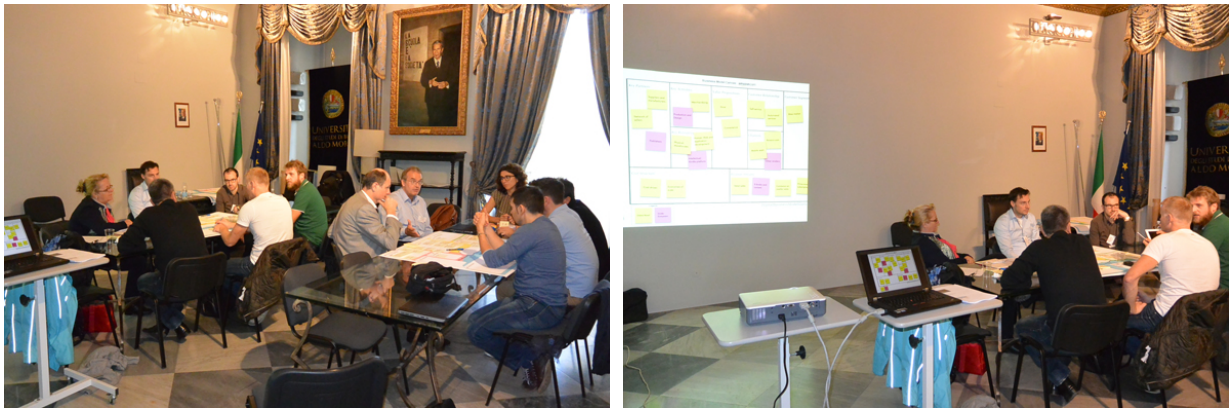


Figure 4. The workshop of the GWP Socioeconomics, during the Business Model Canvas approach.

Minutes of GWP Reproduction and Genetics workshop session

Annual Coordination Meeting, Day 2 (5/11/2014, 9:00-13:30)

By Dr. Neil Duncan, IRTA (GWP Leader)

Attendance list for the workshop:

DIVERSIFY
7FP-KBBE-2013-603121
GWP Reproduction and Genetics

	Lastname	Name	Partner
1	Afonso	Juan Manuel	2. FCPCT
2	Andree	Karl	3. IRTA
3	Cepollaro	Fulvio	24. ITTICAL
4	Corriero	Aldo	13. UNIBA
5	De Giorgi	Carla	13. UNIBA
6	Duncan	Neil	3. IRTA
7	Erstad	Børre	22. SWH
8	Fakriadis	Ioannis	P1. HCMR
9	Fauvel	Christian	14. IFREMER
10	Fontaine	Pascal	9. UL
11	Jerez	Salvador	8. IEO
12	Linares	Fátima	19. CMRM
13	Mylonas	Constantinos	P1. HCMR
14	Norberg	Birgitta	7. IMR
15	Passantino	Letizia	13. UNIBA
16	Peleteiro	Tito	8. IEO
17	Pousis	Chrysovalentinos	13. UNIBA
18	Raftopoulos	Tasos	23. ARGO
19	Rendon	Juan	28. CANEXMAR
20	Rodríguez	Covadonga	15. ULL
21	Rosenfeld	Hanna	4. IOLR
22	Santamaria	Nicoletta	13. UNIBA
23	Tsigenopoulos	Costas	P1. HCMR
24	Vilar	Antonio	32. MC2
25	Zupa	Rosa	13. UNIBA

WP2 Reproduction & Genetics - meagre (Lead Beneficiary P3. IRTA, Dr. Neil Duncan)

Update on results on genetic variation: see pdf of presentation from Juan Manuel Afonso, available from the author or the GWP leader. Deliverables will be on time, at the end of November 2014.

C.C. Mylonas (P1. HCMR) and N. Duncan (P3. IRTA) will each make a 4-pairs cross experiment as in IRTA 2014, *i.e.*, one experiment at HCMR and a second experiment in IRTA. **The experiment at HCMR will be done in addition to the work proposed in the DOW, at no extra cost for DIVERSIFY**, since the fish used in this experiment will be used anyway to produce eggs for the larval rearing and juvenile production needs of the project. Another experiment was done this year at HCMR, and will also contribute towards the same objective. Again, **this was done at no extra cost to the projec**t, since the eggs produced were used for the juvenile production needed for the experiments in the Fish health and Grow WPs. This work will result in a publication that is currently being prepared by P1. HCMR and will be submitted in 2015.

C. Tsigenopoulos (P1. HCMR) and N. Duncan (P3. IRTA) must define what is needed to relate SNP markers to growth. Discussion continued after GWP Reproduction & genetics meeting, and in GWP Growout husbandry meeting to produce separate minutes for this experiment.

ACTIONS

Write deliverable on genetic characterisation of broodstocks. URGENT Deliverable 2.2 due Mo12 (November 2014). Complete work on SNP library. Deliverable 2.1 Mo18.

Repeat paired spawning experiments in IRTA, and include another set of experiments to be carried out in HCMR. Deliverable 2.3 Mo21 .

Experiment on growth of juveniles to identify genetic markers for growth. **Consider working with Andromeda S.A.** (one of the invited guests, and an external collaborator). The company already has two populations of fast and slow growing individuals obtained from the same initial stock of eggs/larvae, and the genetic makeup of the broodstock is already available. **C. Tsigenopoulos (P1. HCMR) and N. Duncan (P.3 IRTA) should consider this**, for Deliverables 2.4 and 2.5 Mo30

Start *in-vitro* fertilisation experiments by P3. IRTA in 2015. Deliverable 2.3 Mo36. Complete sperm work by P14. IFREMER in 2015. Deliverable 2.6 Mo36

WP3 Reproduction & Genetics - greater amberjack (Lead Beneficiary P13. UNIBA, Dr. Aldo Corriero)

Overviewed objectives / progress in **Task 3.1 Description of the reproductive cycle**: see pdf of presentation from Dr. Aldo Corriero or from GWP leader.

Reviewed results for wild fish sampling end of May and end June. New sample dates planned for early-May and end of July 2015 to complete wild fish sampling.

The stock of wild fish that was purchased by ITTICAL at the beginning of 2014, and that was held in captivity died and does not exist. This is a problem, as sampling must start in spring 2015 after an extended period in captivity. It was proposed by P23. ARGO that it has fish that could be provided and they are also catching fish to replace these fish for the hormone induction work. Also a company in Greece (Hellenic Fish) can provide replacement with fish of about 5-6 kg, in exchange for collaboration with the project (assistance with spawning induction, eggs if available).

ITTICAL indicated that there is another possibility to involve a group in Corsica. Another possibility is to catch fish close to oil platforms in the Adriatic Sea (Ancona). The problem is to get these fish back alive. However, there is not time to keep the fish in captivity before sampling. These fish can be good for other studies, but not the Task 3.1 study.

ARGO fish represent the only way to complete this study on time. The budget will be adjusted to recognise that ARGO will do this work / provide the fish.

Plan to ensure biochemical sampling, tissues, eggs, sperm and pellet diets to ULL. Dr. A. Corriero (P13. UNIBA) and Dr. C.C. Mylonas (P1. HCMR) will do all the sampling and then partners arrange to receive samples. All samples must be analysed to have the corresponding deliverable ready for Nov 2015.

Dr. C. Rodrigues (P15. ULL) indicated that a proper sex ratio required in sampled fish for nutritional status analysis. This will be ensured in the sampling. Moreover, need for eggs from wild and captive greater amberjack for nutrient composition analysis. For wild fish, eggs could be obtained by stripping procedure onboard during the peak of the reproductive season; alternatively, samples of ovaries containing oocytes at final maturation stage might also be taken into consideration. Less difficult to get eggs form captive fish in Greek farm. No problem for getting sperm samples during the reproductive season in wild and captive male fish.

Spawning induction Tasks 3.2, 3.3, 3.4 and 3.5

Mediterranean results (HCMR and others) include good success in cages, but not much success in tanks. Tank spawning was not good possibly due to late transfer (HCMR) and young fish (ARGO, FORKYS), better results expected in 2015. These results are ahead of the DOW as no work was planned for 2014.

The spawning results in Gran Canaria (P2. FCPCT) were very good. Should work with different doses in following years.

At P8. IEO in Tenerife, Spain, work in 2014 was not planned and so the lack of production of fertilised eggs is not a problem for this workpackage. Need to plan the work for next year to make sure we get results. Some significant mortalities this year reduced the stock significantly, and they will not be able to implement the DOW with 3 doses of GnRHa. Possibly two doses, but perhaps is better to select one dose: best from Gran Canaria work. The broodstock now consists of 16 fish (mean weight 10-15 kg and sex ratio 1:1). Dr C.C. Mylonas will visit for the work next year. Biopsies needed? When? and how many? Salvador prefers just one biopsy to avoid stress, so one biopsy will be taken in May to see how the fish progress and then plan the spawning induction for June-July.

Egg collection from cages. Important advances this year. Important protocol as tank spawning in the Mediterranean has been problematic. Need to improve egg collection. Extend curtain to a greater depth and raise bottom of cage to ~6 m to reduce the area that fish are spawning, and thus ensure more eggs are restrained within the egg collector. Aeration does not help as also takes eggs down as well as up.

Deliverables looking good. D3.1 is almost ready. D3.2 is under way. D3.3 needs hard work to get samples and make report to compare results between wild caught and wild captive fish.

Sperm work by IFREMER to be completed in HCMR and ARGO next year (as opposed to ITTICAL). This will require first a visit from Dr C. Fauvel to the facilities of HCMR for the establishment of the CASA system. Then implement this to the fish sacrificed at ARGO at three different times (April-May, May-June, June-July). Some samples (videos of sperm movement) may be collected by HCMR staff and sent to IFREMER for analysis, but at least for one sampling Dr C. Fauvel should travel to ARGO. IEO also suggested to consider to extend sperm work to F1 stocks held in IEO.

ACTIONS

UNIBA/IOLR – write deliverable on PCR assays (i.e., LHβ, FSHβ, leptin, Vg and Vg receptor). Deliverable D3.1 Mo12, NOW URGENT. However, it seems that this deliverable is likely to be delayed, as samples from UNIBA were send to IOLR just during the ACM 2014 (to ensure their delivery).

HCMR / ARGO / ITTICAL – Make necessary changes (financial and management) to use ARGO captive wild breeders for sampling reproductive cycle. URGENT

UNIBA / IOLR – Establish and test LH / FSH ELISAs. Deliverable D3.2 Mo18

UNIBA et al. – Sample, describe and compare reproductive cycle, wild caught vs wild captive Deliverables D3.3 Mo24, D3.5 Mo46, D3.6 Mo46

IFREMER / HCMR – Sperm work. Deliverable D3.4 Mo32

FCPCT – continue spawning induction experiments in Atlantic. Deliverables 3.7 Mo48

IEO / HCMR – continue spawning induction experiments on F1s in Atlantic. HCMR to visit Tenerife during the spring / summer 2015. Deliverables 3.8 Mo54

HCMR – continue spawning induction experiments in Mediterranean. Deliverables 3.9, 3.10 Mo54

WP4 Reproduction & Genetics - pikeperch (Lead beneficiary, P1. HCMR, Dr. Costas Tsigenopoulos

Overviewed objectives / progress: see pdf of presentation from C. Tsigenopoulos or GWP leader.

Definition problems for domesticated and wild stocks: every stock delivered to the consortium by a company is considered as ‘domesticated’ and any populations sampled in nature as ‘wild’. Finishing samples now ready for deliverable at end of Mo12 (Nov 2014). Two populations with significant FIS (inbreeding coefficient) values: negative values indicated unrelated breeders, positive indicates presence of genetically related fish (coming from few families) and therefore danger of inbreeding. Genetic assignments seem to

work well: Hungarian samples from Aquapri SA and other Hungarian wild and domesticated samples cluster together.

Wild fish work is in progress and Deliverable will be ready by Mo18.

ACTIONS

Write Deliverable on genetic characterisation of broodstocks. URGENT Deliverable 4.1 NOW Mo12.

Complete work on wild population genetic characterisation. Deliverable 4.2 Mo16

WP5 Reproduction & Genetics – Atlantic halibut (Lead Beneficiary P7. IMR, Dr Birgitta Norberg)

Look more closely at F1s spawning performance, plenty of time for deliverables.

For the F1s, the same exp. as completed in 2014 (which was a preliminary experiment done one virgin females) will be repeated with more fish in SWH. Experiments should be done in Jan-March 2015. Communicate dates to HCMR. Decide GnRHa dose in the implants, release is slow so higher doses may be needed than in other marine fishes. Need to be decided soon to get the implants made and sent to Norway in time.

Discussion on injections vs implants. Injections may be better for females, if they can be timed well with ovulation rhythms and should be considered. Also implant males to have higher productions of good quality sperm was decided. In males different application methods may give short (injection) or long (implants) periods of increased sperm production. However, care must be taken, since injections can also end the period of sperm production after a short period of high sperm production. P1. HCMR suggests that GnRHa implants should be used for the males, regardless of the methods chosen for the females.

ACTIONS

Continue recording spawning performance of F1 females.

Decide on doses, make and deliver implants URGENT for January-February spawning

SWH – repeat F1-F2 implant experiment

WP6 Reproduction & Genetics - wreckfish (Lead Beneficiary P8. IEO, Dr. Tito Peleteiro)

Overview objectives / progress: see pdf of presentation from Dr. T. Peleteiro, or from the GWP Leader).

Results from 2014 for Task 6.2 Reproductive cycle

To describe the reproductive cycle it is expensive to buy large fish 10-20 kg and this is a problem to obtain mature fish. Perhaps this can be coordinated with market testing of product quality?

CMRM Stock: Reproductive cycle in captive fish blood samples need data on sex and maturation stages, but actually only obtained immature oocyte sample from one female all other fish did not appear to mature, this will be confirmed and all data sent to C.C. Mylonas (HCMR) which is the partner responsible for analysing the blood samples for sex steroids. C.C. Mylonas pointed out that it is not appropriate to sample immature fish, whose sex is not known for the purpose of describing the endocrine changes associated with the reproductive cycle in captivity.

Results from 2014 for Task 6.3 Induced spawning

The efforts with the HCMR stock resulted in spawning, but no fertilization success. Next year (2015) will focus on stripping and not wait for spawning, according to the plan detailed in the DOW. The female was induced when it contained oocytes at >1300 µm in diameter.

C.C. Mylonas described the method of using air pressure for strip spawning. This method should be considered to "strip" eggs (see AQUAGAMETE COST action work presented in Aquaculture Europe 2014, San Sebastian), check for wreckfish and other species.

In the IEO Stock, there was no maturation. Possibly, due to handling the year before. The fish have been left quite and will be assessed for gametogenesis and possible induction of spawning in 2015.

The MC2 Stock contained individuals that matured. Many natural spawns were obtained. Problems with aggression between males, best to use one male, or even number of pairs (equal numbers of males and females). Better results were obtained in 2013, with more spawns and better fertilisation. May be related to different environmental conditions in 2013, as spawning was delayed in other species in local fish farm.

One female died due to blockage in ovary by solid tissue. Echo-graph used to examine if other females also have solid tissue in the ovary, which was confirmed, and so this may be a problem in the future. *In vitro* fertilisation should be tried next year.

Results from 2014 for Task 6.4 Sperm quality.

Initial results were okay and will do more work in 2015 on sperm quality assessment and cryopreservation to complete deliverables D6.1 and D6.2 due before Mo24.

Plan for 2015 for wreckfish

Make *in vitro* fertilisation experiments in both HCMR and Galicia (IEO and CMRM). Partner CM2 will try both i*n vitro* and natural (tank) spawning. To better coordinate the activities among partners, it was agreed that all partners involved (C.C. Mylonas, C. Fauvel and N. Duncan) will have a meeting in late January or early February 2015 in Galicia, Spain with the partners there (IEO, CMRM and IEO) in order to see the facilities and the available broodstock.

ACTIONS

IFREMER / IEO – Continue sperm work. Deliverables D6.1, 6.2 Mo24

IEO, CMRM, MC2, HCMR– Continue sampling fish for reproductive cycle, but focus on reproductively mature fish. Also obtain ovarian biopsies and sperm samples for analysis at the times blood is collected, in order to correlate with the endocrine profile. Deliverables D6.1, 6.2 M24

All wreckfish participants – make a meeting and visit facilities Galicia, Spain in January / February 2015.

HCMR– Work on in-vitro spawning.

CM2 - Work on natural and in-vitro spawning.

IEO – Obtain maturation in captivity? Work on natural and in-vitro spawning.

CMRM – Obtain maturation in captivity? Work on natural and in-vitro spawning.

Spawning and reproductive cycle Deliverable D6.3-D6.7 Mo36 – Mo54

WP7 Reproduction & Genetics – grey mullet (Lead Beneficiary P4. IOLR, Dr. Hanna Rosenfeld)
Overview objectives / progress: see pdf of presentation from Hanna, available for her or the GWP leader. Sperm evaluation (Task 7.1) deliverable due now on month 12. Techniques have been tested and set up and a staff member of IOLR has been trained by P14. IFREMER, Dr Christian Fauvel on sperm evaluation methods using Computer Assisted Sperm Analysis (CASA), during a short visit to his facilities in Palavas Les Flots, France. However, the method has not yet been applied to grey mullet sperm, which will be done during the month of November 2014, so that the Deliverable can be prepared on time. Recombinant hormones (Luteinizing hormone, LH and Follicle stimulating hormone, FSH) have already been prepared. The next Deliverable is D7.2 due month 18.

IRTA experiment on induced spawning of wild-caught grey mullet (part of Task 7.3)

date	June treatment	June control	August	October
June	Capture	Capture		
	biochemical	biochemical		
	gonads	gonads		
July	Homone treatment	Saline		
August	Homone treatment	Saline	Capture	
			biochemical	
			gonads	
September				
October				Capture
	Homone treatment	Homone treatment	Homone treatment	Homone treatment
				biochemical
				gonads
>2kg size				
> 6 males and females				

Remember to include egg and sperm samples for biochemical analysis (ULL)

Experiment for roe (bottarga) Task 7.4

F1 compared with wild for roe, Rearing system concrete tanks. Size of fish, should be 3 years old, must start experiment as soon as possible. Numbers to maintain: commercial densities 1000s of fish, that are held in growout condition as specified in the growout work package. Sexual maturation to be determined under culture conditions. Appearance of gonads white through to yellow, yellow is needed for market.

ITTICAL must obtain the fingerlings now, and grow them for 3 years, in order to allow sampling on year 2 and year 3, to document the possibility of producing bottarga in captivity. This Deliverable D7.6 is due month 54, so we will have just enough time to prepare it. IRTA offered to provide a commercial contact of an Ebro Delta company that specializes in the collection and export of grey mullet juveniles to ITTICAL. ITTICAL will also investigate the potential of obtaining juveniles from local farmers.

ACTIONS

IOLR – to apply sperm evaluation techniques to grey mullet sperm immediately, in order to prepare and submit Deliverable D7.1 on time (Mo12).

IOLR - to continue tasks 7.1 and 7.2, which are progressing well. Deliverables D7.2 Mo18, D7.3 Mo24, D7.5 Mo48, D7.7 are due on Mo60.

DOR – To write protocol on shipping mullet eggs with data on testing/use. This is Deliverable D7.4, due on Mo24.

IRTA to supply contact of Ebro Delta company able to provide grey mullet juveniles to ITTICAL

ITTICAL – obtain juveniles **immediately** and start on-growing them for 3 years for bottarga production. Must start **immediately** to have three years grow-out before deliverable D7.6 Mo54.

IRTA – to start experiment of wild caught breeders. Deliverable D7.7 Mo60

Minutes of GWP Nutrition workshop

Annual Coordination Meeting, Day 2 (5/11/2014, 11:30-13:30)

By Dr. M. Izquierdo, P2. FCPCT (GWP Leader)

During this workshop for each species we reviewed and discussed the progress achieved in 2014, problems encountered and potential deviations from the DOW, update on the status of deliverables and milestones, interactions among partners, interactions with other WPs and action plan for 2015.

WP8 – Nutrition - meagre (WP Leader Dr. L. Robaina, P2. FCPCT)

Dr. M. Izquierdo presented and discussed with the rest of the partners the results that will be included in the First Annual Report. A study on dietary levels essential fatty acids and antioxidants in weaning diets for meagre was conducted by P2. FCPCT, that allowed the establishment of the optimum ranges of these nutrients.

No deliverables were planned in this WP until Mo24.

Regarding the *interactions among partners* the following points were discussed and agreed:

1. P2. FCPCT - P15. ULL - P21. DTU: Task 8.1 Selected weaning diets will be tested in May 2015 to complete the studies on welfare, behavior and digestive enzymes activities to be studied for. Scientists from P21. DTU and P15. ULL will participate in the final sampling to conduct behavior studies and fish sampling.
2. P2. FCPCT – P20. SARC: A basic formulation was discussed among these partners and the data, provided by P20. SARC, are included in the MS 12 produced.

Regarding the *interactions planned with other WPs* of the project, the following agreements were made: Information from the Reproduction GWP on egg quality and broodstock management will be required and together with interactions with the Larval rearing WP were discussed in the Larval rearing GWP workshop.

Finally the following **Action Plan for 2015** was agreed:

WHAT	WHO	HOW	DEADLINE
Task 8.1 Trial 2015a. Test three diets for P21. DTU, P15. ULL and P2. FCPCT selected from trial 2014.	P2. FCPCT, P15. ULL, P21. DTU	Experimental conditions as in 2014	Mo24
Task 8.1 Trial 2015b. Effect of vitamins A, K and D.	P2. FCPCT	Experimental conditions as in 2014	Mo24
Task 8.1. Design of the trial on multivariable nutrients (TBARs, AOE activity and gene expression)	P2. FCPCT & P.17 NIFES	Discussion based on previous results by the partners	Mo30
Task 8.2 Experimental design, diet formulation and production	P2. FCPCT & P20. SARC	Discussion based on previous results by the partners	Mo24

WP9 – Nutrition - greater amberjack (WP Leader, Dr. M. Izquierdo, P2. FCPCT)
Dr. J. Pérez (P15. ULL) presented the results obtained by P8. IEO and P15. ULL that will be included in the 1st Periodic Report. Due to the lack of spawns from F1 fish in 2014 at P8. IEO, a study was conducted only on rotifer enrichment to establish a good protocol for LC-PUFA enrichment accordingly to the lipid composition of wild greater amberjack viable eggs. Four lipid enrichment treatments were tested in triplicate: C: commercial enrichment product as control treatment, E1: 100% marine lecithin, E2: 30% marine lecithin + 50% DHA-rich TG oil + 20% cod liver oil, E3: 60% DHA-rich TG oil + 40% cod liver oil. The study, based on rotifer performance and their biochemical composition, allowed the development of a protocol to be tested in 2015 with the amberjack larvae.
No deliverables were planned in this WP until Mo24.
Regarding the *interactions among partners* the following points were discussed and agreed:

1. From P8. IEO to P15. ULL: **Subtask 9.1.2.** Exchange of samples: P8. IEO will provide samples of enrichment products, live preys and larvae to P15. ULL to be analyzed biochemically including lipid classes, fatty acid and carotenoid profiles.
2. From P8. IEO to P2. FCPCT: **Subtask 9.1.2.** Data Interchange: This subtask will contribute to Deliverable D9.1 Optimum levels and ratios of essential fatty acids in relation to Tau and combined PUFA-carotenoids in greater amberjack enrichment products led by FCPCT.

Regarding the *interactions planned with other WPs* of the project, the following agreements were made:

1. WP 15: Larval husbandry greater amberjack
   Task 15.4 Development of industrial protocol (led by P8. IEO).
   Sub-task 15.4.1 (P8. IEO) Development of an industrial protocol for larval rearing based on the results of the previous tasks
   The results obtained in Subtask 9.1.2 will contribute to determine the optimum levels and ratios of essential fatty acids and combined PUFA-carotenoids in greater amberjack enrichment products.
2. WP 3: Reproduction greater amberjack
   Task 3.4 Development of an optimized spawning induction protocols for F1 greater amberjack in the eastern Atlantic (led by P8. IEO).
   The results obtained in Subtask 9.3.2 will contribute to an optimized spawning protocol for greater amberjack.

Finally the following Action Plan for 2015 was agreed:

WHAT	WHO	HOW	DEADLINE
Subtask 9.1.2. Study the combined effect of PUFA-rich lipids and carotenoids	P8. IEO, P15. ULL	Preliminary rotifer trial to establish the best protocol for carotenoids enrichment	March 2015
	P8. IEO, P15. ULL	Trials with amberjack larvae fed live preys enriched with the best PUFA-rich lipids combined with two carotenoids levels.	December 2015

For the P2. FCPCT studies, Dr. M. Izquierdo discussed the results included in the 1st Periodic Report. To determine the optimum levels of essential fatty acids in enrichment products greater amberjack larvae were fed Artemia enriched with different levels of DHA (Feeding trial 1 finish and analysis being conducted). Larval performance in terms of survival, growth and welfare (survival to handling stress test) was studied. Proximate and fatty acid composition of enrichment products, live preys and larvae was analysed. A trial 2 regarding EPA requirements is progressing and analysis will be conducted in 2015.
A draft of M22, Definition of reproductive quality parameters to be studied in amberjack, has been prepared by P2. FCPCT and it was discussed to adapt it to determine more clearly the relation between egg quality,

including the larval rearing in 25-l tanks until 10 dah. A revised draft of the MS22 will be sent to Dr. N. Papandroulakis (P1. HCMR) to collect his inputs.
No deliverables were planned in this WP until M24.
Regarding the *interactions among partners* the following points were discussed and agreed:

1. P2. FCPCT - P4. IOLR: Task 9.1 Design of feeding trials for determination of optimum n-3 HUFA in relation to Tau levels.
2. P2. FCPCT – P20. SARC: Task 9.3 Discuss the definition of broodstock diets,

Regarding the *interactions planned with other WPs* of the project, the following agreements were made:

1. From WP9: Improvements in enrichment products will be used by WP3 Larval husbandry (DHA & EPA recommended levels).
2. From GWP Reproduction, information about the egg quality and broodstock management is required to be able to compare the different studies on larval nutrition in this GWP.

Finally the following Action Plan for 2015 was agreed:

WHAT	WHO	HOW	DEADLINE
Task 9.1 EPA requirements	P2. FCPCT	Enrichment of *Artemia*	Mo24
Task 9.1 N-3 HUFA in relation to Tau	P2. FCPCT & P4. IOLR	Enrichment of rotifers	Mo36

WP10 – Nutrition – pikeperch (WP Leader Dr. I. Lund, P21. DTU)
The 2014 results for pikeperch nutrition were presented by Dr. I. Lund (P21. DTU). A first experimental study is presently carried out according to scheduled plan for task 10.1. Trial is ongoing, but mortalities due to cannibalism are limiting the numbers of samples available. In the following days Dr. I. Lund will inform if it is possible to obtain enough samples for all the studies or if the trial will be repeated. Few samples will be sent to P2. FCPCT for skeleton staining and preparation of MS23 Definition of parameters for skeleton studies in pikeperch, as well as to design the primers for the gene expression studies.
No deliverables were planned in this WP until Mo36.
Regarding the *interactions among partners* the following points were discussed and agreed:

1. P21. DTU and P16. FUNDP (Task 10.1): Analyses of larval samples for enzymatic acitivity (P16. FUNDP), proteomics (P16. FUNDP),
2. P21. DTU and P2. FCPCT (Task 10.1): Staining and analyses of larval samples for malformation (P2. FCPCT), gene expression (P2. FCPCT).

Samples to be sent to P16. FUNDP and P2. FCPCT.
No *interactions are planned with other WPs* of the project.

Finally the following **Action Plan for 2015** was agreed:

WHAT	WHO	HOW	DEADLINE
Task 10.1 Influence of vitamin levels and levels and ratios of Ca and P in weaning dry feed	P2. FCPCT, P9. UL, P16. FUNDP, P21. DTU,	In vivo exp. at P21. DTU	M24
Task 10.2.1 Performance, survival, lipid composition and stress sensitivity of pikeperch larvae and juveniles reared at various salinities	P2. FCPCT, P15. ULL, P16. FUNDP, P21. DTU	In vivo exp. at P21. DTU	M18
Task 10.2.2 In vivo metabolism of unsaturated fatty acids and lipid classes in pike perch larvae reared at various salinities through	P15. ULL, P21. DTU	In vivo exp. at P21. DTU and analyses at P15. ULL	M18

incubation with 14C labelled fatty acid precursors (18:2n-6, 18:3n-3) and LC-PUFA (20:4n-6, 20:5n-3 and 22:6n-3) and PC –PE.	

WP 11 - Nutrition - Atlantic halibut (WP Leader Dr. K. Hamre, P17. NIFES)
Dr. K. Hamre (P17. NIFES) presented the 2014 results for Atlantic halibut nutrition. Discussion, design and planning of Task 11.1 and Task 11.2 has been conducted, through the *interactions between* P17. NIFES and P7. IMR. A trial for Task 11.2 has been started.
No deliverables or MS were planned in this WP.
No *interactions were planned with other WPs* of the project.
Finally the following Action Plan for 2015 was agreed:

WHAT	WHO	HOW	DEADLINE
Task 11.1 Trial on early weaning of Atlantic halibut an report	IMR, SWH, NIFES, SARC	In vivo exp. at IMR And SWH	M36
Task 11.2 Trial on development of a production strategy for on-grown Artemia, analysis and report	IMR, NIFES, SWH	In vivo exp. at IMR	M24
Task 11.3 Nutrient retention and digestive physiology of Atlantic halibut juveniles fed Artemia nauplii or on-grown Artemia (led by NIFES, Kristin Hamre).	NIFES, IMR, SWH, ULL	In vivo experiment at IMR, analyses at NIFES and ULL	M36

WP 12 - Nutrition - wreckfish (WP Leader Dr. F. Linares, P19. CMRM)
The workshop started by Dr. F. Linares (P19. CMRM), who showed and discussed the results, as they will be included in the 1st Periodic Report. A great advance was obtained this year in collecting information at a bibliographic and biochemical level that allowed the development of a specific formulation for wreckfish broodstock. No deliverables were planned in this WP until M54 and M57.
Regarding the *interactions among partners* the following points were discussed and agreed:

1. P19. CMRM – P8. IEO: a) Task 12.1. Some of the experiments with live prey and larvae will be performed at the P8. IEO facilities. b) Task 12.2. Two lots of P8. IEO wreckfish broodstock will be fed either with semi-moisture diet or the "new dry food",
2. P19. CMRM – P2. FCPCT: a) Task 12.1. Some enrichment products will be developed for live food for larval wreckfish, based on the results from biochemical studies and the first trial on 2015 (P2. FCPCT). Biochemical analysis of samples of live food as well as larvae will be done (P19. CMRM). b) Task 12.2. A specific dry food formula for wreckfish broodstock will be developed (P2. FCPCT). Effect of dietary nutrient levels on embryogenesis and biochemical composition of eggs will be examined (P19. CMRM),
3. P19. CMRM – P32. MC2: a) Task 12.1. P32. MC2 wreckfish broodstock will provide some eggs and larvae to be analyzed by P19. CMRM – P15. ULL. b) Task 12.2. P15. ULL will do some analysis to know the nutritional status of wild fish.

Regarding the *interactions planned with other WPs* of the project, the following agreements were made:

1. Between WP12, WP 6 and WP18: Task 12.1. Experiments of live prey enrichments for wreckfish larvae will be subject to the acquisition of good spawnings and sufficient number of larvae.
2. Between WP12 and WP6: Task 12.2. The best feeding regime will be combined with the best induction protocols (Task 6.3) to optimize the effectiveness of the spawning induction protocol.

Finally the following **Action Plan for 2015** was agreed:

WHAT	WHO	HOW	DEADLINE
Task 12.1. Live preys and enrichments for wreckfish larvae	P2. FCPCT P8. IEO P19. CMRM	To determine the quality of enrichment products and the effect of larval quality	M18
Sub task 12.1.1 Testing of commercial products and design of a new enrichment product specific for wreckfish	P2. FCPC P8. IEO P19. CMRM	Based on larval performance after feeding commercial products and the biochemical analysis of wreckfish a specific formulation for enrichment will be proposed	M24
Task 12.2 Influence of broodstock feeding regimes for fecundity and spawn quality The studies will focus particularly on protein/energy ratios and essential fatty acid levels.	P2. FCPCT P8. IEO P19. CMRM	Feeding regimes IGAFA: Commercial feed(Vitalis Repro and Vitalis Cal) IEO : Broodstock 1 Semi-moisture diet Broodstock 2 New specific formulation for wreckfish	M24

WP 13 - Nutrition - grey mullet (WP Leader Dr. W. (Bill) Koven, P4. IOLR)

The results on this WP were presented by Dr. W. (Bill) Koven (P4. IOLR). To take advantage of a great success in spawning from the grey mullet broodstock (WP7), a trial to determine the effect of rotifer and *Artemia* enrichment with Tau was conducted. Delivery of samples to P2. FCPCT for histological and gene expression studies was agreed.

No deliverables were planned in this WP for 2014. The MS27 Definition of methodology to study cost-benefit of grey mullet weaning diets is due for M12.

Finally the following Action Plan for 2015 was agreed:

WHAT	WHO	HOW	DEADLINE
Sub-task 13.1.1 Improvement of larval performance through adequate first feeding regimes.	P4. IOLR	In vivo exp. at P4. IOLR	M24

Regarding the P3. IRTA participation in GWP Nutrition, Dr. A. Estévez explained that P3. IRTA is involved in the grey mullet WP, waiting for the samples to be provided by P4. IOLR in due time.

Regarding P1. HCMR, Dr. N. Papandroulakis explained that the person responsible for the GWP Nutrition Dr. I. Kotzamanis (who could not attend this meeting) would start the feeding trial on greater amberjack next year, and will provide as soon as possible the information on the Basic formulation for amberjack grow-out studies for the MS 21, which is due on M12.

Minutes of GWP Larval Husbandry workshop

Annual Coordination Meeting, Day 2 (5/11/2014, 9:00-11:00)

By Dr. W. (Bill) Koven, P4. IOLR (GWP Leader)

There were representatives of all WPs (WP14-19) present in the larvae husbandry workshop session, which reviewed the progress in 2014 and planned studies for the next reporting period (M12-M30). The discussion focused on problems such as increasing the availability of eggs to ensure the completion of tasks, obstacles to completion of studies scheduled for the next 18 month reporting period, exchange of samples between participants in a WP and potential management solutions in larval rearing.

P3. IRTA, the main beneficiary carrying out the WP14 task 14.1 Determining the earliest and most cost effective weaning period were not successful in advancing the weaning time from the control protocol. Introducing the weaning diet earlier resulted in high levels of cannibalism and variable growth, consequently P3. IRTA would like to repeat the experiment. Larval management may be a problem and a number of approaches were discussed, which included increasing the photoperiod to 18:6 light:dark or 24:0 l:d to improve the chances of the fish eating the weaning diet. This is expected to lead to more synchronous growth and decreased cannibalism. Increased stocking density together with extended photoperiod was also discussed as a means to reduce cannibalism. On the other hand, extended feeding periods meant increased exposure to light, which might lead to retinal damage, which was found in Atlantic bluefin tuna larvae in the SELFDOTT EU program. Increasing the photoperiod during weaning was generally accepted as a means to improve weaning diet consumption.

In WP15, where P2. FCPCT is the Lead Beneficiary, the problem of not completing planned tasks due to the spawning failure of one of the available source of eggs (P8. IEO) was discussed. A similar problem in wreckfish (WP18) was also raised where the potential problems of egg quality as a result of transport was pointed out. It is also necessary to consider the necessary paperwork required in each country for all custom protocols in order to avoid delays in delivery. A practical protocol for shipping eggs from brood stocks of other participants would have resolved this issue as discussed in the "kick-off" meeting, so it was agreed to renew efforts to determine an egg transport protocol by simulating shipping conditions, using data loggers, finding reliable shipping agents to monitor all stages of transport and draw on the egg transport experience of other EU projects (SELFDOTT, TRANSDOTT) in packaging and egg density.

Tasks 15.2 Comparison of semi-intensive and intensive rearing, and 15.3 Effect of environmental parameters during rearing were discussed. The merits of using developmental stage and not larval age for sampling times were highlighted, particularly when comparing intensive culture with the mesocosm approach and/or different culture batches. The mesocosm is not necessarily an economic approach that should be adopted by the industry, but rather a protocol that provides feeding conditions that optimize growth and development that can be used as bench marks when rearing larvae intensively. On the other hand, the Lead Beneficiary of

WP16 countered that in task 16.1 Optimal combinations of factors to improve larval rearing, their experience suggests it is more beneficial to sample according to age as they are testing environmental effects, which will directly impact on development.

The variability in larval experiments, which can begin from stocking and reduce the possibility of achieving a statistical treatment effect was discussed and is a common concern in all studies in WPs14-19. The point was raised that stocking freshly hatched larvae may be preferable to stocking eggs, which might hatch differentially in the experimental tanks. The use of microtiter plates to estimate hatching rates can also be problematic as eggs placed in the plates may not be representative of both floating and sinking eggs which would be stocked in the tanks. On the other hand, the methodology to estimate the density of newly hatched larvae in a tank and their distribution to tanks in the experimental system can cause significant mortality in species where the larvae are particularly small. This approach may be more suitable for stocking larger larvae as are found in fresh water species.

The final adopted sampling protocol for enzyme samples in Task 15.2 is shown below.

Time			
Day0	+	250 mg	triplicate for intensive
Day3	+		duplicate for Mesocosm
Day 6	Will not occur in case of low larvae availability		
Day 10	+		
Day16	+		
Day 22	+		
Day 28	+		
Day34	+		

Another source of early variability occurs during first feeding. The question of feeding the larvae following the completion of eye pigmentation, mouth and anus opening versus adding the live food and algae shortly before the end of endogenous feeding was discussed. Another source of early variability in larval performance was the variable hatching time in stocked eggs that could lead to some individuals feeding earlier, thus resulting in a growth advantage for these fish and later cannibalism.

The results of WP17 Larval husbandry - Atlantic halibut that suggested higher mortality and head deformities in the RAS (recirculation) system versus the FT (flow through) were discussed. This finding was somewhat surprising since the RAS approach generally improves water stability and larval performance. The possibility of mechanical problems (air in water pump resulting in super-saturation) causing the potentially stress-related problems and that only one replicate was run were raised.

All WP groups reported that they expect all planned studies to be carried out within the next 18 month reporting period. The report of deliverable D16.1, which was meant to be in month 12, will be delayed a few months as this experiment did not succeed due to the massive mortality of larvae.

Minutes of GWP Grow out husbandry workshop

Annual Coordination Meeting, Day 2 (5/11/2014, 15:00-17:00)

By Dr. N. Papandroulakis, P1. HCMR (GWP Leader)

Participants

Nikos Papandroulakis, P1. HCMR (npap@hcmr.gr), Carmen María Hernández Cruz, P2. FCPCT (chernandez@dbio.ulpgc.es), Neil Duncan, P3. IRTA (neil.duncan@irta.cat), Alicia Estevez, P3. IRTA (alicia.estevez@irta.cat), Bill Koven, P4. IOLR (bmkoven@gmail.com), Salvador Jerez, P8. IEO (salvador.jerez@ca.ieo.es), Pascal Fontaine, P9. UL (p.fontaine@univ-lorraine.fr), Jose Perez, P15. ULL (janperez@ull.es), Robert Mandiki, P16. FUNDP (robert.mandiki@unamur.be), Patrick Kestemont, P16. FUNDP (patrick.kestemont@fundp.ac.be), Ivar Lund, P21. DTU (il@aqua.dtu.dk), Tassos Raftopoulos, P23. ARGO (argofishsa@yahoo.gr), Deves Kevin, P29. ASIALOR (asialor.kevindebes@yahoo.fr), Marilo Lopez, P30. CULMAREX (Marilo.Lopez@culmarex.com), Jordi Comas, P30. CULMAREX (jordi.comas.bersolaz@culmarex.com), Nikos Papaioannou, P31. IRIDA (papaioannou@irida-sa.gr).

Not present: P18. CTAQUA, P25. DOR, P26. GEI.

The discussion was organized according to the GWP structure.

WP20 – Grow out husbandry – meagre (WP Leaders Drs. N. Duncan & I. Gairin, P3. IRTA)

T20.1 P3. IRTA presented the work done in summer 2014

The results are not satisfactory and a new trial will be organized for 2015.

The general outline will be:

Produce four families from paired spawning. For larval rearing and juvenile production mix eggs from all four families in equal proportions. Make four replica tanks for larval rearing, all stocked with same larvae / eggs. Send 100,000 eggs to P1. HCMR for parallel larval rearing. P1. HCMR and P3. IRTA (Dr. N. Papandroulakis and Dr. A. Estevez) to work together to ensure minimal size variation and cannibalism problems.

- Grading should be considered before weaning and before cannibalism problems (first evaluation at 12 dph).
- Start grading trial with weaned juveniles. Grades every 2-4 weeks. Samples from largest grade and smallest grade fish (200 fin-clips from each grade, smallest and largest) to Costas Tsigenopoulos (WP2 Reproduction and Genetics – meagre) to look for growth related genomic markers. Trial to end when fish are juvenile size 10-20 g.
- Make growth trial with smallest fish to determine growth potential and the economic costs of these grades of fish.

Further considerations for trial

- Should we have a control group with no or minimal grading? Possibly only big individuals will remain.

- Look at behaviour? How? This is an extra trial by itself unless it is just observations.
- Look at aggression, fin condition / nipping? Difficult at early stages.
- Assess cannibalism?
- Look at sex of different grades?
- Distribution of families in grades?

T20.2 P1. HCMR presented the work implemented and planned

T20.2.1 trial started in May 2014 in the cage farm of P1. HCMR. No deviations from the DOW.

T20.2.2 to be implemented at the cage farm of P23. ARGO. Expected to start November 2014. No deviations from DOW.

T 20.3 P1. P1. HCMR presented the work planned

T20.3.1 to start in November 2014 at HCMR AquaLabs. No deviation from DOW.

The task will include testing different stimuli for feeding. There will be light and mechanical stimuli. Light presence before/during feeding will be tested following a preliminary evaluation in terms of appropriate intensity. Mechanical stimuli to be tested include aeration and / or presence of water currents close to feed releasing area.

T20.3.2 This task has not started yet. It is planned for the period after T20.3.1

T20.3.3 This task is not planned yet. It will be implemented following T20.2

T20.3.4 to be implemented at CULMAREX.

Comparison of automatic and industrial demand type feeding in cages. Trials in an SME farm with standard commercial cages (50-m circumference / 16-m diameter cages, 10-m deep, 40.000 individuals per cage) for **2 rearing periods (each with 2 cages)** for a period of 12 month each will be performed. The demand type feeder includes a controller that when not eaten feed is detected the feeding stops. Final stocking density during the trials will be 15 kg m-3. Growth performance will be evaluated every second month with emphasis on size dispersion (P3. IRTA). The feeding behaviour will be monitored with video recordings. At the end of each trial fast and slow growing fish will be genetically characterised (P1. HCMR, Task 2.4 from WP2 Reproduction and genetics - meagre). Methods to estimate feed intake will be tested and to finally provide an estimate of feed intake of fish in the different groups during the trials. The feed intake estimation methods must be non-invasive and non-lethal and will be focused on video recordings of behaviour, morphological parameters, presence of feed in the intestinal track and blood physiology parameters.

Starting phase at cages to be properly defined in order to avoid size dispersions (depth of cage, feeding schedule, quality of juveniles). Make agreement with juvenile supplier to obtain juveniles from same group with little size variation. Define sampling procedures. **To start at autumn 2015.**

WP21 – Grow out husbandry - greater amberjack (WP Leader Dr. N. Papandroulakis, P1. HCMR))

In general the work planned is as in DOW. A general concern from the partners exists in terms of fry availability.

T 21.1

T21.1.1 The trial will be performed as in DOW depending on fry availability. FORKYS and HCMR will decide on type of cages (diameter) to be used. Planned to start in 2015. Plan B: in case of low fry availability use cages of smaller volume.

T21.1.2 P28. CANEXMAR has some administrative issues for the installation of the submerged cage that are resolved in collaboration with P2. FCPCT. The cage is expected to be on site in early 2015. The trial will be performed as in DOW depending on fry availability.

T 21.2

21.2.1 Implementation in 2015 as in DOW

21.2.2 P8. IEO had difficulties with availability of juveniles and has **proceeded with purchase of juveniles** from a commercial company. The juveniles are currently (week 46) in the facility of P8. IEO at a size of 30 g. The trial is planned to start in early 2015 as described in DOW

21.3.1 The task is to be implemented in part by P1. HCMR and in part by P2. FCPCT. The P2. FCPCT part (individuals of 5 and 500 g at the beginning) has been already planned, the individuals are available and the trial will be implemented with the bigger size fish according to DOW at the beginning of 2015.

The implementation by P1. HCMR of the task with 200 g individuals will be decided depending on juvenile availability in Summer 2015 (it is important to start the trials in cages that require large amount of juveniles, as there will be no issue with the deliverables).

21.3.2 P.8 IEO will perform the trial as in DOW during 2015

WP22 – Grow out husbandry – pikeperch (WP Leader Dr. P. Kestemont, P16. FUNDP).

P16. FUNDP presented the work implemented (preliminary trials) and planned.

T22.1 Before the actual start of the multifactorial trial described in the DOW, preliminary experiments have been implemented targeted on the standardization of some protocols using pikeperch. Some of the analyses are ongoing while two more pre-trials are planned until the end of 2014. These are related to the resilience response of pikeperch to stress and the definition of lethal dose of *Aeromonas salmonicida* for the challenge test.

The MS 48 that was for month 18 will be delayed for month 22. Indeed, the multifactorial study was planned to start between month 8 and 12, but it appeared necessary to adapt the rearing conditions of the UL facilities to the protocol requirements of the multifactorial design for a better implementation concerning the identification of the major stress factors for pikeperch juveniles. This adaptation took more time than expected. Due to limited information on stress responsiveness for pikeperch, it was also necessary to standardize some methodological aspects, especially concerning the physiological and immune analyses as well as the bacterial LC50 doses for the evaluation of the disease resistance of stressed fish. As a consequence, the multifactorial trial is postponed and is planned to start by early June 2015, but should be completed by November 2015. Therefore, Task 22.1 will be completed in time through preliminary methodological refinement, without any major delay on the Deliverable (except some data on immune responses to bacterial challenge tests) since the Deliverable is expected on Mo24.

T22.2 The task will start in the second part of 2015 as in DOW.

WP 23– Grow out husbandry – grey mullet (WP Leader Dr. W. Koven, P4. IOLR)

P4. IOLR presented the work planned

T23.1 The implementation is based on wild juvenile availability that are collected from September to December. P3. IRTA has already started the collection process. A detailed experimental protocol is available and the trial is expected to start in January 2015

The Deliverable 23.1 is expected to be ready in time (month 18 i.e. May 2015)

T 23.2, 3, 4 There was a discussion on the implementation. According to the decisions taken during the Kick off meeting (Jan 2014) a formula for the "improved diet" should have been available by IOLR in order to proceed with the trial in the three facilities (Greece, Spain and Israel) as described in the DOW.

For this, P4. IOLR performed a series of tests, which were not implemented as expected and some of them should be repeated. As a result the final formula for the diet is not available now.

Although P4. IOLR could provide now a formula (quite close to what is expected to be the final) it was decided that an extra trial will be implemented as soon as possible at P4. IOLR in order to have the required information on time. Then P4. IOLR will provide the formula for the diet as soon as possible to P.31 IRIDA. The performers of the trial (P26. GEI, P25. DOR and P18. CTAQUA) will contact P31. IRIDA for the amount and size of the diet that they need. The trials will be performed according to the DOW. P4. IOLR will have a close coordination during the implementation.

It should be clarified when the trial at P25. DOR will start.

Minutes of GWP Fish Health workshop

Annual Coordination Meeting, Day 2 (5/11/2014, 15:00-17:00)

By Dr. C. Secombes, P6. UNIABDN (GWP Leader)

Present: Chris Secombes (CJS) (P5. UNIABDN), Douglas Milne (P5. UNIABDN), Karl Andre (P3. IRTA), Pantelis Katharios (PK)(P1. HCMR), Covadonga (Cova) Rodriguez (P15. ULL), Sonal Patel (SP)(P7. IMR), Virginia Martin (P8. IEO), Juan Afonso (P2. FCPCT), Ramon Fontanillas (P20. SARC).

Absent: Daniel Montero (DMontero)(P2. FCPCT).

CJS gave an overview of the deliverables and milestones for the first 24 months of the project, so that everyone was reminded of the dates by which tasks should be completed.

It was noted that initially there was only one deliverable within the first 12 months, in WP24 (D24.1), but that this had been requested to be moved to month 20 at the Kick-off mtg. Similarly the only milestone to be achieved by month 12 was in WP24 (MS52), which was the "Design of primers for amplification of meagre target gene DNA sequences", which had been completed.

CJS also reminded everyone that the P5. UNIABDN contract was for 36 months, and so PhD student Douglas Milne would be involved from beginning of Sept 2014 to end August 2017.

Each WP and associated tasks were then discussed.

WP24 – Fish health - meagre

Task 24.1. This task includes a number of diet trials to be performed at P1. HCMR and P2. FCPCT, to try to mitigate against the impact of granulomatosis. At this early stage it was agreed there was a need for standardizing the scoring of the pathology, and that PK and DMontero should agree a common scoring system, and numbers of fish needed, as soon as possible and BEFORE further trials.

An initial vitamin D trial had been performed by P1. HCMR but no obvious effect was seen. This may be repeated with diets from SARC, with a focus on impact on immune genes.

The next diet trials (Ca/P and high plant protein) at P1. HCMR are anticipated for June 2015, (both will be done simultaneously). SARC need to be kept informed of the anticipated size of fish and start date (*i.e.* SARC needs a 2-3 month notice period).

SARC confirmed that diets were prepared and en route for the FCPCT trial on vitamin supplementation: 3-4 mm pellet size, so expect fish to be ~150 g. It was queried whether these fish will already have granulomas.

It may be best to start the trials BEFORE granulomas are apparent (*i.e.*, ~2 g fish, 60-70 days old), to try to prevent granuloma development rather than their progression.

Task 24.2. Chronic Ulcerative Dermatopathy (CUD) trial at P1. HCMR is planned for June '16 (*i.e.* within yr 3), so no current issue re supply of fish, etc.

Task 24.4. It was noted that *Nocardia* had been isolated by FCPCT in routine screening of meagre, and this is potentially very helpful for this task. It was queried whether this isolate can be sent to P1. HCMR to make the autologous vaccine and to check primer specificity (see below).

ACTION: CJS/DMontero

IRTA will plan to PCR screen fish for *Nocardia* to ensure they are free of this disease in their facility prior to any vaccine studies. Can do on small fish (~1 g?) of the same batch prior to starting the experiment.

Currently have the primers for the pathogen ready to go from the Ahmed Elkesh paper, but need a positive control to verify they work okay. P1. HCMR will get another batch of the type strain sent from Biobank as a plan B, since first batch appeared contaminated. Could also check if National Collection of Industrial, Food and Marine Bacteria (NCIMB) have the *Nocardia* type strain. **ACTION: CJS**

Task 24.5. Primers have been designed for PCR of immune genes in meagre by IRTA and UNIABDN. First PCRs have been completed for IgM and IgT by UNIABDN with promising results, using samples received from IRTA.

Immune gene ontogeny study is on-going at IRTA.

Task 24.7. It was noted that routine microbiological sampling of meagre had been performed by FCPCT, with *Nocardia* already isolated and other bacterial strains being typed and virus analysis on-going.

It was noted that a first challenge trial had been performed by FCPCT, using *Photobacterium damselae* subsp. *piscicida*. Again it was queried as to why a sublethal challenge dose was used, and more generally how to establish whether a particular bacterial strain is pathogenic. To discussed further with DMontero.

ACTION CJS/DM

WP25 – Fish health – greater amberjack

Task 25.1. In addition to *Chlamydia* it was clear that several other bacterial species may be involved in epitheliocystis. P1. HCMR had identified several new species for which new primers would be needed for screens. Currently plan to screen for 3 bacterial species (including *Chlamydia*).

Task 25.3. Primers have been designed for PCR of immune genes for amberjack. Anticipate first PCRs will be completed before end of November. Samples had been received from FCPCT to help with the gene cloning.

Task 25.4. IEO making good progress with anti-oncomiracidia treatments. A collector device has been designed and tested as a method to detect and quantify the level of infestation of monogenean parasites in the fish rearing tank without the need to manipulate the fish. Plan to test the impact of two different densities (high, low) on presence and density of parasites in the coming year.

Task 25.5. It was noted that different bacterial strains had been cultured from skin ulcers of amberjack by FCPCT (DMontero), with *Staphylococcus epidermidis* and *Clado Harveyi* identified to date. How to prioritise these bacteria for determination of pathogenicity testing and for treatments was queried and will be discussed further with DMontero. P1. HCMR offered help for pathogenicity testing in terms of providing virulent strains if needed.

It was noted that a first challenge trial had been performed by FCPCT, using *Photobacterium damselae* subsp. *piscicida*. However, it was queried as to why a sublethal challenge dose was used, and more generally how to establish whether a particular bacterial strain was pathogenic at all. Again this will be discussed further with DMontero. With respect to VNN it was queried whether a challenge model would be established for this pathogen, and if so which strain would be used.

WP26 – Fish health – Atlantic halibut

Task 26.1. Whilst good progress was being made with production of the recombinant VNN capsid protein in the different expression systems, up-scaling of the systems was now required prior to in vivo experiments. **ACTION: SP**

SP would soon plan the experimental design so as to guide the quantities of the recombinant protein needed. Currently all three proteins (*i.e.,* produced in the three expression systems) are planned to be used for vaccination, but if difficulties arise from the amounts produced, this could be reduced to two.

Task 26.2. In addition to studying protection, 3 immune genes will be analysed after vaccination. CJS will help look for further relevant immune genes in the Japanese flounder databases (eg IL-2/IL-4, IFN type I). **ACTION: CJS**

Good timing to check with TargetFish programme as to expression system being used for seabass vaccination against VNN. **ACTION: SP**

Discussion was done regarding the comment that meagre can be carriers for VNN (that came up in day 1) and CJS agreed to inform DMontero and ask that he confirms if VNN is found in the general screens for bacterial/viral pathogens. **ACTION: CJS/DM**

Minutes of GWP Socioeconomics workshop

Annual Coordination Meeting, Day 2 (5/11/2014, 11:30-17:00)

By Dr. G. Tacken, P5. DLO (GWP Leader)

Present:
K. Grigorakis (P1. HCMR), L. Guerrero (P3. IRTA), G. Tacken (P5. DLO), R. Beukers (P5. DLO), M. Reinders (P5. DLO), M. vd Borgh (P10. TU/e), E. Nijssen (P10. TU/e), A. Krystallis (P11. AU), M. Keller (P34. BVFi), K. Larentzakis (P38. HRH) H. Saltvarea (P38. HRH).

In this meeting 2 tasks were discussed that needed extra attention:

- Task 27.3.1 Success - failure study is a conclusion of the previous tasks in WP 27, of which some are not completely ready. This WP has to be finished before 1 December 2014.
- Task 28.1.1 Focus groups have to be delivered at the end of January, and were dependent of the analysis of 29.1.1. The analysis of 29.1.1 is ready now, but is 2,5 months including Christmas holidays enough to finish these deliverables?

Sub-task 27.3.1: Success-failure study
Goal (as stated in DOW): A success-failure study of comparative cases will be carried out in order to identify critical success factors for market acceptance, given the legal, organizational, competitive and trent context as analysed in Tasks 27.1 and 27.2. (P5. DLO, P11. AU, P12. APROMAR). This Sub-task will result in D27.6 List of critical success factors for market acceptance.
Deliverable: List of critical success factors for market acceptance (M12)

Potential success stories:
Perspective of species

- Salmon: market shares have gone up in a lot of countries
- Trout (similar to salmon)
- Pangasius
- Tilapia: in some countries it is increasing case for the food service sector, interesting for aquaponic-system (urban farming)
- Shrimp

Perspective of labels:

- sustainability labels from a B2B perspective: retailers demand these labels because of NGO pressure.

Perspectives of products made of sea products:

- sushi are increasingly popular in Europe
- products like seagrass are growing

Potential failure stories:

Perspective of species:
- sales of processed sea bream and sea bass in Greece (in 2000) failed;
- market introduction of cobia

Perspective of labels/brands:
- Sustainability labels (e.g., ASC) are not offering a market advantage (most consumers are not aware and/or have little knowledge of these labels).

Actions:
The Mintel GNPD-database could be a good base for selecting species or products. It contains new product launches in European countries and this database can differentiate between National brands and private labels. A. Krystallis (P11. AU) has access to this database and can send us some figures on fish introductions plus overview of relevant variables in the database.

- A. Krystallis sends potential products in the week of 10th of November

Don't look at the EU as a homogeneous market, but differentiate between countries. Also look at distribution channels: Turkey is much cheaper in delivering trout to Germany than France, although it has a higher carbon footprint. Subsidies seem to play a role. The international benchmark-study of P5. DLO (Van Galen et al.) can probably help.

- G. Tacken will look at the possibility to use the P5. DLO study about Innovativeness in the food business and the database used for it.

Sub-task 28.1.1: Focus groups
Goal (as stated in DoW):
Qualitative research (*i.e.*, focus groups) with consumers and experts in selected countries (UK, D, ES, F, I) to generate input, *i.e.*, ideas for new product development (IRTA, DLO, HRH). The choice for the countries is determined by the following characteristics: largest EU markets for cultured fish (ES, F, I), important growing EU markets for cultured fish (UK, D). This will result in Deliverable D28.1 Report with results of focus groups with consumers and experts regarding ideas for new products. Careful attention should be paid that outcomes of this stage can indeed guide the next step, *i.e.*, tasks 29.3, and 29.4. So, clearly stimulate experts and customers to think out of the box mentioning, e.g. based on trends, convenience and discussing options not available yet.

Deliverable: Report with results of focus groups with consumers and experts regarding ideas for new products (Mo14).

The GWP-leader hasn't seen any preparations for this task, while the promised date for the deliverable is the end of January (Mo14). At the kickoff meeting in January 2014 in Crete we have already discussed the deadline of this deliverable and by then the conclusion was that Mo14 would be very difficult to reach, but that by moving forward deliverable 29.1 the deadline could be reached possibly.

Focus groups can be conducted in 3 days (2 focus groups in each country), translation of the transcripts takes approximately 2 weeks (1 week for the decoding of the audio in the local language and 1 week for the translation in English). However, around the Christmas holidays it is not the ideal time, thus no focus groups will be conducted. So, when the deliverable would be sent to the EU at end of January, according the planning, the time schedule would be:
- Focus groups around 15 December;
- Discussion guide should be ready at December 5;
- Recruiting questionnaire should be ready at November 25.

This is not a smart planning, since the segmentation data is just ready and the Christmas Holidays have to be taken into account. Next to that, doing the focus groups around Christmas gives a bias since people are looking for more luxurious products.

Proposal: postpone the delivery of the Deliverable 28.1 with 2 months (Mo16, end of March 2015, instead of Mo14) and deliver it together with D28.2. Then the focus group discussions can be conducted around January 15 (and the discussion guide should be ready at January 5). February can then be used to analyze the data.

Explanation of the reason for the delay:
1. A complicated multi-country analysis was required to decide on criteria for focus group participants' recruitment. This analysis got completed before the ACM 2014 meeting.
2. Time consuming task to develop the discussion guide in 5 languages
3. Data collection initially promised coincided with Christmas, which prohibits any field work. As a rule of thumb, irregularities in consumer behavior because of the special conditions that prevail during this period every year keep us from data collection between early December and early January.

No impact is anticipated, however, on any of subsequent deliverables due to the fact that
(1) the requested delay is small,
(2) the proposed delay is in congruence with the following deliverable, while both are needed for the third deliverable of WP 28, and
(3) all preliminary actions (i.e. finalization of the screening / recruitment criteria, development of draft and final discussion guides, contact with local field collaborators etc.) will unfold in parallel during the Christmas period, so to accelerate the process immediately after that.

- G. Tacken will discuss this with the project coordinator.
- The project coordinator will do a formal request for delay

A. Krystallis is responsible for the discussion guide. A draft discussion guide is ready now. Furthermore, a post-doc is hired by A. Krystallis to work on the focus groups.

Do we need focus groups with consumers and experts? Focus groups are not going to work if competitors are sitting around the same table, so interviews will work better. The DOW says qualitative research *e.g.*, focus groups, so this is not a deviation from the DOW.

Focus groups: 6-8 consumers for each group. Ideally, we want to have separate focus groups for each of the consumer clusters (innovators, traditionals and indifferent). On the other hand, variability in focus groups can produce fruitful ideas based on interactions. In conclusion, it was decided that we should focus on "innovators" and "traditionals" and leave the "indifferent" ones out.

The expected value of the focus groups (ideas for new product development) does not justify a complex design of focus groups, but 2 focus groups in each country (with both "innovators" and "traditionals") is minimum to cover potential distortions in a group discussion.

Recruitment criteria:
- Behaviour in the category
- Specific behaviour with respect to each species
- Scores on innovativeness, involvement and knowledge

Interaction of 27.2.3 and 28.1.1: Can we use the interviews with the experts to validate the results of the consumer focus groups?
- We can then focus on the value (benefit) and costs perceptions of consumers in the consumer focus groups and experts can then, based on the results of the focus groups,

come with concrete ideas for new product development. This can be decided after results of the consumer groups are received.

Expert interviews: 3 expert interviews in 5 countries (Germany, UK, Italy, France and Spain).

- Retailers
- Chefs or foodservice providers

➢ Task division expert interviews: DLO can do the interviews in Germany, HRH in UK, Italy and France and IRTA in Spain

Evaluation 2014 and outlook for 2015, 5 November 15.00 -17.00 hrs

Present:

K. Grigorakis (P1. HCMR), L. Guerrero (P3. IRTA), G. Tacken (P5. DLO), R. Beukers (P5. DLO), M. Reinders (P5. DLO), M. vd Borgh (P10. TU/e), E. Nijssen (P10. TU/e), A. Krystallis (P11. AU), C. Rodriguez (P15. ULL), R. Robles (P18. CTAQUA), M. Keller (P34. BVFi), K. Larentzakis (P38. HRH) H. Saltvarea (P38. HRH).

Evaluation 2014

Deliverables:

D27.1 Report on external environmental factors that affect or will affect the production chains of meagre, greater amberjack, pikeperch, Atlantic halibut, wreckfish and grey mullet (Mo3)

➢ Delivered 2 weeks over schedule.

D27.2 Report on current certification schemes and standards and their business dynamics in the fish supply chain (Mo3)

➢ delivered in May 2014 (more than 2 months behind schedule)

D27.3 Report on competitive analysis for the supply chains of meagre, greater amberjack, pikeperch, Atlantic halibut, wreckfish and grey mullet. (Mo12)

➢ The deliverable is at the moment finalized with information about the competitors of the new species. This took 4 months.

D27.4 Report on trend mapping for the European aquaculture, seafood sector and protein market in the (near) future (Mo12)

➢ Actions that are still needed: include trends for meat and novel proteins. Expected to be ready before the end of November

D27.5 Report with results of international survey on industrial buyers' attitudes and perceptions regarding cultured fish (Mo12)

➢ TU/e has the lead here
➢ Difficulty in convincing the interviewees to cooperate, particularly in southern countries, *e.g.*, Spain. Interviews for Italy have been scheduled right after the ACM 2014.
➢ Results: 12 buyers
➢ For Italy interviews are scheduled right after this meeting. However, actions for Spain are required. GWP-leader has asked APROMAR, but effective response is not received. An extra, urgent request will be made.
➢ Country-specific descriptions and cross-country analysis are in progress to look at similarities and differences
➢ Will be ready before December 1

D27.6 List of critical success factors for market acceptance (Mo12)

- Discussed during GWP7 meeting 11.30-13.30 hrs

D27.7 Report on the analysis of the business models and supply chains of the participating SME's (Mo12)

- Discussed at GWP7 workshop 9.00-11.00 hrs

D29.1 Dataset of consumers' perceptions, attitudes, buying intentions, consumption, willingness to buy and pay, and value perceptions towards the selected species in the five countries investigated (Mo9)

- Delivered on time

D29.2 Report on the segmentation analysis based on consumer value perceptions about the selected species in the five countries investigated (value-based segmentation task) (Mo24)

- Basic analyses for report are already done
- Fine-tuning (extra analyses) in the next months
- Is expected to be delivered ahead of schedule

Summary: what did we find in 2014 that we did not know before the project started?

- Downside of consumer survey is that we used a hypothetical product > this has led only to generic responses, not to product-specific findings.
- We have insight in perceptions of consumers with regard to farmed fish as opposed to wild fish. Technologists involved in the project think that consumers may be negatively biased towards farmed fish, whereas the results of the consumer survey proof otherwise.
- Survey has produced a lot of variables that we can use to do some in-depth analyses (that have yet to be done). For example, questions with regard to objective knowledge and fish buying behaviour or substitution effects between farmed and wild fish. Also insight in consumption of different species is interesting.

Outlook 2015

Sensory test (task 29.2)

- Incorporate comparisons with other species: "This fish reminds me of..." > provides a perceptual map of the new species.
- Questions with regard to wild/ farmed and price sensitivity can be incorporated in the sensory test.
- P3. IRTA has done already a sensory test with pikeperch with trained people.
- Next year: the concept for the consumer sensory testing will be further developed.

Focus groups and ideas for new product development (task 28.1)

- Was discussed during morning session 11.30-13.30 hrs

New product development (task 28.2)

- Input for the new product development information from focus groups (ideas for new products), properties of raw material.
- Materials are needed:
    - Pikeperch is already available.
    - Wreckfish: samples of wild fish are available in December 2014.
    - Greater amberjack: wild specimens can be analysed at P1. HCMR and the cultured ones, if available, will be obtained around March 2015 by P15. ULL from other partners (P2.FCPCT/P8. IEO) or purchased by P1. HCMR (own contacts).
    - Meagre: samples will be available next week.
    - Grey mullet: will be available in January.

- In April 2015, 20-30 kg from each species is needed for the new product development (consumer tests).

At the end it is concluded that for product development purposes, only for wreckfish wild species will be used. This was already known during proposal development of this project. For all other species cultured species will be used.

- Action: P1. HCMR, P3. IRTA, P15. ULL, P18. CTAQUA, make a year-plan when/what fish (materials) is needed and contact the species leaders or SME's in the project to receive the fish. A meeting was held between L. Guerrero, K. Grigorakis, R. Robles and C. Rodriguez, in which planning of sampling was discussed. L. Guerrero made an Excel table summarizing species, quantities required for each task and source, transportation and time and this was completed by all attendants. It is concluded that the raw material needed for the consumer test will be about 60 Kg/species of fish fillets. These fillets will be needed by the end of February 2016 (deliverable D 29.4 in month 29).

Communication

C. Mylonas has asked whether all presentations could be published. G. Tacken asks the task leaders whether all presentations can be made public. M. Keller indicates that public information is needed for him to inform his processors and producers in Germany.

There are no objections towards public publication of the presentations done on day 1. These can be shared.

Annual Coordination Meeting, Day 2 (5/11/2014, 11:30-17:00)

By Gemma Tacken DLO (GWP Leader)

DAY 3 – Dissemination, Scientific and Financial Reporting

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. This includes, but is not limited, to the uploading of updated information on all undertaken research in the various Work Packages. To that effect, there was a presentation of the DIVERSIFY website (www.diversifyfish.eu) and an explanation of its organization both according to the species studied in the project, but also according to Scientific Discipline. This structure was considered optimal in order to organize the acquired knowledge, and to make it easier for stakeholders to locate the information of interest.

Then, there was a presentation of the Deliverables submitted so far, which included the development of the website, brochure and logo, audiovisual material, presentation to the European Aquaculture Society's annual meeting (Aquaculture 2014) in San Sebastian, Spain, and dissemination to the aquaculture industry, food industry and consumers. 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 48 Dissemination actions, which include:

1. Magazine articles for the Aquaculture industry, and magazines addressing Politics, Policy and People (The Parliament Magazine, Paneuropean Network, CommNet, etc.),
2. Newspaper articles,
3. Interviews in newspapers, radio or TV,
4. Web articles,
5. Oral presentations in conferences/meetings,
6. Oral presentations to journalists and aquaculture professionals visiting P1. HCMR and P18. CTAQUA,
7. Distribution of the project's brochure and bookmark to aquaculture professionals, regulators and administrators.

All these dissemination activities have been already registered in the Participants Portal. Dissemination material was mainly produced in English, but some material has been produced also in Greek, Spanish, German and Italian. The Dissemination leader underlined the need to implement the recent instructions by the EU to include the appropriate funding acknowledgements in all dissemination activities and material (**Fig. 5**).

As regards the DIVERSIFY website, it was noted that for the past month it had an average of 300 pageviews per day, with an average visiting time of 2 min, something that is considered very good for the first year of the project. It was also pointed out that the article prepared by P37. EUFIC and uploaded in their website (www.eufic.org) has been accessed 1,000 times so far. The project also has an account in Tweeter and Facebook, in order to widen the reach of the project activities. In order to facilitate the production of short reports on implemented work and acquired results, the Dissemination leader prepared a format file to be used by all scientists to prepare dissemination materials, in a way that would be easy for the partners to prepare. It will contain the most essential information about the Task, and would be easy for the reader to download and read. The file was presented and explained to the Partners.

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 2014 have already been uploaded on the website of the project, and are available to all interested stakeholders.

The following statement should be included in all Dissemination material (press releases, interviews, web material, etc.)

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

This 5-year-long project (2013-2018) has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration (KBBE-2013-07 single stage, GA 603121, DIVERSIFY). The consortium includes 38 partners from 12 European countries –including 9 SMEs, 3 Large Enterprises, 5 professional associations and 1 Consumer NGO- and is coordinated by the Hellenic Center for Marine Research, Greece. Further information may be obtained from the project site at "www.diversifyfish.eu".

The following statement should be included in all Scientific presentations (Posters, Oral presentations and scientific articles)

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

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

Figure 5. Instructions for the acknowledging of the EU funding to all dissemination activities, as prepared by the PC and uploaded in the website of the project.

It was also suggested by some members of the consortium, to hold a Special Session at the upcoming European Aquaculture Society's annual conference (Aquaculture Europe) in 2015, to be held at Rotterdam, the Netherlands in October 2015. The PC will contact the society's secretary to investigate his possibility. Presenting research that was undertaken in the project, in a Special Session that would include the name "DIVERSIFY EU" was considered as a very good idea for enhanced publicity for the project.

Scientific Reporting (Deliverables and Periodic Reports)

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 than 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. 6**) as well as explicit instructions on the preparation of the Deliverables (**Fig. 7**) which are included in the website (www.diversifyfish.eu/INTRA/Meetings/2014 Annual Coordination Meeting).

The session continued with the presentation dealing with the upcoming Periodic Report (Period 0-12 months, due January 2015). As for the Deliverables, special format files have been produced by the PC for each Work Package and were sent to the Lead Beneficiaries of each Work Package to help them compile the results and data from each Task (**Fig. 8**). 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. This will allow the Consortium members to follow the major achievements as well as problems encountered during the 1st 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.

FP7-KBBE-2013-07, DIVERSIFY 603121

Deliverable Report

Deliverable No:	D1.1		**Delivery Month:**	24
Deliverable Title	This is the full title of the Deliverable as it was written in the DOW. It should be descriptive enough to show the full scope of the deliverable and all the necessary details.			
WP No:	1		**WP Lead beneficiary:**	P1. HCMR
WP Title:	Title of WP from DOW			
Task No:	1.1		**Task Lead beneficiary:**	P1. HCMR
Task Title:	This title should come from the DOW and should be complete and descriptive.			
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:**	48
.....				

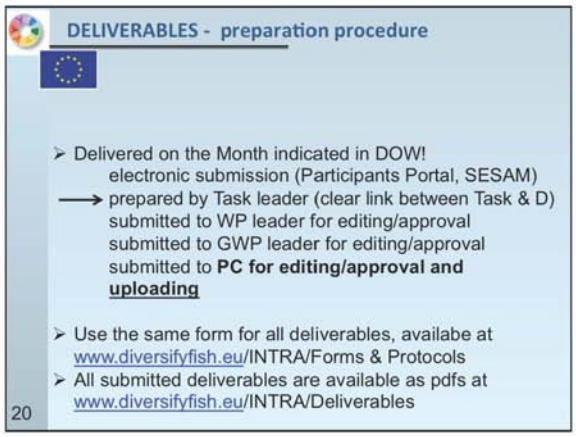
Lead Scientist preparing the Deliverable: Mylonas, C.C. (HCMR),
Other Scientists participating: Corriero, A. (UNIBA), Duncan, N. (IRTA)

Objective: The objective of this Deliverable is to .....

Description: Description of the work done and results

Deviations: If any, explain the deviations, their impact on the deliverable and project overall

Figure 6. Format file created by the PC for the preparation of the Deliverables of the project (available at www.diversifyfish.eu/INTRA/Forms & Protocols).



The Deliverable should be prepared by the Task leader (or another appointed researcher) and be submitted to the WP leader for editing/ approval.

Check both the format/language as well as the content. We want to submit complete, meaningful and well written Deliverables, since **EVERY SINGLE DELIVERABLE** will be examined by the Mid Term Evaluation committee, and will have to report on it's content, completion and impact!!!!!

The WP leader should make sure that all Deliverables in the Work Package follow the appropriate format (as prepared by the Program Coordination).

Preparing good deliverable will also help in the preparation of the Periodic Reports, since all information may be copy-pasted there, and vice-versa (if a good amount of work has been done and reported in a Periodic Report, prior to the completion of a Task and the submission of a Deliverable)

The Deliverable list can be viewed in chronological order or by Partner, by clicking on the heading. The submitted deliverables are listed in the bottom of the list, and a copy can be downloaded by all Partners. You can look at them to see the format and how other partners have prepared them.

The already submitted deliverables are also uploaded in the DIVERSIFY web site (INTRA/Deliverables) and are organized according to GWP in chronological order.

Figure 7. Representative slides from the instructions provided in the presentation for the procedure for the preparation of the Deliverables and the uploading of the Deliverable in the Participants Portal (the whole presentation is available at www.diversifyfish.eu/INTRA/Meetings/2014 Annual Coordination Meeting).

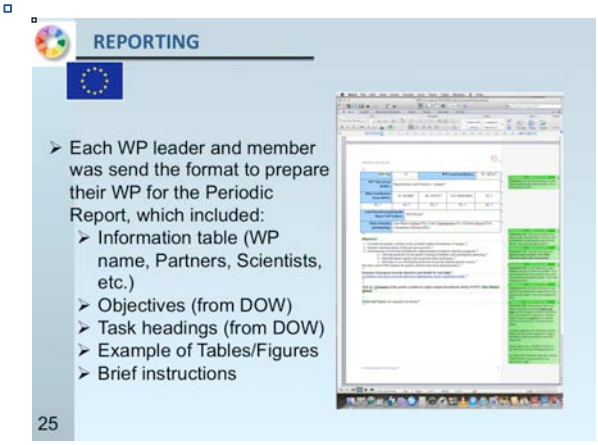
To speed up the process of preparing the report, while at the same time ensuring that a uniform and high quality document is presented (both in terms of format and content), the work has been delegated to all Consortium members as follows (Fig. 8):

a. The Lead Beneficiaries for each Work Package 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 in preparation for the ACM 2014, so few modifications are necessary,
b. The Lead Beneficiaries then compile all the information into a single document for each Work Package, reviews it for content/format/editorial errors and submits it to the GWP leader (20 November 2014),
c. The GWP leaders then compile all the Work Packages into a single document for each GWP, reviews it for content/format/editorial errors and submits it to the PC (30 November 2014),
d. The PC then compiles all the GWPs into a single document to prepare the 1st Periodic Report (0-12 Months), and reviews it for content/format/editorial errors (10 December 2014),

e. The GWP leaders prepare the additional information required for the Periodic Report (10 December 2014):
   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)

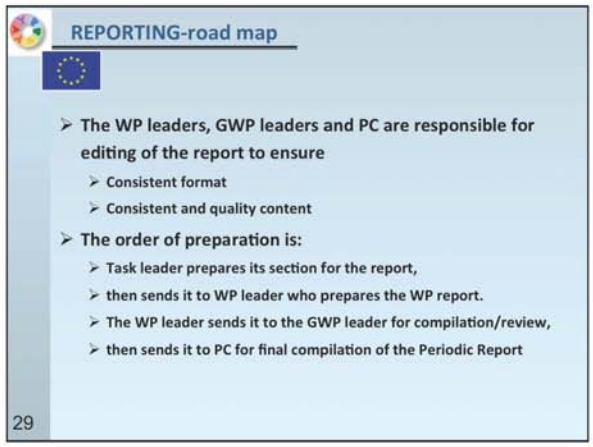
and submit them to the PC for incorporation in the Periodic Report. The PC prepares the remaining sections required (e.g., 3.2.3 Project management for the Period, Deliverables and Milestones, etc.) and completes the 1st Periodic Report by the end of December 2014 and uploads it in the Participants Portal.

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.



Each WP leader received the file that should be used to prepare their WP report for the Period Report. Some information were put there by the Project Coordinator, in order to speed up the process, make it easier for the WP leaders and also to avoid format errors and mistakes.

Some "Instructions to authors" have been provided as comments in the MS Word file, and more follow in a subsequent slide. **MAKE SURE YOU FOLLOW THEM!!!**



All WP leaders, GWP leaders and the PC will review their respective sections of the report, to ensure a quality report. The objective is that as each WP is moving from Task leader, to WP leader, to GWP leader and finally to the PC, at least four sets of eyes (and equivalent number of brains!!!) would have seen the document, ensuring a uniform and high quality report.

This is the sequence of the process for preparing the Periodic Report.

Figure 8. Representative slides from the instructions provided in the presentation for the procedure for the preparation of the Periodic Report for 0-12 Months, due in January 2014 (the whole presentation is available at www.diversifyfish.eu/INTRA/Meetings/2014 Annual Coordination Meeting).

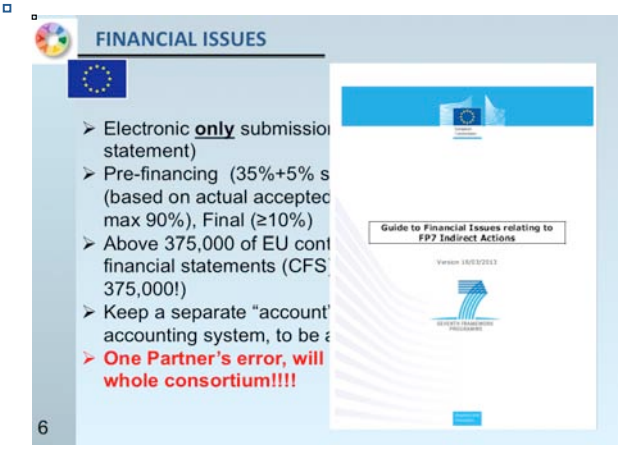
At the end of the presentation, the date and location of the **next ACM meeting** was discussed. It was decided to have the meeting later than planned in the DOW (*i.e.*, every 12 months). The next ACM has been proposed for **Jan-Feb 2016** so that it will be closer to the end of the next Reporting Period (30 month, May 2016). This will allow the Partners to use the occasion of the ACM for the preparation of the next Scientific Report, while at the same time there will be no loss of coordination, since the next reproductive season for most of the fish in the project (and hence most of the subsequent activities of the project) will begin after February.

So, the **ACM 2016 will be hosted by the University of Loraine (P9. UL) in Nancy, France**, in Jan-Feb 2016.

Financial Reporting

After a short coffee break, the PC gave another presentation on the Financial Reporting for the 1st Period of DIVERSIFY (**Fig. 9**). The objective of the presentation was to reiterate the need for all Partners to become familiarized with the Participants Portal, especially the Principle Investigators from the SMEs who are most likely the ones responsible for entering the financial information (Form C) into the system. After a brief mentioning of the functions of the Participants Portal, the Partners were reminded of some important aspects relating to EU funding schemes and the budget of DIVERSIFY for each Partner. Specifically, it was reminded that there are different types of "Activities" (e.g. RTD, Management and Other), which are handled separately and differently by the EU. All partners in DIVERSIFY have at least two types of Activities (RTD and Management), while many are also involved in Dissemination activities ("Other").

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. It was emphasized that all Partners must do their utmost to **abide by the budget allocation as described and agreed in the DOW,** as relates to both the types of expenses, but also the items that will be charged to the project. 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.



ALL Financial information (Form C) is filled electronically through the Participants Portal.

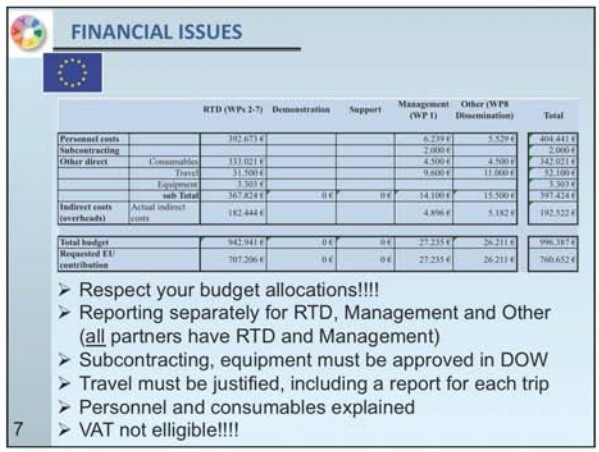
Each Principle Investigator (PI) from each Partner has been given access codes at the beginning of the project.

Form Cs must be submitted together from PC for all partners!!!! So, if someone is late, all will be late…

For advice on financial Issues, consult the following publication of the European Commission,

"Guide to Financial Issues relating to 7FP indirect actions"

also uploaded in the website of DIVERSIFY (www.diversifyfish.eu/ INTRA/EU Support documents).



Respect your budget as it was agreed in the DOW and is shown in the appropriate forms, as well as in Part B of the DOW (See DOW, Part B, Resources to be Committed, pages 119-170) for each partner. The DOW is available in the DIVERSIFY web site (www.diversifyfish.eu/INTRA/DOW, GA, CA).

Expenses must be reported **separately** for each **type** of activity:

RTD, funded by the EU 75 % for Research Organizations, Universities and SMEs, and 50% for large enterprises

Management, funded by 100% by the EU for all partners

Other (i.e., Dissemination), funded by 100% by the EU for all partners

All Partners have at least two types of activities (RTD and Management), while some have also Other.

Expenses are also separated in the following major categories: Personnel, Subcontracting, Other Direct Costs and Overheads (the method for claiming is specific to each partner, and has already been determined/approved in the DOW)

Figure 9. Representative slides from the instructions provided in the presentation for the Financial Reporting (the whole presentation is available at www.diversifyfish.eu/INTRA/Meetings/2014_Annual Coordination Meeting).

Then there was a detailed explanation of the different types of costs, followed by a step-by-step guide to how the various costs will organized and entered into the Financial Reporting (Form C) application of the Participants Portal. Specific examples were used to make it easier for the Partners to understand how the application works and what is the appropriate way to submit the information. The Financial Reporting presentation was later modified by adding detailed comments for each slide, and was produced as a pdf document, to function as instructions for all Partners (especially the ones that were not present at the meeting, or during this day of the ACM 2014) and their colleagues from their organization responsible for the financial reporting. This document has been uploaded in the website of DIVERSIFY and is available at www.diversifyfish.eu/INTRA/Meetings/2014 Annual Coordination Meeting.

It was agreed that the **Form C will be submitted to the PC by all Partners before 10 December 2014**, 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.

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, three representatives of SMEs and one representative from a professional organization. The people attending this meeting were Mylonas, C.C. (PC, P1. HCMR), Duncan, N. (GWP leader, P3. IRTA), Izquierdo, M. (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), Lopez, M. (P30. CULMAREX), 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. Modifications
    a. A significant problem was created by the loss in April 2014 of the wild-caught, greater amberjack broodstock at P24. ITTICAL due to a parasitic infection (*Amylodinium spp*). This stock was required for Task 3.2 Description of the reproductive cycle of greater amberjack. To address this problem, P23. ARGO was requested and accepted to provide a similar broodstock that they acquired for their activities (outside DIVERSIFY). Covering the cost of (a) replacing and maintaining this stock for the period required by the project (Dec 2013 to April-June 2015) by P23. ARGO, and (b) traveling for sampling the fish during the reproductive season by P1. HCMP will be done through redistributing funds from the P24. ITTICAL budget.
    b. A problem was also encountered in the activities of P8. IEO in Tenerife, Spain under WP9 Nutrition – greater amberjack and WP15 Larval husbandry – greater amberjack, due to the failure of their greater amberjack to spawn fertilized, high quality eggs. As a result, the work was not implemented and will have to be done next year, with one year delay. The possibility of one Partner needing eggs from another was recognized in the DOW (Part B p.33, Table B 1.3.1a Identification of the level of risk per activities and associated contingency plans) and was addressed in the Kickoff meeting (recorded in the Minutes of Kickoff meeting), and this was the reason that multiple broodstocks from all species were included in DIVERSIFY, and the decision was taken at the Kickoff meeting that P2. FCPCT would examine the possibility of transferring greater amberjack eggs to partners that would need them. However, P8. IEO did not request a supply of eggs, as they were hoping that their own broodstock would start spawning. The PC considered this a serious fault on the part of P8. IEO, and to a certain extend the WP9 and 15 Lead Beneficiaries (P2. FCPCT in both WPs) who could avoid this with a more close following of the activities of their Work Packages. Such problems should be avoided in the future, and the PC asked the GWP leaders to be more "pushy" with managing the activities of their GWPs and the function of the Work Package Lead Beneficiaries.

2. Dissemination – GWP leaders need to be a bit more active in preparing dissemination activities. In addition, the PC asked the GWP leaders to encourage more contacts with national and private initiatives making similar research to DIVERSIFY, and to identify potential invited guests from International experts, according to the guidelines explained in the DOW (WP 1 Management and WP 31 Dissemination). Some members suggested that video-conferencing should be considered to include presentations from invited speakers during DAY 1 of the ACMs.

3. Socioeconomic – more focus of the Partners and better communication with other consortium members that can provide essential information (especially P12.APROMAR, P34.BVFi) was encouraged.

4. Management - Substitution of the leader for GWP Nutrition Dr. M. Izquierdo.
    a. The PC expressed his dissatisfaction on the commitment of this GWP leader to the project (*e.g.*, attendance to organized meetings) and the limited responsiveness to the PC's communications regarding the management and acquisition of information of the GWP, which are probably caused by a heavy workload of the GWP leader with other commitments,
    b. The GWP leader responded that she is very proud of the work done by her, her organization and her GWP partners, and that there is a communication problem between her and the PC, and that she does not understand the requests of the PC, due to differences in their "coordination approach",
    c. The PC suggested that the GWP leader appoints someone from within her organization to be GWP Nutrition leader, someone with more available time to respond to the requirements of the project and the PC's requests, while she can remain involved according to her availability,
    d. The GWP leader responded that she proposes Dr. Hipolito Fernandez Palacios to take this role, since this scientist has had prompt and effective communications with the PC so far (as member of the GWP Reproduction & Genetics). However Dr. Izquierdo, should remain as the leader of WP 9 and Task leader in various WPs, and will assist Dr. H. Fernandez Palacios in the management of the GWP Nutrition, as much as possible.
    e. The PC accepted the suggestion and both will try to work with this arrangement. Dr. H. Fernandez Palacios was contacted at the end of the meeting and presented with this development, and he accepted to assume the role of the GWP leader for Nutrition, with the support of Dr. M. Izquierdo.

5. Next ACM 2016 end of January, beginning of February, UL University Loraine, France, hosted by Pascal Fontaine - The location of the meeting and the time was confirmed by all members of the Steering Committee, since some of them were not present in the previous discussion of the subject.

Excursion to "Eataly"

In the evening, the participants that were still in Bari were taken by bus to "Eataly", a high-end Italian food market and restaurant, where they had a chance to taste a variety of Italian dishes, as well as buy authentic Italian products, such as pasta, cheese, sausages, etc. It was also a good opportunity to relax after a heavy 3-day meeting, and to strengthen the "social" bonds between the consortium members.

A group photo of the participants of DIVERSIFY ACM 2014 at the staircase of the magnificent Palazzo Ateneo of the University of Bari Aldo Moro, Bari, Italy. At the front, Professor Antonio Felice Uricchio, Rector of UNIBA (3rd from the right).

Deviations from the DOW:

WP1 Project management.

The ACMs were planned in the DOW to consist of 2-days of open presentations and 1 for consortium activities. Instead, the ACM 2014 contained only 1 open day and 2 days reserved for consortium activities. This was considered 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. Based on the progression of ACM 2014, we believe this arrangement is adequate to both disseminate the most important information obtained in the previous period by the consortium, and also to benefit from presentations and the interaction with the invited guests. So, we intend to maintain this planning for the following ACMs.

The next ACM will be held later than planned in the DOW (*i.e.*, every 12 months), in order to be closer to the end of the next Reporting Period (30 month, May 2016). This will allow the Partners to use the occasion of the ACM for the preparation of the next Scientific Report, while at the same time there will be no loss of coordination of activities, since the next reproductive season for most of the fish in the project (and hence most of the subsequent activities of the project) will begin after February. So, the ACM 2016 will be held in Jan-Feb 2016.

WP2 Reproduction & Genetics - meagre.

In addition to the paired-spawing induction trials that have and will be undertaken by P3. IRTA (as per DOW) under Task 2.1, P1. HCMR has carried out a similar experiment and will also carry out another one in 2015 in order to obtain more relevant information for this deliverable. The additional data will also facilitate the publication of the results, since it will contain a mirrored experiment undertaken in two different facilities, in different geographic locations, but under the exact same protocol. This work is **without any extra cost** to DIVERSIFY, and it is undertaken because spawning induction is carried out anyway at P1. HCMR in order to produce eggs for juvenile production for other WPs, in which the partner is involved.

WP3 Reproduction & Genetics – greater amberjack.

Task 3.1 description of the reproductive cycle in captive greater amberjack will no longer be carried out at P24. ITTICAL (Italy), but at P23. ARGO. Partner 24. ITTICAL purchased a stock of fish from Greece in February 2014, and was moved to Italy in April 2014 and was supposed to be killed in April-May-June of 2015 to describe the reproductive cycle of the fish in captivity. Unfortunately, the stock died in May 2014, due to a parasitic infection (*Amyllodinium spp.*). Fortunately, P23. ARGO that is involved in the spawning induction activities (Task 3.2 and 3.5) had purchased another stock of fish from the same source, and have offered to make this population available to DIVERSIFY. The fish will be killed in the farm and the scientists from Italy responsible for this task (P13. UNIBA, P4. IOLR and P14, IFREMER) will travel for some of the sampling times, but P1. HCMR will be responsible to travel there from Crete to help them with the sampling.

This means that we will move a significant amount of the budget from P24. ITICAL to P23. ARGO, to cover the cost of these additional fish (24-36, we need to decide if we will kill the original number from the DOW or reduce it to save fish, given the problem encountered), as well as to HCMR and UNIBA for additional traveling. At the end, the task will be completed and delivered as proposed in the DOW (except that it will most likely be done with n=4 fish for each sampling as opposed to n=6), within the budget agreed (*i.e.*, no more money will be required, but with some reallocation of resources among partners and types of expenses). We may also be able to buy fish from another farm in Greece, to "replenish" the stock of P23. ARGO, in which case the reallocation of funds will also go towards this purchase, and P23. ARGO will only charge the cost of maintenance of the fish (personnel, feed, etc), but not the original purchase.

The considered budget allocation will not affect the realization of the other tasks planned for the partner (P24. ITTICAL) in this or other WPs. The total budget for the company was to:

a) acquire and maintain a stock of amberjack for sampling them during the reproductive season
b) acquire and maintain a stock of amberjack for spawning induction
c) acquire and maintain a stock of grey mullet juveniles for maturation and sampling

The allocation of the transferred budget will be in the 70-100,000 EU contribution range, as follows:

a) ARGO: additional personnel (person months) and consumables for the cost of the additional fish, feeds, and husbandry and sampling
b) UNIBA: additional traveling expenses and consumables for the sampling that needs to be done in Greece (ARGO) at three different times in 2015
c) HCMR: additional personnel and travel expenses for the sampling that needs to be done in Greece (ARGO) at three different times in 2015; additional personnel and consumables for carrying out the CASA development for greater amberjack in our facilities (together with IFREMER staff), and perhaps additional consumables to purchase another stock of fish, which will be maintained at ARGO. These fish will replace the ones that will be killed, which were planned for additional spawning induction experiments.

We do not expect any delay in any of the deliverables associated with this task.

Deliverable 3.1 Establishment of quantitative PCR assays for target genes in greater amberjack (LHβ, FSHb, Leptin, Vg and VgR) will be delayed by 4 months. This is due to the late arrival of tissue samples derived from wild greater amberjack to P.7 IOLR (Eilat, Israel), which delayed the cloning of target genes (*i.e.*, pituitary gonadotropin beta subunits and liver leptin) still in progress. We expect to finalize this task and establish the respective quantitative real-time PCR assays, by March 2015. Therefore, Deliverable 3.1 will be delayed by 4 months, but this delay is not expected to have any impact on other tasks or deliverables.

WP16 Larval rearing – pikeperch.

Deliverable 16.1 - Determine the effect of environmental factors on pikeperch larval rearing, will be delayed by 8 months. The experiment pf Task 16.1 planned for April-June 2014 has been postponed for December 2014-February 2015. Partner P9. UL has initially scheduled the experiment first in spring 2014, because this period corresponds to the natural pikeperch spawning season in France and contacts have been previously established with the fish farm "Domaine de Lindre" to supply pikeperch larvae. As planned, 500,000 larvae were purchased from the company. To do this experiment our laboratory was going to use the brand-new and modern experimental platform (with many ARS, at a cost of ¢3 million. The facility was completed and delivered in late April 2014 (3 months later than scheduled, after a long period of technical tests by companies (to test cooling, ventilation and warming systems). That meant that regardless of our efforts, such as introduction of nitrifying bacteria in commercial solution (AQUACLEAN N), the ARS did not operate with mature biofilters. Then as the biofilter was not balanced, very high levels of total ammonia nitrogen and nitrite (more than 10 mg L^{-1} for each each substance) were measured and larvae died five days after introduction. From that moment, we have continued to manage our larval rearing station in order to obtain a well-balanced biofilter; that was achieved in July 2014 only. We have contact several pikeperch farms (Aquapri in Denmark, Excellence Fish Farm in the Netherlands) to buy a new batch of larvae, but they had no larvae available at that period. Consequently, we have decided to postpone this experiment to late 2014 because P29. ASIALOR will be able to supply us with larvae produced out-of-season spawning.

WP21 Growout husbandry – greater amberjack.

The purchase of greater amberjack juveniles was necessary to complete sub-task 21.2.2 and 21.3.2. It was planned to carry out the production of juveniles in P8. IEO facilities, but this was not possible due to the absence of spawning during 2014. The cost of this purchase (approx. 7,500 €) will be charged to the consumable assigned to P8. IEO in the DOW for this WP.

WP22 Growout husbandry – pikeperch.

The Milestone 48 that was for month 18 will be delayed for month 22. Indeed, the multifactorial study was planned to start between month 8 and 12, but it appeared necessary to adapt the rearing conditions of the UL facilities to the protocol requirements of the multifactorial design for a better implementation concerning the identification of the major stress factors for pikeperch juveniles. This adaptation took more time than expected. Due to limited information on stress responsiveness for pikeperch, it was also necessary to standardize some methodological aspects, especially concerning the physiological and immune analyses as well as the bacterial LC50 doses for the evaluation of the disease resistance of stressed fish. As a consequence, the multifactorial trial is postponed and is planned to start by early June 2015, but should be completed by November 2015. Therefore, Task 22.1 will be completed in time through preliminary methodological refinement, without any major delay on the Deliverables associated with this task (except some data on immune responses to bacterial challenge tests) since the only Deliverable is expected on Mo24.

WP27 Socioeconomics – Institutional and organizational context.

Deliverable 27.3 Report on competitive analysis for the supply chains of meagre, greater amberjack, pikeperch, Atlantic halibut, wreckfish and grey mullet and ***Deliverable 27.6 List of critical success factors for market acceptance*** will be delayed by 2 months (Mo14). The time required for the completion of these deliverables was probably underestimated in the DOW. In addition, the partners responsible were involved in the preparation of 3 more deliverables that were due at the same time (Mo 12), which made working on all

deliverables at the same time difficult. The delay of the above two deliverables will not affect the implementation of other Tasks in the DOW.

WP28 Socioeconomics – New product development.

Deliverable 28.1 Results of focus groups with consumers and experts regarding idea for new products will be delayed by 3 months. The reasons for this are as follows:

1. Complicated multi-country analysis was required to decide on criteria for focus group participants' recruitment (analysis got completed before the ACM 2014 meeting in November 2014)
2. Time consuming task to develop the discussion guide in 5 languages
3. Data collection initially promised, now coincides with the Christmas season (given that the start of the project was set to Dec 2013 by the EU), which prohibits any field-work. As a rule of thumb, irregularities in consumer behavior because of the special conditions that prevail during this period, prevents us every year from data collection between early December and early January.

No impact is anticipated, however, on any of subsequent deliverables due to the fact that (a) the requested delay is small and (b) all preliminary actions (*i.e.*, finalization of the screening / recruitment criteria, development of draft and final discussion guides, contact with local field collaborators etc.) will unfold in parallel during the Christmas period, in order to accelerate the process immediately after that.