Case Study progress reports at 18 months

Case Study 1: UK - Crab

Institute: University of Leicester
Lead PI: Paul J B Hart

1. Science Highlight

We have completed a year of data collection from eight crabbers distributed evenly across the area covered by the inshore potting agreement (IPA). This has required a great deal of hard work by the research assistant, Emma Pearson. In addition, the work has been dependent on the willingness of the crabbers to take an extra person on board. The interaction between Pearson and the fishers has cemented the link between scientist and fisher.

2. Progress Report

As already mentioned, the fishers have taken the research assistant out to complete monthly targets for data collection. We have also had a seminar with the fishers during which preliminary data was presented and discussed. The fishers provided valuable input into the process of data interpretation and suggested improvements to the survey methods.

- Field work, number of surveys = 48 completed
- Number of meetings with stakeholder partner = 10

Three talks have been given to workshops and conferences outlining the work being done in collaboration with the crab fishers.

1. Workshop at Karlstad University, Karlstad, Sweden on the involvement of fishers in research.
2. Paper read at the 6th World Fisheries Congress, Edinburgh, Scotland on the south Devon crab fishery case study.
3. Paper read at a conference on State of Lake Vänern Ecosystem in Vänersborg, Sweden. The paper used the lessons learnt in the crab fishery to propose ways in which the fishers on the lake could be involved in fish stock assessment and management.

We have been active in helping SeaWeb produce videos of the fisher/scientist partnership. Rosie Magrudia visited a meeting with the crabbers in March 2012 where she filmed interviews with scientists and fishers. She also took part in a crabbing trip on the Superb-Us (Skipper Allan Steer) during which she made a film of the day's work. Both films have been available on the GAP2 website.

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)).

We are planning a short course on fish biology and fishery science for the fishers. The plan is to provide the fishers with sufficient understanding of fisheries science to raise their confidence and make it easier for them to interact with fisheries scientists.

Between 15th – 19th October a party of fishers from Steigen, Norway (24 NORGES FISKARLAG FORENING) is visiting Devon under the exchange programme. The group will learn about the crab fishery and find out how the case study is working. A party from Devon will visit Norway before Easter 2013.

We will be interviewing a sub-set of the fishers over the next few months to gather their personal understanding of how the crabs behave over the year and of the environment in which the crabs live. These data will then be matched with scientifically collected data dealing with the same factors.

A paper will be read at the ICES Annual Science Conference in Bergen, Sept 2012 in which the GAP2 work will be outlined as part of the presentation.

We will be continuing to develop a crab biomass model of the Inshore Potting Agreement area and teaching the fishers how to use the model to evaluate their stock.

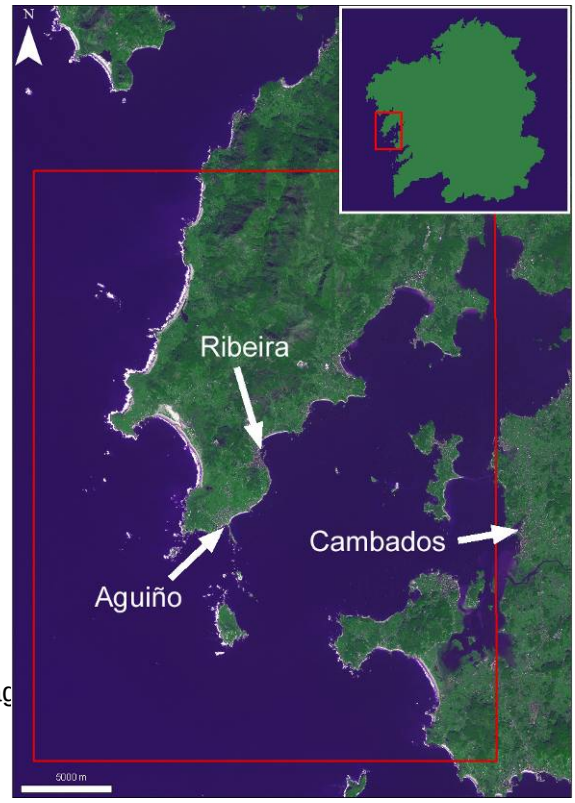
We will contribute material for the outreach work as requested.

Case study 2: Spain - Mapping

Institute: Universidad de A Coruña (UDC)
Lead PI: Dr Juan Freire & Dr Ramón Muiño (from 1st October 2012)
Author: Dr Pablo Pita

1. Science Highlight

We completed the phase of Ecosystem Mapping based on the collection, categorization and integration of the expert ecological knowledge of fishermen as part of scientific knowledge. We have collected data on the distribution of fish, shellfish and substrate composition of the seabed of our study area in the Ría de Arousa (NW Spain; Fig. 1). We have integrated the data in a GIS tool and obtained detailed information on the different habitats and ecosystems, on the fish species (nursery areas, abundance, productivity, qualities and exploitation levels) and on shellfish resources (ground location and extension, exploitation levels, species, productivity and qualities).



Our final cartography (GIS and Google Earth format) on sea habitats and ecosystems was delivered to our operational partner, *Federación Galega de Confrarías de Pescadores* (FGCP), and to the *Confrarías* of Aguiño, Cambados and Ribeira (Fig. 1), which were very interested in the utility of the data for the future management of the fisheries in the area. Also, a report was delivered to the FGCP on the phase of Ecosystem Mapping. This report will be also the basis for a scientific paper on this issue.

2. Progress Report

Fig.1. Map of the study area.

- Field work, number of interviews = 19 personal interviews and 2 group interviews.
- Number of meetings with stakeholder partner = 5.

The main responsibility of the Universidade da Coruña (UDC) within the case study (CS) is to take the necessary actions for the execution of the CS and collaborate with the operational partner, the *Federación Galega de Confrarías de Pescadores* (FGCP).

Background

To develop the first phase of the GAP project, GAP 1 "Mapping habitats and fishing grounds in coastal ecosystems. Development of a spatial management strategy", the fisher's organization of *Confraría de Aguiño* was chosen. This is a 300 fishers and shellfishers organization in a small fishing community located in the southern shore of the Ría de Arousa (A Coruña, Spain; Fig. 1). This organization has a diversified coastal fleet including purse seiners (targeting sardine), boats operating tangle and gillnets (for spider crab, cuttlefish and a large number of fish species) and traps (for octopus, velvet swimming crabs and prawns), intertidal harvesters of goose barnacle, divers (for razor clams and sea urchins) and bivalve harvesters (clams and cockles) both intertidal and on board. Most of them take part in various fisheries along the year in a seasonal cycle, although goose barnacle is the most valuable fishery for most of the fishers.

Most sedentary marine resources exploited by the members of the *Confraría de Aguiño* (banded carpet shell, pullet carpet shell, grooved carpet shell, razor clam, goose barnacle and sea urchin) are regulated through specific management plans (for shellfish and specific resources) based on Territorial Use Rights in Fisheries (TURFs) and co-management model by the administration and the producers. However, the rest of fisheries in this area are regulated by traditional centralized top-down norms and regulations, common to the whole of the Galician fleet.

The success of the co-management models for specific resources opens the door for the application of similar models to the rest of fisheries in the area.

Taking the geographical activity range of the fleet from Aguiño as a reference, a study area was defined, with an extension of 18.4 Km^2, comprising the Sagres, Vionta and Sálvora islands, belonging to the Atlantic Islands National Park.

A representative work committee was constituted and legitimated by the General Board of the *Cofraría de Aguño*, with the purpose of giving expression to the interests of the fishermen in a consensual way. A series of weekly meetings were held with the working group, using an ethnographic method based in semi-open interviews, where the Traditional Ecological Knowledge (TEK) on the study area was gathered. Thus, based on a detailed cartography of the area, interviews were made to the different members of the committee, which located information about resources, habitats and fishing grounds on maps. All the information obtained was digitalized and introduced in a GIS, generating a series of detailed maps of the main fishing grounds for each fishery resource. Given the importance the goose barnacle, a detailed study was made for this species, classifying the extraction zones according to their productivity and quality of the resource.

During the GAP 1, the scope of the research was focused on the fleet inscribed in the *Confraría de Aguiño*, and managed by TURFs for some coastal sedentary invertebrate resources. However, the rest of fishing resources and fleets is managed using a top-down

non-spatial approach. Due to the absence of territorial rights, vessels from neighbouring confrarías also exploit fishing grounds belonging to the territory of the *Cofraría de Aguño*.

For this reason, the study area in GAP 2 has been expanded to include the whole fleet carrying permanent, regular and occasional activity in the area, including vessels from other *confrarías* that also exploit this area. This inclusion will improve the characterization of habitats and fishing resources, the definition of the areas subjected to high fishing effort, the identification of fishing areas in relation to their quality and productivity and the assignation of economic value to each fishing ground.

Our progress so far

In our study area (Fig. 1) operates a very heterogeneous, multi-gear artisanal fleet, linked to several *Confrarías de pescadores*. In the annual meeting of London, 2011, we presented the updates of our CS since our objectives have changed from the initial proposal. On June, 2011 we performed a trilateral meeting with the FGCP and the *Confraría de Pescadores de Aguiño* in which we informed about the updates and we constructed a definitive timetable of the project. In this meeting we also decided the most appropriate way of gathering the different information necessary for the project and we decided to divide the study area into 3 subareas. In the next meetings with FGCP we decided to involve the main *Confrarías* of the area and remained clear that our better choice were the *Confrarías de Aguiño*, *Cambados* and *Ribeira*. Hence, we've contacted them and presented our project to fishers belonging to those *Confrarías* that had been summoned by the FGCP (Fig. 2).

On June, 2012 we completed the field work for the Ecosystem Mapping Phase based on the collection, categorization and integration of the expert ecological knowledge of fishermen as part of scientific knowledge. During this stage, initiated in August 2011, we developed 19 personal interviews with fishermen belonging to the *Confrarías de Aguiño*, *Cambados* and *Ribeira*.

Each interview was divided into two parts. The first asked about the general characteristics of the fleet operating in the area of study (technical aspects of the craft, arts distribution, annual cycle of fishing, major resources and catches). The second part of the interview, which uses charts of the area of study, examined the characteristics of marine ecosystems, types of habitats and microhabitats, distribution areas of the species, breeding areas (nursery habitats), quality (size) and productivity (abundance) of resources and changes in population dynamics of the species.

Fig. 2. Workshop between scientists and fishers.

Our sample design took into account all the *metiers* which were previously identified as the observation units. Thus, it was necessary to be represented in the interviews all the different gears operating in the study area. The most important fishing gear in the area are the dredges for clams and scallops, the pots for octopus, crab, pout and shrimp, poaching of barnacle, sea urchin and razor shells, gillnets, different kinds of purse seines, and hook gears.

The level of participation and the quality of information obtained from fisheries has far exceeded initial expectations, but we were not able to involve fishermen using gillnets

regularly during the annual cycle of fishing. However we have enlisted their support for the next phase of Fisheries Monitoring.

Once we have collected data on the distribution of fish, shellfish and substrate composition of the seabed in our study area, we have integrated the data in a GIS tool and obtained a detailed image (Fig. 3) of the different habitats in the area (substrate typology and algae species) of the fish species (nursery areas, abundance, productivity, resource quality and exploitation levels) and shellfish resources (ground location and extension, exploitation levels, species, productivity and qualities).

We have finally validated our preliminary cartography derived from the initial Ecosystem Mapping Phase. For this purpose we performed two workshops with the fishers that provided the information and also new others and we asked them to find mistakes and to resolve some doubts that have emerged on certain habitats.

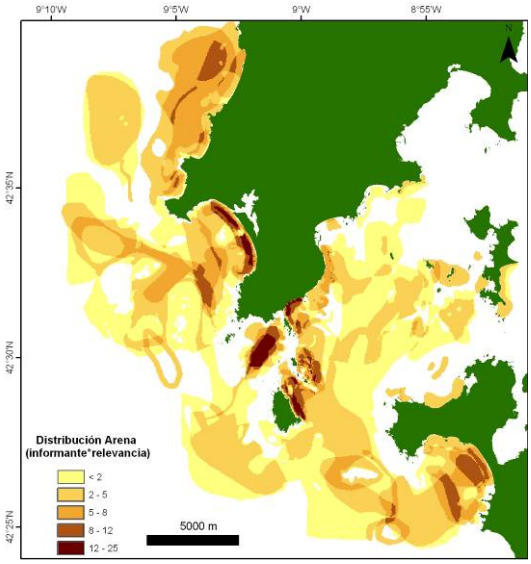


Fig. 3. Example of our initial cartography showing the distribution of sandy substrates in the study area.

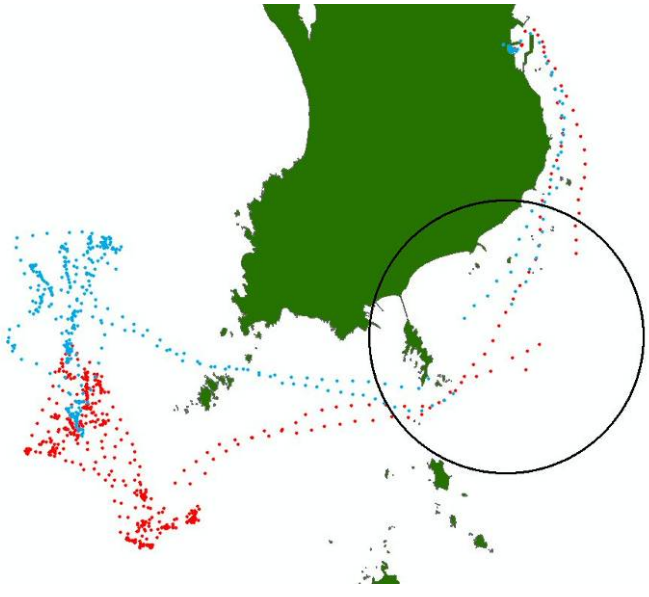
Our final cartography (GIS and Google Earth formats) on sea habitats and ecosystems was delivered to our FGCP and to the *Confrarías* of Aguiño, Cambados and Ribeira, which were very interested in the utility of the data for the future management of the fisheries in the area. Also, a report was delivered on July, 2012 to the FGCP on the Ecosystem Mapping Phase. This report will be also the basis for a scientific paper on this issue, which is currently under construction.

The second phase of our case study, the Fisheries Monitoring, began in February, 2012, as scheduled. During the initial Ecosystem Mapping Phase, fishers of 23 vessels agreed to participate and provide detailed information on the fisheries operating within our study area. Then, we performed workshops with fishermen and the Technical Assistance of the 3 *Confrarías* involved in the case of study. During the workshops we agreed together a methodology for the use of data loggers that will store their daily movements and the daily log-books in which fishers record their catch and effort.

We are already working with a lot of information from the data loggers and from the log-books. During the first weeks of implementation we have been dealing with practical problems related to the collection and integration of information: after we downloaded the data loggers provided to the fishermen to check if their configuration were the most appropriate, we have detected problems (e.g. a shadow zone that blocks the GPS signal because the presence of a metal lighthouse; Fig. 4). Also, we had to redesign the log-books for 8 of the *metiers* with the help of the fishers.

Critical issues

We had scheduled to deliver a report on the Ecosystem Mapping Phase by the end of 2011 to contribute to the planning to the Fisheries Monitoring Phase. Despite the delay in the delivery of this report, actually this had no negative effect



on the next phase, because we were able to use the data from the interviews to plan the Fisheries Monitoring Phase.

Fig. 4. The shadow zone in our study area is showed in the circle. Some of the detections in the data loggers are blocked there.

The main critical issue we have faced in the field work is related to the participation of the fishers in the Fisheries Monitoring Phase. We anticipated that some fishers could lower their participation in this phase, or even leave it, because is hard for them to fill the daily log-books. We have developed different approaches to face this problem:

1. We delivered the results of the Ecosystem Mapping cartography to the FGCP so they can use it to improve the management of their resources. By this so, the fishers can verify that their work has practical feedback for them.

2. We have improved our communication with our operational partner, the FGCP, the 3 *Confrarías* involved and the fishers by:

- We are delivering weekly reports to the FGCP about the progress of the CS.

- We are writing regular posts in the web of our CS (http://recursosmarinos.net/gap2/) informing about progress and news. The FGCP is also writing posts in the blog.

- We regularly visit the fishers involved in the project to get face to face feedback about the progress of the work.

Finally, UDC has been forced to change our PI because our initial PI, Dr Juan Freire, left the UDC. The interim period is still on process, since Dr. Ramón Muiño has formally accepted the invitation of the UDC to become our new PI, but still has not been officially designated. We hope that his designation will finally take place soon and we hope that the transition will be executed without risk for the progress of our responsibilities in the CS and in the rest of the project.

As an informal result of the activities held in the session in Brussels (II GAP2 Annual meeting), we agreed with Mr Gianluca Francescini (ISPRA, Italy), to arrange a visit to Galicia. Mr Francescini stayed in Galicia for more than a week in August, 2012 and he was able to visit marine culture installations of his interest and the Marine Reserve of Cedeira, guided by our anthropologist, Mr Duarte Fernandez. Mr Francescini, also performed a conference in the installations of UDC to members of our Research Group (Recursos Marinos y Pesquerías), explaining the CS of Italy: *Spatio-temporal distribution of fishing effort and biological resources in the Northern Adriatic Sea: towards the identification of fish habitats and management proposals in the framework of a participatory approach*, in which he is involved.

A visit of WP4 representatives Dr Petter Holm and Dr Maiken Bjørkan was organized and performed in October, 2011. We scheduled an agenda for them to perform interviews with the scientific team involved in our CS, with fishers of our CS, with a representative of the management of marine resources of the regional government (Dr Jose Molares) and with Mr José Antonio Fernández, manager of the National Park in which part of the fishers of our CS use to go for fishing (*Parque Nacional Marítimo-Terrestre de las Islas Atlánticas de Galicia*).

We have provided contents of our CS to the web of the project, when Seaweb members asked for them. As part of our communication strategy with our operational partner, the FGCP, we are writing regular posts in the web of our CS (http://recursosmarinos.net/gap2/) informing about progress and news. The FGCP is also writing posts in the blog. We are also using social media (Facebook) to be in touch with news from GAP2 and to disseminate our own news from our blog.

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)).

We will construct a cartography (GIS and Google Earth format) on the distribution of fish and shellfish in our study area in the Ría de Arousa (Fig. 1), based on the collection, categorization and integration of the expert ecological knowledge of fishermen of the *Confrarías* of Aguiño, Cambados and Ribeira.

During the next months we will continue obtaining information relating to the Fisheries Monitoring Phase. We expect to increase the number of fishers involved (currently 23 vessels) when some *metiers* begin their seasonal activity.

We will also establish definitive protocols in order that the information on catches provided by the fishermen in their log-books is properly referenced in the routes contained in the data loggers. There are several important issues regarding this matter, being the main one obtaining the highest accuracy in identifying the different activities of the fishing vessels.

We have agreed to join the FGCP in their meetings with the South Western Waters RAC, which will be held in the future to expose our CS and the work of the GAP 2 consortium.

We will continue providing contents of our CS to the web of the project. We will be writing in the web of our CS (http://recursosmarinos.net/gap2/) and in Facebook informing about progress and news. We have agreed with our partner, FGCP, to develop a media campaign in press about our CS.

Case study 3: Germany-Shrimp

Institute: AWI
Lead PI: Kai Wätjen

1. Science Highlight

We found 3 out of a total of 7 FFH (Flora-Fauna habitat) relevant fish species, as well as the migratory Sea trout. By taking into consideration that the 4 other species (Sturgeon, Allis shade, Sea lamprey and the Houting) have a IUCN Red list status of 1 and 2 or even 0 (Sturgeon) and that our stakeholders use sieve nets to prevent by catch (a guideline to get certified by the MSC) is this a good result.

- River lamprey
- Twaite shad
- Salmon

Furthermore we were able to demonstrate 1 species which is considered as very rare in the scientific catches When we compare our stakeholder gained data with the Reference species list of fishes in the Wadden Sea (Jager et al. 2009) we found so far in addition to the migratory fish species, one for the Wadden Sea extremely rare species, the **Goldsinny.**

- River lamprey
- Goldsinny
- Sea trout
- Twaite shade
- Salmon

The Goldsinny or Cliff perch is actually associated with hart substrate. For the fishermen it was the first sighting of this species. This is a great success, either the species is new in the Wadden sea, or he was trained and sensitized through cooperation and regarded thereby more of the by catch.

Another Highlight was the huge unexpected **media interest** of our work (see WP5).

2. Progress Report

Both fishermen provided us continuously regularly with one or two samples of *Crangon crangon* each week. We examine the shrimps to assess the distribution range of the stock due to size, weight, and sex as well as health status of the shrimp stock so far > .
First results come to the conclusion that the total infection rate of the Black Spot disease is on the same level like 2000 and earlier (reference years), but the abdominal infection rate with big lesions should to be decreased in comparison than before.

Meanwhile we were able to demonstrate 6 species which are considered as rare in the scientific catches of the Wadden Sea. This runs very smooth, due to a very interested and ambitious decks hand and an optimal processing.

- River lamprey
- Cliff perch
- Sea trout
- Twaite shad
- Salmon
- Sea bass

In contrast to former years, except for the Sea bass, we could not establish the occurrence of southerly distributed species up to date. This is a result we did not expected, but the chance to catch this species is still given the whole September.

Field work, number of surveys:

Different accompanied surveys were taken out and with up to now, two different trawlers.
2011:
5 times with Polaris
2 times with De Liekedeelers

2012:
6 times with Polaris
1 time with De Liekedeelers (unfortunately one survey was cancelled due to the failure and following repair of the engine)

We connected the accompanying surveys with the meetings. We made the experience that it`s much easier to talk or to discuss things about the cooperative work during the practise on board or directly after the work is finished. During the time on board questions arise more significant and the solution is easier.

Number of meetings with stakeholder partner:

2011
8 times Polaris
5 times De Liekedeelers

2012
6 times Polaris and regularly telephone calls
3 times De Liekedeelers (twice in Bremerhaven) and many updates and exchange of knowledge and information via regularly telephone calls

It seems that we need more cooperating vessels. The area we are covering is a small part of the subarea East Frisia and a part of the subarea North Frisia. These are only 2 from almost 7 German Wadden Sea subareas. If we want to cover the whole range of the German Wadden Sea area we need more involved fishermen, at least 6.

We now have a promising contact with the blue mussel farmers in Lower Saxony to become more stakeholders involved.
We revised sampling procedures, which will allow us to simplify the GAP2 relevant duties on board of the vessels. We agreed to count the species only if the total catch is very low, otherwise we use data of presence/absence base for example.

We will try to get the coordinates directly from the navigation system (easier to record).

In 2011 commercial issues were an overarching theme of the shrimp fishing industry. Low prices of the shrimps, increasing running coasts and internal conflicts determine the discussions. Fortunately the prices in 2012 recover very quickly and most of the fishers (approximately. 120) are now organized in one overall producer group. We will see how the fisher uses their new opportunities. We are looking forward to the MSC certification, and to the implementation of management plans, up to know there is now quota and management plan for Crangon available, much less than a long term management plan or an ecosystem approach. Currently the relationship between fishermen and NGO´s like WWF and NABU (German Association for Nature Conservation) is disturbed. Fishermen are afraid about NATURA 2000 sites and MPA´s. We will try to communicate these sorrows to the respective other site and mediate between both sides (on lower and local level).

We made good progress towards the implementation of the HOVERCRAN (see the 12 month report). Last June the mounting of the gear was finished and the HOVERCRAN project was successfully started, led by colleagues from the von Thünen institute (vTI). Now the gear is in a testing phase, partially accompanied by scientists, the crew of the vessel is doing self-sampling. Our role in this project is to communicate and to inform other fishermen and stakeholders about the developments and first results of this exiting project. A first information meeting, on the part of the vTI about newest results, should be held in the near future.

So far we weren't able to convince the fishermen to an objective point of view of the HOVERCRAN. The electric beam trawl is still highly controversial. Fishers are afraid of overexploiting of the shrimp stock. It might deliver high catches with lower effort and due to the electrical pulse; the HOVERCRAN enables fishing in clear water during daylight. We are looking forward to the newest results of this exiting project and will disseminate these findings to our partners.

We achieved a huge unexpected media interest.

- March 2012 press release in German and English language
    - Exotensuche im Krabbennetz: Krabbenfischer helfen AWI-Biologen beim Monitoring seltener Fischarten
    - (Searching for exotics in the shrimp nets: shrimp fishermen help biologist to monitor rare fish species.
- Three TV productions about the project, e.g. one for the German Foreign Office which should broadcast in the Middle East!
- Two radio interviews (Nord West Radio and Jade Radio).

- The exchange of the voluntary ecological worker between AWI and from the national park was successful.

- Everything was working very well due to the competent support of Seaweb and the enormous patience of the involved fishermen (TV-Team on board and so on).

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)).

- We carry on with the analyses of the provided shrimp samples.
- At the end of the fishing season in December, we start with data downloading from the loggers which were the whole year fixed to the beam trawl to gain physical parameters.

- We have to concern how we can harmonized or combine our fish data with already existing monitor programs
- So far, we don't know exactly what about the shrimp samples from the Icelandic population.

We stay tuned to the HOVERCRAN project and try to involve other fishermen to visit the vessel. Our main focus will be to accompany the hopefully successful start of the overall producer group and the MSC certification. Another key aspect is to establish/re-establish a better relationship between NGO and fishery stakeholder.

We are looking forward to the newest results of the exiting HOVERCRAN project and will disseminate these findings to our partners once the data is published. It is planned to visit the HOVERCRAN vessel, possibly with other interested fishers, to see the functioning of the gear and the catch results for themselves.

We will focus our work on the preparation of the promised flyer with special focus on the problems between nature conservation and fishery. The flyer should be in German language and inform the interested public.

Case study 4: Denmark-Herring

Institute: DTU Aqua, Denmark
Lead PI: Lotte Worsøe Clausen

1. Science Highlight

The overarching achievement in the case study has been to lay a common ground for a LTMP for WBSS and the identification of the parts of such a plan, which need particular attention in terms of negotiation and clarification prior to actual MSE for WBSS. A wide range of stakeholders (industry, management, science, NGO's) agreed, that the objectives of a LTMP were that the plan should be Specific, Measureable, Achievable, Realistic and Time-limited (SMART); it needs to be simple to grasp by all stakeholders and the most important objective to aim for is a high and stable yield based on a sensible F. The division of the catch opportunities between SD 22-24 and Div. IIIa was identified as being of outmost importance for successful implementation and compliance with a suggested LTMP. The decision to divide the catch opportunities was the subject for debate with the BSRAC, PELRAC, fisheries representatives, the Commission and a few representatives from the Governmental bodies.

2. Progress Report

The case study has focused a lot on getting all relevant stakeholders involved and has been successful in relation to the fishing industry and the green NGO's, and to some degree also the necessary management bodies. There is still some diplomatic work ahead to get all managers present, however, through meetings between the stakeholders facilitated by the lead scientist, getting over the remaining obstacles seems promising. The split between the Baltic and the Skagerrak is a political decision and the Member States (MS) have very different opinions on the matter; Germany's interest is in the Baltic fishery, Sweden's interest is in the Skagerrak fishery. Additionally, the TAC for Norway in the Skagerrak would then be based purely on the EU's decision on the TAC level fixed for the Western Baltic stock, and on the split between the management areas. Obviously, Norway does not agree to the use of any such formula. Thus it seems to be a catch-22 situation when setting the shares of the TAC on WBSS and NSAS across the management areas. Any innovations would have to respect relative stability both in the North Sea and in the Skagerrak and if not based on solid indisputable science, then the political reasoning needs to meet the demand that Norway needs room to manoeuvre negotiation of the TAC in Skagerrak and that MS need to maintain relative stability.

During the first 18 months, the case study has held 1 large scale workshop, 3 meetings with specified ToR's, 2 debates at RAC meetings and 5 small scale meetings between the lead scientist and stakeholders. Reports and minutes from the workshop and meetings are available.

A very significant result is first and foremost a common ground and perception of what is to constitute the LTMP (from Workshop 1, November 2011). However, almost as important are the more political related parts of the management defined as the division of the catch opportunities between SD 22-24 and Div. IIIa was identified as being of outmost importance for successful implementation and compliance with a suggested LTMP.
Through many fruitful and constructive discussions, the members of the meeting ended up with the matrix shown below, where three options is listed along with the plusses, minuses and implementation chance:

Options	1. Timing of the advice – harmonising the timing for advice for NSAS and WBSS	2. Removal of the areal TAC and application of a stock TAC only	3. Mixed fisheries approach
Pro's	Can be resolved within the framework of relative stability and existing management decisions. Can work as a 'transition' while other options are developed and tested.	Clear, transparent and manageable advice. Gives possibility to exploit stocks at MSY. Keep the relative stability between Div. IIIa and SD 22-24.	Include all stocks in one assessment (incl. local) and take their dynamics into account. Advice aimed for the highest sustainable production. 'SMART' management of the herring fishery in the areas.
Con's	Norway usually needs to get all agreements done in one 'take,' so agreeing on Skagerrak outside the annual negotiations will probably not be accepted. Several MS fishing in SD 22-24 have pushed for having the advice early in the year, so this will be seen as a setback.	How to decide how much of the WBSS TAC should be allowed as 'by-catch' of the NSAS fishery in Skagerrak by Norway? Could disturb relative stability between MS exploiting the North Sea. Open for exploitation of SD 22-24 by all fleets.	MSY considerations need to be done, much along what is debated for Mixed Fisheries; should advice follow MSY for the weaker stock? Advice needs to be translated into something simple that can be legislated on and easily transposed into management decisions.
Reality check	Doable without too much trouble.	MSE's on a row of scenarios necessary as basis for the foreseen political debate to make this option operational.	Much knowledge required of local stocks dynamics; modelling approaches; handling mixed stock in MSY

			framework, etc.

It was agreed that in order to evaluate the consequences of the two latter options it would be necessary to look at a series of simulated scenarios applying settings mirroring the set-up in option 2 and this should be given higher priority than option 3, as this last option although concluded as the optimal way to handle the stock mixing in a scientifically solid way, needs a lot of work before it can be operational.

The case study has successfully made use of the Message Box (Nancy Baron, 'Escape from the Ivory Tower, 2010) and brainstorming exercises (re-tailored Snow Carding) in meetings to grasp and visualise the perceptions of the main points in LTMP for the complex herring stock in Western Baltic and adjacent waters.

The case study has been presented at the 2 most recent BSRAC ExCom meetings, the two most recent HAWG meetings and also at the DTU Aqua scientific club by the case study leader, Lotte Worsøe Clausen 14th of June, 2012

Additionally has the case study been part of the ICES Inside Out in July 2012: (http://www.ices.dk/InSideOut/No3%202012/Insideout2012-No.3.7.pdf)

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013).

As the above matrix was produced in a meeting where a highly relevant stakeholder – the Norwegian part of the fishery – was not represented, the success of the conclusions for the further development of the LTMP may be impaired. Thus before any further action should be taken, a new meeting should be held between the stakeholders from the fishing industries from the relevant Nations (Denmark, Sweden, Norway and Germany). This meeting should solely be between the fishermen and their organisations, though chaired by the lead scientist of the case study.

Anticipated numbers of participants are at least 1 representative from BSRAC, PELRAC, Producer Organisations and Fishery Unions representing the smaller fishing vessels from Denmark, Sweden, Germany and Norway. The meeting will take place during early autumn 2012.

Following the meeting, the modellers in the case study will start up adjusting the MSE simulations according to the decisions made and add on the most recent data. So far, 4 options have been identified as interesting:

a) 100% TAC utilised in Div. IIIa
b) 100% TAC utilised in SD 22-24
c) Stock TAC utilised following historical proportions
d) 50/50 stock TAC utilisation between Div. IIIa and SD 22-24

Included in these simulations the risk to the NSAS should also be considered given the stock mixing in Div. IIIa.
It should also be explored what options there may be for giving an advice based on the spatial and temporal distribution of the available pool of herring for the fishery – and most importantly how such an advice can be made operational. Related to this exploration, it was strongly recommended that a discussion and calculation of how the best sampling regime is put together for both areas in relation to stock composition and production should be done. This means inviting a somewhat larger group of stakeholders including representatives from the relevant RCM's.

An MSc student adhered to the case study will fine tune the modelling of stock components to improve the statistical evaluation of the migration patterns of the herring stock components in the areas.

Case study 5: Norway-Cod

Institute: UIT, NCFS
Lead PI: Petter Holm
Partner number: 6
Author: Maiken Bjorkan

Stakeholder organization name: Norwegian Fisherman's organization (NF)
Partner number: 24

1. Science Highlight

Our overall aim is to develop a fisheries-based monitoring system for Norway coastal cod. The idea has been to generate robust information system that can be operated as an integral part of ongoing fishing operations. In order to do this, we have underlined that the fishermen themselves must have an active role in designing and testing out the system. Since the purpose of the information system is to work as a basis for producing reliable and robust resource indicators the science partners in the project must take an active part in the overall planning of the project, and in the design of data collection procedures. In addition, the science partner must take a lead in identifying weaknesses and vulnerabilities in the information flow.

In the course of the last 18 months, all partners have cooperated closely and we have managed to follow our aim of generating a fisheries-based monitoring system for the coastal cod. The local fishers have been active in the design of the sampling system, and together with the science partners they have established a robust system for data collection while fishing.

2. Progress Report

Field work, surveys and meetings with stakeholder partners: in total 12 meetings/Fieldwork trips. See table below.

Place and date	Present	Summary
Tromsø, IMR 07.04.11	Maiken Bjørkan, Petter Holm, Knut Sunnanå	Kick off meeting: how to initiate GAP in Steigen
Steigen, 27.05.2011.	Representatives from the IMR (Hector Peña), the local fishers' organization (Jan Andersen and Jon Erik Pettersen) and the NCFS (Maiken Bjørkan).	Kickoff meeting with science partners and fisher stakeholders in Steigen During this meeting Peña presented the possibilities and ideas behind the acoustic gear he works with, and suggested a design for how to collect the necessary data together with the fishers. Together, they agreed on how to move forward based on earlier experiences and what is practical and realistic to achieve. After this meeting, both the IMR and the fishers had some tasks to realize in order to move forwards. The fishers established a committee to choose a vessel for the project, and the IMR looked into what was necessary in terms of equipment and analysis of data.

London, 07.06.2010	Representatives from the IMR (Sunnanå), the local fishers' organization (Andersen) and the NCFS (Holm and Bjørkan).	A follow up meeting. Practical issues and budgets were discussed.
Tromsø, 18.08.2010	Knut Sunnanå, Petter Holm, Maiken Bjørkan	A follow-up meeting discussing the budget as well as how to proceed
Steigen 08.09.2010	Representatives from the local fishers' organization (Andersen, Skogeheim and Pettersen) and the NCFS (Bjørkan).	We agreed to aim at a meeting with all partners in October, during the annual meeting in the fishers association in Trondheim.
Steigen 07.09.2011-09.09.2011	Mark Dubois (IFM Denmark), Maiken Bjørkan (NCFS), Several local fishers	This meeting/fieldtrip was arranged in order for IFM to do their interviews for WP 4. Maikens role was to translate and help with practical issues
Trondheim 06.10.2011	Petter Holm (NCFS), Jan Andersen (NF Steigen) and Maiken Bjørkan (NCFS)	The partners from the NCFS and the NF met to discuss the budget, responsibility sharing and to have a general update on progress.
Tromsø 25.11.2011	Hector Peña (IMR), Knut Sunnannå (IMR), Jan Andersen (NF, Steigen), Torleif Paasche (NF), Petter Holm (NCFS), Maiken Bjørkan (NCFS).	All partners met to discuss budget, challenges and progress. Main concerns mentioned were to ensure that the sampling would start in 2012, and to find funding for more vessels.
Bodø 16.02.2012	Jan Andersen (NF Steigen) and Maiken Bjørkan (NCFS)	The partners met to follow up on funding possibilities, and had a meeting with the county council. The partners also discussed general issues.
Steigen 12.04.2012	Asgeir Aglen (IMR), Maiken Bjørkan (NFH), Jan Andersen (NF) og Trygve Skogheim (NF). Sted: Steigen vertshus	This meeting mainly aimed at establishing a sampling system. The IMR scientist and local fishers discussed the maps and the next day they went out together to test sample.
Brussel 02.07.2012	Jan Andersen (NF, Torleif Paasche (NF), Asgeir Aglen (IMR), Petter Holm (NCFS) og Maiken Bjørkan (NCFS).	We discussed what we have acheived, what could be improved and what we should focus on in the future.
Steigen 0.5.08.2012-07.08.2012	Maiken Bjørkan (NCFS) and Trygve Skogheim(NF)	We met at his vessel and looked at the facilities for sampling. Discussed how it works.

Significant results:

In line with our objectives of developing a data collection system for coastal cod as an integral part of fishers activities, the sampling and analyses of the data collection is now working and systematized.

The NF partners expressed some concerns with regards to the role of fishers' knowledge in the project. While fishers have been included in all stages of the project and in all decision making arenas, this case is influenced by the fact that we are trying to produce data for scientists to use. Accordingly, we are now discussing how to focus more on fishers' knowledge.

An exchange visit is organized between Dover and Steigen, and will take place in October.

It is important to look into the issue of fishers' knowledge and discuss how it can be integrated more in the case study. We also think that this can be a general note to all cases: what is fishers' knowledge and how is it different from science?

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)).

Over the next 6 months we anticipate that the project will flow forwards as it has so far. We assume to meet with all the local partners at least once before March 2013, and to do fieldwork in Steigen with the fishers.

Case study 6: Sweden - Whitefish

Science Institute: Swedish university of Agricultural Sciences, Dep. Aquatic resources, institute of freshwater research,
Industry partner: Lake Vättern Water Conservation Society
Lead PI: Alfred Sandström

1. Science Highlight

Very high level of involvement of fishermen and despite extreme weather conditions a large collaborative effort in joint surveys (279 survey occasions of which 106 (or 38 %) were joint surveys)

1. Progress Report

MS I: (Month 1-6)

Concerning the case-study in Lake Vättern, the first period of the project has been focussed on communication with fishermen and regional authorities and allowing fishermen to take part in the design of joint sampling activities. A total of fourteen commercial fishermen have so far agreed to take active part in the project. This must be considered a successful result since this constitutes more than 50 % of the total number of fishermen in Lake Vättern. Firstly, a workshop with all participating fishermen was carried out in order to communicate the idea of the project and the case-study. Secondly, one-on-one researcher/fishermen meetings were carried out with all participating fishermen in order to design individual plans within the common theme of the case-study. Thirdly, starting in the middle of August, there has been active collaboration in the field with fishermen. So far, the response of fishermen has been overall positive. Data collection and field collaboration will continue until the end of December when the fishing season for the target species of the case-studies ends. Interestingly, there is a large variation as regards preferred sampling design and fishermen´s ideas concerning the behaviour and life-history of the target species. This is partly a consequence of different environments in different parts of the lake but also, potentially a result of fishermen having different histories and backgrounds. The peak activity of sampling will be between October and December. At this stage it is too early to summarise detailed results of the field campaign.

MS II: (Month 7-12)

Concerning the case-study in Lake Vättern, the second period of the project has been focussed on practical field work in collaboration with fishermen during the main fishing season in autumn and winter. The weather during the autumn was extremely harsh which limited the number of fishing trips to some extent. In total, almost 300 fishing efforts has been carried out during the specific period of which 40 % were collaborative, e.g. with scientists working together with fishermen. A total of eleven commercial fishermen have been active in the project and three more has been active only in the planning. A second workshop with all participating fishermen was carried out in the end of the period in order to interpret the results collectively and discuss future plans. So far, the response of fishermen has been overall positive. Data collection and field collaboration will continue to a smaller extent also in April.

MS III: (Month 13-18)

This period was less intense than the previous one since there is limited fishing during this period. Some time was allocated to analysing data and presenting results from the case-study and the project as well as planning the forthcoming field activities in autumn and winter. A test of discard and catch- and-release mortality of undersized Arctic char was conducted together with two Masters students.

Summary of progress towards objectives and details for each task;

- Task 2.1. No involvement yet but plans to be involved in forthcoming mutual learning event concerning collaborative assessments of small-scale fisheries
- Task 2.2 Active involvement in workshop.
- Task 2.3 No clear involvement yet but discussions with lead on potential areas of interest.
- Task 2.4 Progress reports submitted to lead partner. One first manuscript submitted to journal. Further reports and manuscripts under preparation but will take more time and effort than what was first anticipated. Corrective actions – involve more students and collaborate with other researchers within the project as well as outside of the project. This specifically concerns cross-sectoral work, collaboration with social scientists etc.

Highlight clearly significant results;

- Discovery of a "new" form of whitefish using traditional fishermen's knowledge– a rare deep-living, winter-spawning eco-morph.

- Development of a gear selectivity model for whitefish and arctic char to better assess and avoid by-catch mortality

- Surprisingly good involvement of fishermen (more than 50 % involved in the project). Positive feedback so far concerning the process and way of working.

- Results so far show that it seems to be possible to reach the overall case-study objective (to achieve a selective fisheries on whitefish).

- Despite extreme weather conditions a large dataset has been collated in collaboration with fishermen. 279 survey occasions of which 106 (or 38 %) were joint surveys with a scientist participating

- Two successful workshops have been arranged with the participating fishermen.

Deliverables

- D2.2.2-3
  Participation in workshops and in summary work.
- D2.3.1
  Field work, number of surveys = 279 survey occasions of which 106 (or 38 %) were joint surveys with a scientist participating
  Number of meetings with stakeholder partner: a) With all stakeholders jointly, two workshops arranged. B) Meetings with stakeholder partner: six. C) Individually with participating fishermen: circa 2-4 meetings per fisherman so far.
  One manuscript submitted. Other manuscripts planned to be prepared this winter.
- D.2.3.2 No publications yet, but plans to prepare during forthcoming milestones.

1.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)

This period is where the fishing period for whitefish takes place. We anticipate intense work with sampling of data with fishermen in the field, a test of new fishing gear (the push-up trap and other new innovations), writing and analyses of manuscripts and reports and participation

in the EIFAAC international symposium “Towards responsible future in inland fisheries - Management-related collaboration in inland fisheries and aquaculture” held in Hämeenlinna Finland in late October 2012.

Case study 7: France & Spain - Tuna

Institute: IRD & AZTI TECNALIA
Lead PI: LAURENT DAGORN & GALA MORENO

1. Science Highlight

Key stakeholders of the purse seine tuna industry were gathered in two parallel participatory approach meetings, one with French representatives and other with Spanish. The first meeting was held on June 20 and 21 of 2012 at Quimper (France). The second one was held a few days later, on June 26 and 27, at Sukarrieta (Spain). Participants included fishermen, scientists, ship owners, NGOs, associations, regional fisheries commission delegates and government representatives. Professional mediators with non-fisheries backgrounds conducted both meetings.

Three conceptually broad questions were addressed during the meetings: (i) what is the ecosystem approach to fisheries (EAF), (ii) is it possible to build a common view of the EAF and how would it be, and (iii) how to put the EAF into practice in the tuna fisheries management. The last also included minor questions such as how to improve the monitoring, what new indicators and data can be used and what would it be the role of each stakeholder in 10 or 20 years from now.

The broadness of the questions and the skills of the professional mediators who conducted the meetings allowed an open discussion as well as the arising of other relevant topics of common interest. Within the most commented topics were the use of fishing aggregating devices (FADs), the bad image of the purse seine fishery and the IUU fishery (illegal, unreported and unregulated). Scientists also highlighted the lack of data as an important concern.

Having separate meetings also helped to identify crucial differences between the two main tuna purse seine fleets operating in the Indian Ocean. Regarding the use of FADs, for example, the French fleet raised concerns to the lack of control and even suggested some management measures. The Spanish fleet, in the other hand, agreed that regulations are not necessary at this point and claimed for more studies to be conducted on the matter. Spanish boats are bigger and make use of supply vessels, which enables them to have more FADs resulting in higher catches. French boats are smaller than the Spanish ones resulting in fewer catches and lesser need to use FADs. This scenario is an indicative of why the Spanish fleet seems to be satisfied with its situation while the French fleet seems to want a more fair competition.

These distinct fishing strategies leading to divergent opinions on crucial policies will be a challenge, especially when considering that both flags are represented by only one voice, the EU.

2. Progress Report

- Purse seiners landing in Victoria (Seychelles) have regularly collected biological samples of by-catch species for studies on the biology of these species.

- Fishermen are sharing echo sounder buoy information with scientists to improve estimations of by-catch species using the sounder.

- Semi-structured interviews are being conducted with skippers to collect fisher's ecological knowledge (FEK). The aim is to extract valuable information from fishers on historical trends, such as size and abundance, of tuna and by-catch species and also on the development of the FAD fishery in the Indian Ocean. During the interviews a questionnaire is followed, but fishermen are left free to speak their mind and other questions might come up. The questionnaire has been designed to be of easy understanding for a non-scientist public and user-friendly, with maps and graphs to draw in and multiple-choice questions.

- Biological samples = 290 silky sharks, 280 rainbow runners and 350 triggerfish.

- Field work (number of interviews) = 6, 4 with French skippers and 2 with Spanish.

- Number of meetings with stakeholder partner = 3, 2 in Spain and 1 in France.

- Preparation and execution of two parallels participatory approach meetings with key stakeholders of the tuna industry. Participants included fishermen, scientists, ship owners, NGOs, associations, regional fisheries commission delegates and government representatives that were gathered in an open debate to discuss ecosystem-based management of the purse seine fishery. Both meetings were held in June 2012. The first one, with French stakeholders only, took place at Quimper (France). The second, with the Spanish stakeholders, took place at Sukarrieta (Spain). Both meetings were meant to have the exact same structure to ensure the comparability between results. Professional mediators, outside the fishery industry and with experience in participatory approach, conducted the meetings.

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 – 24 (1 October 2012 – 31 March 2013)).

- Advance in the analysis of buoy with echo sounder data to better estimate by-catch species.

- Discuss other possible scientific collaborations (i.e. which other data collected by the fishermen can be shared).

- Continue interviewing skippers to collect FEK using the semi-structured questionnaire. During the interviews some experts are being identified. The idea is to use them as counsellors, going back for advice and more questions. As a solid historical trend is aimed some retired skippers will also be interviewed.

- Continue meetings with stakeholders. The format of the meetings and each stakeholder who should be present still need to be discussed. One possibility is to have regular mutual learning meetings between fishermen and scientists. During these events, important issues can be identified and a boarder meeting could be scheduled with the presence of all stakeholders.

- During the past stakeholder meetings potential ideas of joint work were discussed and, as a long-term activity, a collaborative book or movie could be produced.

- A need for improvement in the communication system between scientists and fishermen was identified. Fishermen are sharing their knowledge but scientists are

failing to bring back the results generated with what was shared. One of the future directions of this case study could be the set up of a website to improve this communication channel.

Case study 8: Italy - management

Institute: ISPRA (Istituto Superiore per la Protezione e Ricerca Ambientale) and Consorzio UNIMAR

Lead PI: Saša Raicevich

1. Science Highlight

Fishery independent trawl survey. On the 20th of August 2012, ISPRA and UNIMAR scientists started the first GAP2 fishery-independent trawl survey in the Northern Adriatic Sea (Mediterranean). The survey lasted three days at sea (20th -22nd August 2012) with the bottom trawlers "Drago" and "Perla Nera" (FFVV joining the GAP2 project), covering an area that extends over 59 nautical miles between the Po delta in the south and the Grado-Marano lagoon in the north (21 stations, whose location was defined by scientists and fishermen together) within 4 and 18 nautical miles from the coast, that represents the Veneto Region Administrative marine waters.
The sampling will be performed seasonally (or twice a year) to monitor and describe demersal fish and shellfish, together with fish habitats and biocenosis, spatial and temporal distribution in the area. Commercial species, by-catch and discard, have been collected and analyzed both at sea and in the lab during the survey by ISPRA scientists.
This first survey was particularly important since it was conducted at the end of the summer fishing ban (started on the 16th of July 2012) enforced in the area, which every year stops trawl fishery in Italian waters for more than one month to ensure the reproduction and successful recruitment of some of the most important demersal resources exploited by local fishing fleets (for instance, the red-mullet *Mullus barbatus*). Thus, data collected are useful to evaluate the status of marine resources immediately after the ban, and results were illustrated to fishermen and stakeholders on Saturday 25th of August, two days before fishermen started to go at sea again. Notably, this meeting was joined by many approximately 70 fishermen and by local authorities (the vice Major of Chioggia, who is responsible for Fishery Office of Chioggia, Veneto Region representatives and fishery cooperatives representatives), who expressed appreciation for the GAP2 project and declared that they will be collaborative in the next future. This result is important since one of the criticalities that emerged last year was the difficulty to involve more fishermen and local authorities in the GAP2 project.
Results highlighted that the end of the fishing ban should have been delayed (probably until the end of September) because most catches were juveniles, since the recruitment of many commercial species is still ongoing. The draft report of the survey has been finalized on the 7th of September 2012; it has been submitted to GAP2 participants for its revision and to take a common decision on its dissemination to the public. To this purpose a meeting have been scheduled on the 14th September 2012. We believe this is the most important outcome, so far, since it is directly linked to fishery management in the area, and represents a support to both fishermen and policy makers. Of course, the integration of such data with the fishery dependent observations, and data from the electronic logbook and VMS data will be complementary and will provide the basis to propose management regimes that are rooted in real field data.

2. Progress Report

The Northern Adriatic Sea Case Study (Spatio-temporal distribution of fishing effort and biological resources in the Northern Adriatic Sea: towards the identification of fish habitats and management proposals in the framework of a participatory approach) involves ISPRA

and UNIMAR scientists as well as a group of fishermen (about 10-15 skippers -fishermen) belonging to the Chioggia fishing fleet.
It's main aim is to provide support to the definition of management proposals giving value to fishermen's knowledge and to the participation in field activities. To this purpose, several field work has been established in order to jointly collect data on fishing effort distribution, catches, habitat definition, in order to quantitatively describe fishing effort and biological resources distribution, as a basis to propose management schemes in the region according to a participatory approach.

Number of meetings with stakeholder partners:

- Monthly meetings with GAP2 fishermen = 16 meetings, mainly held at the Chioggia fish market meeting room or at ISPRA branch in Chioggia, were carried out in order to plan activities and discuss results;
- Meetings with UNIMAR = 8 meetings to plan activies and discuss the progresses in the CS development;
- Meetings with RACMED = 5 meetings to discuss progresses in the CS and establish collaboration between the GAP2, the Adriatic sea CS and RACMED;
- Meetings with National Resource Council (ISMAR Ancona, Italy) = 4 meetings in order to enforce a scientific collaboration for the use of electronic logbook on board of GAP2 fishing vessels;
- Meetings with Regional Fishery Management Bodies and local administration = 4 meetings to introduce GAP2 project and collaborate on issues related to fishery management in the CS area;
- Interviews with 6 fishermen that aimed at collecting their ecological knowledge and incorporate their instances in the research activities.

These activities were carried out in order to:

i) refresh and discuss the aims of the project with fishermen and stakeholders partners, maintain momentum and involve fishermen in the field activities, while also discussing the sampling plan and the early results;
ii) establish collaboration with scientists belonging to other research institutes working in the Adriatic Sea (National Resource Council - ISMAR (Ancona) and University of Rome (Tor Vergata) to foster collaboration on issues of common interests for the development of the CS (i.e. electronic log-books and VMS data);
iii) establish a network with other stakeholders, from the local/regional (e.g. local and regional fishermen associations, Chioggia Fishery Office, Veneto Region Fishery Office, national and Mediterranean fishermen associations and stakeholders through the Regional Advisory Council of the Mediterranean Sea) to promote the approach and aims of GAP2 project and, in particular, the Northern Adriatic Sea Case-study, in order to build a common ground that could allow CS outcomes to be incorporated into management proposals;
iv) to disseminate information on GAP2 framework, approach and early results with the purpose of giving value and relevance to this participatory approach.

Field work:

- Collection of fishery-independent data in the framework of the SoleMON trawl survey in the whole Adriatic Sea through a collaboration with the National Research Council (November 2011) = 10 fishing days.
- Number of surveys on FV = 15 daily trips - collection of fishery dependent data (catches and discard composition) and oceanographic data through the presence of ISPRA onboard observers on commercial fishing vessels.
- Collection of fishery dependent data by means of electronic log-books installed on 8 fishing vessels belonging to different métiers (self-sampling, since July 2012).
- First fishery independent trawl survey in the coastal waters of the Veneto region = 3 fishing days (20^{th}-22^{nd} of August 2012).

Field work activities were aimed at collecting information on the spatio-temporal distribution of fishery resources as well as describing fishing grounds and benthic mega epifauna (as proxy to describe/identify commercial fishing grounds and habitats). Collected data were analyzed by ISPRA scientists and relevant results were illustrated to fishermen.

All this field work, together with the fishery independent trawl survey started in August 2012 represents a fundamental step for the Italian case study, aiming at identifying and mapping fishing grounds, defining fishing effort and describing catches and discards composition, by integrating fishery dependent and fishery independent data sources. The information will be available either to fishermen and fishery managers (early results has been already shown and discussed with fishermen) and will facilitate the definition of proposal for a spatially explicit management plan in the framework of an ecosystem approach.

Deviations from the Description of Work

Deviations from the Description of Work consisted mainly in a delay of field activities respect to planned activities (that were planned to start on January 2012), due to administrative difficulties in providing timely the funding as well as recruiting people. Thus, in the next future we will step up field activities and more detailed reports will be created as we collect a longer time series of data. At the same time, it is worth noting that the Electronic logbooks implementation is still not completed, since the evaluation of early results to test the functioning of the system still needs to be accomplished. Moreover, the full analysis of results has not been accomplished since it will be needed to cover a longer time-span in order to be able to describe seasonal patterns in biological resources and fishing activities. However, all collected data are already inserted in a DB and the early analysis of partial datasets shows that data are coherent with fishermen experience. It is worth noting that further effort will be devoted to integrate the analysis with data that were collected in the past years in the framework of comparable field activities, to conduct long-term analysis for the evaluation of the present day data.

Criticalities

It is worth noting that the collaboration with fishermen and stakeholders improved during the project activities. However, to our view, it is still not “safe” and “robust” to cope with external events that might contribute to worsen it. This is to say that the situation of the Chioggia fishing fleet is very difficult at the moment and any external change in the current situation (even in the enforcement of rules or controls by the authorities) could possibly reflect in the willingness of fishermen to collaborate to the project. Indeed, the collaboration between fishermen and scientists in the framework of GA2 has the potential of changing the “usual” management practices, that in turn represent a “system of power”. Some comments from local informants show that this is something it is feared. This information can be judged according to two different sides of the same medal: the project in itself is doing well; the collaboration might fail due to external events.

Even the collaboration between GAP2 fishermen is not simple, since many different point of views are incorporated in our consortium, with a clear difference between small and large trawlers, that have different needs and aims in terms of management. Simple issues like the economic contribution to fishermen hosting our observers or to those that joined the fishery independent survey might determine discussion between our fishermen partners.

At the same time, the collaboration with Regional Fishery bodies is not straightforward: while the GAP2 project seems to be considered as an interesting bottom-up approach, the technical bodies are used to related to Regional Fishermen organizations without taking into account the scientific evidences provided by research institutions.

To prevent these criticalities, the approach we are following is to increase the dialogue with GAP2 participants, increase as much as possible the collaboration with stakeholders, provide explanation and feedback to fishermen, discuss results and plan together the future activities, thus sharing responsibility and choices together. An example could be seen in the “report” of the fishery-independent survey in the Veneto Region, that has been spread to fishermen for a common discussion about its contents and to decide how (including whether or not) to let it be disseminated to Administrations and management bodies).

Since the Italian case-study was selected by the WP4 to evaluate, whether, when and how collaborative research makes a difference to empirical knowledge and to management, technical support was given to M. Dubois (WP4) for the setting of interviews to local informants (GAP2 participants, stakeholders, policy makers, etc.) in Chioggia, by organizing the meetings and providing a translator from Italian to English.

The Italian case -study contributed to the development of the CS web site in the context of the GAP2 website providing information on the project activities, the description of the

stakeholders, and additional materials and news on the enforcement on the fishery independent trawl survey. Moreover, several seminars were delivered by ISPRA researcher to promote GAP2 activities.

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)).

In the next six months the bulk of the activities will be devoted to the continuation of field activities and the analysis of early results, along with the collaboration with stakeholders and policy makers to support GAP2 vision and proposals for fishery management. The following activities (including delivery of papers and MSc thesis based on GAP2 activities) have been scheduled:

i) November 2012. Presentation of the paper entitled "When understandings do not evolve. Adriatic Sea fisheries management: still the same old story?" (authors: Tomaso Fortibuoni, Otello Giovanardi, Saša Raicevich) at the Oceans Past IV Conference (Fremantle, Australia).

ii) November 2012. Presentation of the paper entitled "Disappeared habitats of the Northern Adriatic Sea" (authors: Saša Raicevich, Carlo Froglia, Tomaso Fortibuoni, Otello Giovanardi) at the Oceans Past IV Conference (Fremantle, Australia).

iii) November-December 2012. Participation to the SoleMON trawl survey.

iv) December 2012. Book: Un futuro per la pesca in Alto Adriatico (*A future for the Northern Adriatic Sea fisheries*). Quaderni di scienza marina. ISPRA. 80 pages.

v) March 2013. Monica Mion (MSc student) will discuss her MSc thesis (University of Padua, Marine Biology) developed in the framework of GAP2 project. Provisional title: Spatio-temporal distribution of fishery resources in the Veneto Region: implication for management strategies.

vi) March 2013. Camilla Piras (MSc student) will discuss her MSc thesis (University of Padua, Marine Biology) developed in the framework of GAP2 project. Provisional title: Benthic habitats and demersal fishing grounds of the Northern Adriatic Sea.

Case study 9: Malta - management

Institute: MRRA
Lead PI: 11

1. Science Highlight

In the past fisheries scientists encountered some problems with regards to trawlers' onboard sampling amongst others. While few were those fishermen or vessel owners which trusted scientists onboard, due to these being perceived as part of the enforcement system, fewer were those vessels which came back into port on a daily basis, making onboard observations by scientists feasible. when trying to work together with fishers. A major problem was that the fishers were not willing to share the fishing ground coordinates with the fisheries scientists, another problem was that the fishing trips regularly last for more than four days, making it difficult for on board observation to be carried out. Through the GAP II project, a study whose objective was set up by the fishermen and discussed with scientists from the Capture Fisheries Section of the MRRA, was designed. Working towards an objective which was set up by themselves, is expected to increase the fishermen's participation in onboard

observations. Furthermore, in order to overcome the problem of onboard observers when trips are longer than 1 day, the case study of the project in Malta is also aiming towards fishers' self-sampling.

The objectives of the Maltese case study are to identify main nursery and spawning areas of target species within the 25 nautical mile Fisheries Management Zone (FMZ) and studying their temporal fluctuations along the year. The fishermen asked for this study to be carried out in order to have data which could be used for advice when managing the trawling fleet working within the FMZ. The sampling methodology was discussed between the fishermen, whose experience and years of observation was used in order to determine the locations to be sampled, and the scientists, who designed the methodology for sound results to be obtained.

2. Progress Report

While field work surveys have been planned to start during the month of December 2011, these have started during the month of August 2012. Up till now one survey has been carried out. Another 2 field trips involving two different vessel are planned during the month of September.

The reason for the delay in field work surveys has been the initial reluctance of fishermen to participate in the project, perceiving it as a task with no financial benefit. This problem was tackled by discussing and setting the project's finances together with the fishermen's cooperative. Since reply for participation in the project was only obtained from 2 vessel owners, efforts to include further vessel owners are ongoing. Vessel owners are being approached individually in order to further explain the project, the perceived benefits and their participation in it.

Sixteen meetings have up to now been carried out between MRRA and stakeholder partners. These meetings have been divided into two categories, meetings with the cooperative which is the stakeholders' representative and meetings with the individual fishers. The meetings with the cooperative have focused more on setting up and planning the new case study, on the other hand the meetings with the fishers have focused more on obtaining fishers' traditional knowledge and introducing the project to the fishers and their role in the case study. Along the project, the methodology of meetings with the fishermen was changed. It turned out to be very difficult for fishers to attend meetings all together due to the nature of their work, this problem was tackled by first discussing with representatives from the cooperative, participating in the project as a partner, then holding individual meetings with the fishers.

As reported in the first section of this report, the fishermen's know-how together with research knowledge has been used in order to design the methodology of the study. Furthermore, through the study, fishermen's observations throughout the years will be documented with the help of research knowledge.

Maps have been the main tool used to bridge the gap between stakeholders, scientists and policy makers. The Maltese case study deals with the spatial dimension of fish stocks, therefore maps are the ideal tool. They are highly visual and easily understood by all participants involved in the Maltese case study, furthermore maps are a tool routinely used by fishers.

Maps are going to be used to combine data from existing sources, namely data available from MEDITS surveys collected yearly since 2001. Traditional fishers' knowledge on the spatio-temporal distribution of the species to be studies, spawning grounds and nursery areas is also being used and documented.

An open day has been held at the Malta Centre for Fisheries Science on the 12th May 2012 where the GAP2 Maltese case study has been introduced to the general public through a presentation and flyers have been handed to the audience.

Approval through the necessary channels has been granted to start a FaceBook page for the Maltese case study.

Till now there have been no results to present to the general public since sampling has just started.

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)).

In order to support the MEDRAC's efforts in engaging the commission and member states in dialogue on regionalisation of the CFP, MRRA together with Ghaqda Koperattiva tas-Sajd have agreed to further participate in future MEDRAC meetings of CFP reform.

For the month of October we are planning to cover the full set of three monthly surveys and will continue doing so up to September 2013 so that we will have a total of 39 surveys.

By March, 6 months of sampling data should be available, the data will be mapped by the use of GIS and any preliminary results will be discussed with the fishers and compared with fishers' knowledge and other fisheries dependent and fisheries independent data.

From October, field work sampling should start at a steady pace with three samplings per month.

Case study 10: Spain – shrimp

Partner organisation name: Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC)
Partner number: 12
Lead scientist: Joan B. Company

Stakeholder organization name: Federació Territorial de Confraries de Pescadores de Girona (FTCPG)
Partner number: 27

1. Science Highlight

During the first 18 months of the work development in our Case Study, two main achievements should be highlighted:

A) MANAGEMENT PLAN: Beginning in the framework of the GAP_1 proposal, a working document of a Management Plan for the fisheries of the deep-sea red shrimp *Aristeus antennatus* have been discussed and drafted by three parties, i.e. Catalan Autonomous Government, Regional Federation of Fishery Associations of Girona and the Marine Science Institute (ICM-CSIC). Being a very long and stressful discussions, the final draft of the Management Plan document was sent to the Fishery Ministry of the Spanish Government on July 25th. The Spanish Government already has prepared a draft document and send it to the 3 parties for its final approval. As acknowledged by the Spanish Government, it is worth to mention that this Management Plan document is the single one being drafted for the Mediterranean Fisheries. As per this mentioned reason, congratulations were received from the Spanish Ministry.

B) MARINE STEWARDSHIP COUNCIL: Among hundreds of applications, the PhD student Giulia Gorelli, who is doing her research in the framework of GAP_2 proposal, have been awarded for the Marine Stewardship Scholarship Fund (see announcement in: http://www.msc.org/newsroom/news/msc-announces-recipients-of-new-scholarship-award). Also, the Marine Stewardship Council staff has announced their interest in

the scientific work of our case study and in the study of the potential certification of the red shrimp fisheries of our area. No other Mediterranean fishery is being studied for obtaining the MSC certification.

2. Progress Report

During these first 18 months of the GAP_2 project, the activities of Partner 12 (CSIC) and partner 27 (FTCPG) have been developed mainly under the framework of the objectives proposed in Workpackage 2.

The specific work conducted is mainly summarized as follow:

a) Field work: 13 field biological surveys have been conducted during these last months, beginning October 2011, at a twice per month frequency.
b) Number of meetings with stakeholder partner: over 15 meetings have been conducted between Fishery Association, Autonomous Government and Scientific partners.

During this period, the acquisition of field data was initiated and a series of meetings were done in order to discuss the agreement achieved during the GAP_1 discussions.

The chronology of the specific activities were as follow:

1.- October, 1st, 2011: two observers started doing the field work on board to one fishery vessel of the Fishery Association of Palamós, *Nova Gacela*. The observers are doing their work at a frequency of almost twice per month in order to gather the biological data needed for the biological assessment of the Red shrimp fishery resource.

2.- November 1st, 2011: logbooks were given to all fishery boats of the Fishery Association of Palamós. The information obtained from these logbooks pretend to know the fishing grounds visited by all the fleet along the entire sampling period (two years). An ongoing conversations are conducted every two weeks with the skippers of each boat of the fleet in order assure the correct implementation of the data required.

3.- October, 10th, 2011: Meeting at the Palamós Fishery Association. Three institutions were present at the meeting: Fishery Association of Girona, Scientific partner and Regional Fishery Administration. People present at the meeting: President and Vicepresident of the fishery association, plus two speakers of the fishery association, the IP of GAP_2 (Joan B. Company) and Prof. Sardà, and the vice-director and Service Chief of the Regional Fishery Administration. Objectives: to discuss the first initial document of a future Management Plan for the Fishery of the red shrimp *Aristeus antennatus*. In this discussion, one of the agreements was to close the two main fishery grounds of this species (named *Rostoll* and *Sant Sebastià*) during three months and increase the mesh size to 40 mm square mesh for the rest of the sampling period (two years).

4.- January 1st to March 31th, 2012: The two main fishery grounds of the red shrimp were not visited by the entire fleet during this period. This agreement was raised in the framework of the GAP_2 discussions. With a special permission from the Catalan Autonomous Government, during this closing season, we have followed our field work on the two closed fishery grounds.

5.- January 26th, 2012: Meeting at the Palamós Fishery Association. Three institutions were present at the meeting: Fishery Association of Girona, Scientific partner and Regional Fishery Administration. People present at the meeting: President and Vicepresident of the fishery association, plus two speakers of the fishery association, the IP of GAP (Joan B. Company) and Prof. Sardà, and the vice-director and Service Chief of the Regional Fishery Administration. Objectives: to follow the achievement of the agreements raised on October the 10th.

6.- February 14th, 2012: Meeting at the headquarters of the Regional Fishery Administration of the Autonomous Government of Catalonia (*Generalitat de Catalunya*). Two institutions were present at the meeting: Scientific administration and Regional Fishery Administration. People present at the meeting: General Director of the Catalan Government, Service Chief of the Regional Fishery Administration and the IP of GAP $_2$ (Joan B. Company) and Prof. Sardà,. Objectives: discussion on the working document of the Management Plan for the fishery of the red shrimp. The agreement was to send this first draft to the Spanish Government in order to know their opinion about the viability of this fishery strategy .

7.- March 27th, 2012, Rome: Presentation of Case Study "New fishery management strategies for the Mediterranean Red Shrimp" to the Executive Meeting of the RAC MED in Rome, Italy. The other two case Mediterranean Case Studies of GAP2 were presented on that same meeting. The Coordinator of the GAP_2 was also present of this meeting.

8.- May 16th, 2012: Meeting at the Palamós Fishery Association. Ongoing discussion on the working document of the Management Plan.

9.- June 27th, 2012: Meeting at the Palamós Fishery Association. Ongoing discussion on the working document of the Management Plan.

10.- July 17th, 2012: Meeting at the Palamós Fishery Association. Ongoing discussion on the working document of the Management Plan.

11.- August 23th, 2012: Meeting at the Palamós Fishery Association. Discussion on the draft of the Management Plan sent by the Spanish Ministry of Fisheries.

During all this second year, permanent ongoing negotiations (personal meetings, emails exchange and phone conversations) with the Regional Fishery Administration (*Generalitat de Catalunya*) and Fishery Association of Girona have been done in order to officially establish a Fishery Management Plan for the deep-sea red shrimp. Together with all these negotiations, we are submitting to the Fishery administration of the Catalan Government a proposal to conduct a selectivity trail that will be co-financed with GAP_2 budget.

PhD thesis dissertations in the framwork of GAP_2

One Doctoral Thesis have been programmed in the Framework of GAP_2. The PhD student started its research activities last October 2011. On September 5th, 2012, the Spanish Ministry of Education and Culture has published the selected students to be potentially awarded by a 4 year PhD fellow, on which Giulia Gorelli appears as one of the selected students.

Giulia Gorelli (ongoing). New management strategies for the deep-sea red shrimp fishery. PhD dissertation, University of Barcelona. Supervisors: Dr Joan B. Company (ICM-CSIC) and Prof. Francesc Sardà (ICM-CSIC).

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24

Over the coming 6 months we are planning to follow with the monitoring of the biological and population aspects of the deep-sea shrimp *Aristeus antennatus*. Two observers (Giulia Gorelli and Joan B. Company) will be monitoring onboard the three main fishery ground of the Palamós area during the coming 12 months.

A two weeks selectivity trail is planned for next spring 2013, where two different net size and a experimental grid will be test in two different fishery vessel. The funding for this trail are still

under negotiation with the Catalan government. This trail was planned initially for this September but financial difficulties avoid its final

Case study 11: Estonia - mapping

Institute: University of Tartu, Estonian Marine Institute (UTARTU)
Lead PI: 13

1. Science Highlight

Attempt is made to connect the concepts of Marine Space Governance, of Web-based Multipurpose Marine Cadastre (WMMC) and of Integrated Ecosystem Assessments with aim to architect the system enabling the Ecosystem-based Marine Space Governance. At that, the Integrated Ecosystem Assessments are seen as a system's critical science-based element enabling the practical implementation of the Ecosystem-based Marine Space Governance. The BaltFishPlan Web application is developed in a course of implementation of the GAP2 case study "Mapping Baltic Fisheries in support of Marine Spatial Planning" and it is proposed as a prototype of the Web-based Multipurpose Marine Cadastre to be used also by GAP2 other relevant case studies.

2. Progress Report

GAP2 case study "Mapping Baltic Fisheries in support of Marine Spatial Planning"

During the GAP2 project reporting period months 1-18 the first results have been presented at 9 international meetings and conferences (12 presentations), 2 peer reviewed and GAP2 project related papers are presented at international science conferences and published. 2 working papers are published as a part of the ICES WG on Maritime Systems (WGMARS) Report and are available online.

The fisheries stakeholder meetings are planned and carried out as a Mutual Learning Events. The BaltFishPlan Web application developed in a course of implementation of the GAP2 case study "Mapping Baltic Fisheries in support of Marine Spatial Planning" is used as an efficient visualization and the Mutual Learning supporting tool as well as the working prototype of the Web-based Multipurpose Marine Cadastre.

Mutual Learning Events

GAP2 project presentation and the Mutual Learning Event were delivered as a part of the Annual Meeting of Estonian Fisheries Network Organization on 7 December 2011 in Sagadi, Estonia. As a result, the fishing industry representatives realized that they and the environmental NGOs have important common interest in protecting the Baltic Sea Essential Fish Habitats, and especially the fish spawning grounds of the shallow coastal sea areas.

Saaremaa Island's fisheries stakeholder's meeting in Kuressaare on 28 June 2012 gathered representatives of professional and part-time fishers as well as representatives of Saaremaa County Government. Among the critical issues related to the integration of fisheries into the process of Marine Spatial Planning the following was mentioned: 1) more precise delimitation of the coastline and the Saaremaa County's marine boundary delimitation by Estonian Land Board, 2) the conflict between the open sea trawl fishing fleet and the coastal fixed gear seasonal fishery, 3) the conflict over resource use between professional and recreational fishers, and 4) the worrying state of some Baltic Sea fishery resources that results in decreasing of fishing possibilities. Fisheries stakeholders supported by Saaremaa County Government are mapping the spawning, nursery and fishing grounds of most important coastal fish species. The results will be discussed during the next stakeholder meeting with Saaremaa Island's fisheries stakeholders in autumn 2012.

Hiiumaa Island's fisheries stakeholders are meeting with the GAP2 project team in Kärdla on 13 September 2012 with aim to discuss the practical integration of the fisheries into the process of Maritime Spatial Planning. The topic is especially hot because the Government of Estonia decided to authorize the Hiiumaa County Government to carry out the first real Marine Spatial Planning of the marine waters around the Hiiumaa Island. Therefore, the fisheries stakeholders are keen to develop credible, relevant and sound arguments to be used in balancing environmental, economic and social interests in a process of the Marine Spatial Planning for the Hiiumaa Island's waters. Among the critical problems are following: 1) Hiiumaa County's marine boundary delimitation, 2) conflicts over resource use between trawl fisheries and the coastal fixed gear fisheries as well as between professional and recreational fishers, 3) recent situation and prospects for the fishing harbours further development, and 4) the state of the fishery resources and the related fishing possibilities. In a course of the meeting and also later after the meeting the fisheries stakeholders are mapping the essential fish habitats and are discussing the necessary efforts in protecting the fish spawning, nursery and fishing grounds.

The methodology and the results of the recent and the future fisheries stakeholder meetings as the Mutual Learning Events will be analysed and presented as Deliverable D2.1 "Reports on specific Mutual Learning Events."

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)).

A series of Mutual Learning Events involving several Estonian fishing communities are planned to be carried out during the period 1 October 2012 – 31 March 2013. The BaltFishPlan Web application will be used at that to support the public participation and to facilitate the stakeholder consensus building.

It is planned to participate in the ICES Study Group on Spatial Analyses for the Baltic Sea on 6-8 November 2012, Lysekil, Sweden. It is planned also to continue to participate in the relevant BS RAC meetings with aim to disseminate the Estonia Mutual Learning experiences at the Baltic Sea regional level.

Based on the first results it is planned to submit 2 scientific papers to be published in peer reviewed journals.

The implementation of the GAP2 case study "Mapping Baltic Fisheries in support of Marine Spatial Planning"is evolving according to planned schedule and there are no critical issues expected during the next 6 months.

Case study 12: Netherlands - Flatfish

Institute: IMARES
Lead PI: Martin Pastoors

1. Science Highlight

Marloes Kraan presented the paper *"The optimal process of self-sampling in fisheries; lessons learned in the Netherlands"* at the World Fish Conference in Edinburgh (7-11 May 2012). The paper was invited for publication in the proceedings of the conference in the Journal Fish Biology. It was submitted in June 2012 and is currently under review. The paper describes three Dutch demersal fisheries research programmes in which self-sampling is used. And discusses the use of self-sampling; what are the risks and benefits compared to observer programmes. In the paper self-sampling is analysed as a form of cooperative research.

On 5 July 2012, Martin Pastoors organized a workshop on *"Making and using Long Term Management Plans (LTMPs): What's different when stakeholders are involved?"*. The workshop was well attended by a number of key stakeholders, policy-makers and scientists/advisors. A key finding from the workshop was that the development of long term management plans is essentially a process that should benefit from a broad stakeholder involvement in setting the objectives, identifying the trade-offs and exploring the potential management measures. Nevertheless, the practice is often that requests for scientific advice on management plans treat them as technical exercises. Some solutions were discussed and during the workshop concrete suggestions were made to change one of the on-going management plan developments and to make it fully participatory.

2. Progress Report

The IMARES case study consists of three main parts:

1. Learning from (on-going) self-sampling programmes: cod-monitoring, pulse-monitoring and the DCR discards monitoring. In each of these programmes fishermen are involved in self-sampling their catches, albeit using different self-sampling schemes. With GAP we analyse what is done in these programmes, how fishers and scientists cooperate and value the cooperation and will further the method of self-sampling.
2. Study research cooperation. Thereby we analyse what the success and failure was of the F-project (2002-2007) and analyse our self-sampling projects in the light of research cooperation.
3. Delve into discards as a topic. The self-sampling programmes all are related to the topic of discards. With the discard ban proposed in the revised CFP – the highly debated topic has priority on the Dutch fisheries agenda. The discards debate is not only factual and practical, but also ethical. We are interested in the 'local knowledge' of fishermen on discards and seek ways to include their knowledge in the knowledge domain related to discards. For this part we work closely together with the Discards Think Tank, which has been erected by the Dutch Fish Product Board (partner in GAP) in 2011.

For each of these parts we have been undertaking the following activities:

1. Interviewing fishermen and scientists about the programmes, visiting harbours to explain the method of self-sampling, discussing the method within IMARES. Co-organising the making of a film on how to self-sample in the pulse-monitoring. Writing an article entitled: *"The optimal process of self-sampling in fisheries; lessons learned in the Netherlands" (*see 1 Science Highlight)
2. We have had an intern (feb-aug 2012) who has finished a report about cooperation between fishermen and scientists in research projects: *Collaboration between Dutch fishermen and scientists of IMARES. An evaluation of three Dutch cooperative research projects.* She has interviewed fishermen and scientists about their role in

research cooperation projects, including the F-project, the industry survey and the DCR self-sampling programme. Also we have produced 2 overviews:

a. an overview of all cooperative research projects between IMARES and the sector.

b. an overview of all fishing vessels that have been and are participating in cooperative research – in total adding up to 162 vessels active in research – with some vessels participating in more than one project resulting in 250.

We have written an article in *Visserijnews* (Fishing News) about this high level of cooperation (see 3 Dissemination of Knowledge).

3. Together with the Discards Think Tank research questions have been developed which will be carried out. The goal of the research will be to bring ideas of the sector to the fore, which haven't been studied yet and to include local knowledge of fishermen.

2.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013).

Case Study IMARES - planned activities related to the three topics:

1. We will organise meetings between the scientists and fishermen involved in the self-sampling projects to discuss the results of the programmes, the method of self-sampling, the research cooperation and the underlying knowledge of both scientists and fishermen on the topic of discards / stock assessments. We are planning for these meetings to be held in the second half of 2012 and first half of 2013. We will write a self-samplings guidebook.
2. We will have some more interviews with scientists and fishers about the cooperation and the F-project and write an article on the basis of the intern's report.
3. Also we will start with the discards research questions of the Discards Think Tank and visit DTT meetings.

Case study 13: UK – management plans

Institute: Cefas
Lead PI: Steven Mackinson

1. Progress Report

Cefas has met with the North Sea RAC demersal working group at 3 of its meetings, each time presenting and discussing the direction of work on investigation ecosystem aspects of Long Term Management Plans (LTMP). Short reports of each meeting are provided on the case-study web page.

The shared learning of the important scientific issues and capability to address them has led to an evolution of the work. Initially, plans were to align with the RACs needs for developing a LTMP for fisheries catching whiting in the North Sea. However, our discussions allowed us to recognise that it was not sensible to focus on whiting fisheries in isolation, since they are intimately connected to other fisheries. This led us to frame the problem more generally as 'mixed fisheries', and a special focus group, comprised of members of the RAC and Cefas scientists was convened.

This focus group was also intended to enable a mechanism to channel collaboration with the MYFISH project, which will work with the RAC on the issue of Maximum Sustainable Yield.

(Note: Steve Mackinson leads WP2 in MYFISH and to enable continuity in the dialogue is the project rep to the NSRAC). However, formalisation of the RACs working protocols and their need to change their meeting agenda to accommodate urgent issues mean that there have been fewer opportunities than expected to get down to finer details of the work. Reflecting on this, it was decided with the WG Chair and Secretariat that a better approach will be for the RAC to nominate a few selected individual to work closely with the case study on a technical basis and to have period progress reporting to the Demersal WG. To ease burden on people's time, we will endeavour to align technical meetings with DWG meetings.

The conceptual work undertaken by Cefas on how to develop a common language for discussing the science issues has been used to prompt discussion at the RAC meetings. Technical work on developing ways to account for uncertainty in food-web interactions and incorporate this in an ecosystem modelling tool has been an important area of work, with good progress being made. Preliminary examples shown at meetings have led to a clearer technical description of the modelling work. The approach being taken is to develop a modelling tool that can be made widely available to other researchers through the Ecopath with Ecosim software. The next major technical milestone for Cefas is November 2012 when the uncertainty analysis routine should be available. This will enable scientists and the RAC to investigate the outcomes of alternative LTMPs and use the understanding of uncertainty in consider choices among possible management options.

A poster of the case-study work has been prepared and was presented at the GAP2 annual meeting.

1.1. Brief description of the anticipated future delivery over the next 6 months (months 19 - 24 (1 October 2012 – 31 March 2013)).

Technical work on developing a tool for evaluating uncertainty in ecosystem models will continue during the next six months. Initially a simple interface for use in participatory modelling with the RAC will be developed, at which point a decision will be made whether to invest in this further. The schedule of meetings will coincide with best availability of the nominated RAC members and alignment with meetings of the Demersal Working Group.