Project Final Report

Deliverable 6.1.2 Final Report

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Bridging the gap between science, stakeholders and policy makers

Phase 2 – Integration of evidence-based knowledge and its application to science and management of fisheries and the marine environment (GAP2)

Grant agreement: 266544

Capacities Part 5, Science in Society

5.1 First Action Line – A more dynamic governance of the science and society relationship

SiS-2010-1.0-1 Mobilisation and Mutual Learning Actions

Executive summary

Stakeholders may frequently challenge the validity or interpretation of scientific advice because of the negative impact policy decisions arising from it can have on their lives. This 'tension' between society, policy and science is plainly evident when environmental sustainability concerns appear in conflict with maintaining livelihoods. As an example of this phenomenon, GAP2 used active participation and knowledge sharing between scientists, stakeholders and policy makers as a way to reduce tension and build relationships that will yield long-term benefits to the sustainability of European fisheries. The premise for this approach is based on the understanding that:

- *The evidence-base for management improves if knowledge of fishers and their experience is integrated in a meaningful way with scientific and policy knowledge.*
- *If knowledge is shared and co-constructed it improves the implementation and effectiveness of management measures and;*
- *If knowledge is shared and co-constructed it improves the support for policy and societal goals to achieve responsible, sustainable, productive fisheries.*

Scientists & fishers work together to monitor cod populations in GAP2's Steigen case study.

Since 2012, 38 partner institutions from 11 European countries have been engaged in mutual 'learning by doing'. The work centred around 13 case studies, where fishers, scientists and sometimes policy makers, have worked together on a diverse range of research issues aimed at solving problems of shared interest in fisheries management and science; From monitoring coastal cod populations in Norway, assessing crab stocks in the SW UK, defining spatial marine plans in Estonia, modelling multispecies mixed fisheries in the North Sea, to confronting head-on the realities of a 'discard ban' in the Netherlands, GAP2 has sought to facilitate and integrate fishermen's and other stakeholders knowledge in to the scientific and management arenas which make decisions that affect them.

The inclusive approach has reaped many rewards, documented throughout this report. One particularly successful example is GAP2's red shrimp case study in Palamós, Spain, where collaboration between local fishers, scientists and the regional Government of Catalonia has

produced a co-management plan approved by the Federal government and now used as a role model for fisheries along the Mediterranean coast.

GAP2 scientist Marloes Kraan gathers knowledge aboard a Dutch trawler.

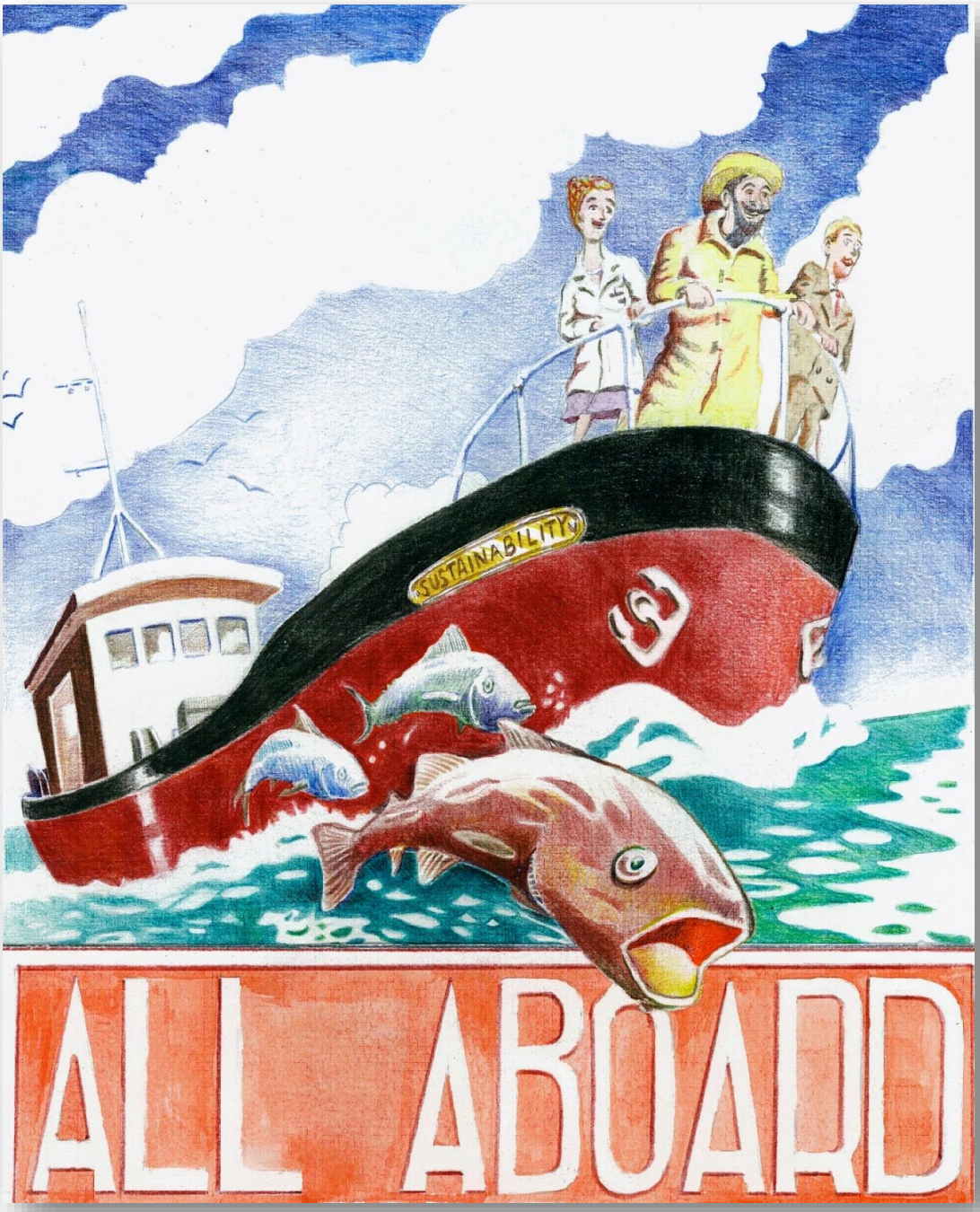
The wealth of new knowledge and data produced by the case studies has been complemented by the contributions to learning about participatory science and good governance of fisheries. Social scientists have continually analysed the building and developing of relationships between those involved in the work. Observing the case-studies as 'experiments' in the transition to a more inclusive ecosystem-based approach to management, they have also revealed the challenges and benefits of the participatory approach.

Throughout its course, the project has aligned itself with the emerging issues of the reform of the Common Fisheries Policy (CFP) and implementation of the Marine Strategy Framework Directive (MSFD). A range of inclusive participatory events on important, timely issues has been held. Two pivotal workshops during CFP reform provided the first opportunities for policy makers, industry, managers and scientists to come together and discuss the theme 'Putting the Science into Regionalisation'. Other pioneering workshops include: a fisher-focused interactive workshop on collaborative management of octopus fisheries in Northern Spain, UK-French collaboration on the Channel scallop fishery, multi-stakeholder workshops on Irish Sea herring management plans, and Spanish and French collaboration on sustainable FAD fishing for tuna in the Indian Ocean.

A re-occurring theme in GAP2's work has been the importance of establishing trust and developing the 'common language' to work effectively together. It not surprising then that good communication at all levels has been central to our work. We have used a range of tools and approaches to reach different audiences, making our work transparent, visible and accessible to everyone. It can all be found at www.gap2.eu.

The mutual benefits of collaboration are captured in this image from GAP2's case study in Galicia.

After four years at the forefront of participatory research in Europe's fisheries, the GAP2 team and all those who have shared in the projects work are moving forwards with a wealth of new knowledge, and an ever-growing enthusiasm for the value of collaboration in research and policy-making. This enthusiasm will inevitably continue to be a force of momentum towards inclusive governance within Europe. Key to achieving this will be efforts targeted at evolving the institutional processes and structures that enable co-created knowledge to be applied and made useful.



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1. Overview of the project context and objectives

1.1 Rationale

The interplay between policy makers, experts, stakeholders and the public at large is an increasingly crucial part of policy making for which the process is as important as the outcome.

Stakeholders may frequently challenge the validity or interpretation of scientific advice because of the negative impact policy decisions arising from it can have on their lives. This 'tension' between society, policy and science is plainly evident when environmental sustainability concerns appear in conflict with maintaining livelihoods. As an example of this phenomenon, GAP2 used active participation and knowledge sharing between scientists, stakeholders and policy makers as a way to reduce tension and build relationships that will yield long-term benefits to resource management.

> ***Definitions and clarifications***
>
> ***Fisheries stakeholders*** *refers to all those with an interest in the science and management of fisheries and the marine environment. The principal fisheries stakeholders are fishermen and the organisations representing them. Other stakeholders include fishing communities, dependent industries, management agencies, civil society organisations and other citizens.*
>
> ***Participatory or Collaborative research*** *is about processes as well as scientific outcomes. It involves stakeholders and scientists working and learning together through the planning and delivery of research. The common aim is to improve the knowledge base and quality of scientific information for management advice and legislation. Two compelling reasons for doing participatory research are that it facilitates solving problems using a more extensive knowledge set, and that greater compliance can be expected when stakeholders themselves have contributed to scientific advice and can see clearly the links from this to policy decisions.*

GAP2 has been about making a difference to an issue of significance to the whole of society; the wellbeing of the marine environment and the sustainability of fisheries upon which society depends for food. It has been driven by the belief that "**it's not only what you do that makes a difference, it's how you go about it**". Building on the relationships, processes and plans arising from GAP1, the project has enabled Mobilisation and Mutual Learning (MML) actions that promote stakeholder participation in the debate on and development of research knowledge and structures relevant to policy on fisheries and the marine environment.

A broad range of stakeholders participated from the beginning, including actors from civil society organisations, research institutions, universities, national and regional ministries and media organisations. Their work has involved participatory research actions designed integrate the knowledge of stakeholders and scientists and render it useful for policy implementation, critical evaluation of the participatory processes and incorporation of the lessons learned into systems of research and decision making. Project partners and other external participants have helped forge and strengthen trans- and international learning on the role and value of Public Engagement in Responsible Research and Innovation.

1.2 Aims and objectives

Aims

To promote and enable processes for open and effective participation of stakeholders in research and management, and demonstrate through specific examples and critical evaluation, the role and value of stakeholder driven science in the governance of fisheries and the marine environment.

Objectives & their Tasks

The work plan is guided by 6 objectives that contribute knowledge and debate on issues of importance to Science in Society:

Objective 1. Promote and enhance stakeholder involvement in research and governance of fisheries and the marine environment, by improving engagement of research organisations, stakeholders and policy makers.

1.1 Strengthen multi-stakeholder engagement mechanisms towards fully embedding applied scientific knowledge into the sustainable management and governance of European fisheries and the marine environment.
1.2 Promote and maintain the structure and processes to enable active participation and mutual learning of stakeholders within and beyond the GAP_2 consortium.
1.3 Compare best practice on stakeholder participation in research and management of natural resources through trans and international exchange. Evaluate and integrate the lessons relevant to European research and policy.

Objective 2. Enable meaningful two-way interaction between scientists and fisheries stakeholders, by working together on research of common interest, engaging in shared learning activities and by integrating knowledge in ways useful to management.

2.1 Facilitate and maintain effective dialogue and mutual learning.
2.2 Capture and integrate stakeholder and scientific knowledge.
2.3 Make the research outcomes accessible and promote their uptake.
2.4 Coordinate and monitor progress and achievements of the case study portfolio.

Objective 3. Establish and demonstrate concepts and mechanisms that enable uptake of participatory research knowledge and promote application of stakeholder know-how to European policies on fisheries and the marine environment.

3.1 Analysis of the use of shared concepts in transferring the knowledge required for evidence-based policy making.
3.2 Develop and apply concepts and mechanisms that effectively bridge the gap between different actor groups.
3.3 Engage policy makers, stakeholders and scientists in formulating expectations for research needs and contributing to the establishment of mechanisms for the uptake of participatory research outcomes consistent with the needs of the CFP, MSFD and Natura 2000.

Objective 4. Evaluate, whether, when and how collaborative research makes a difference to empirical knowledge and to management.

4.1 Examine the overall institutional framework for each participatory research case study.
4.2 Establish how participants' attitudes change through collaborative research.
4.3 Examine the fit between collaborative research and management decision making.
4.4 Examine the dynamics of the interaction between management requirements and stakeholders.

Objective 5. Promote the engagement of society with science and vice versa, by enabling effective communication and outreach actions. Ensure that the principles of transparency and openness, together with scientific quality and credibility are adequately addressed in communications.

5.1 Develop the outreach strategy, manage its implementation and monitor and evaluate its effectiveness and impact.
5.2 Deliver timely and effective communication of the concept, plans and outcomes of GAP_2 targeted at the Reference User Group.
5.3 Communicate the outcomes of interest internationally via the Civil Society Group.
5.4 Coordinate an international symposium, aimed at identifying and describing means to overcome possible barriers to the participation of society and its organizations in research and management of the marine environment.

Objective 6. Ensure effective implementation and delivery of the GAP_2 MMLAP according to the description of work and consortium agreement. Monitor, evaluate and report on progress and impacts.

6.1 Co-ordinate and manage implementation and delivery of GAP_2.
6.2 Monitor and evaluate the process and impact of GAP_2.
6.3 Management of the legal, contractual, financial aspects of the consortium.

To enable the consortium to successfully meet the aims and objectives, a straightforward work plan that mapped aims and objectives to work packages and their associated deliverables was implemented (Figures 1).

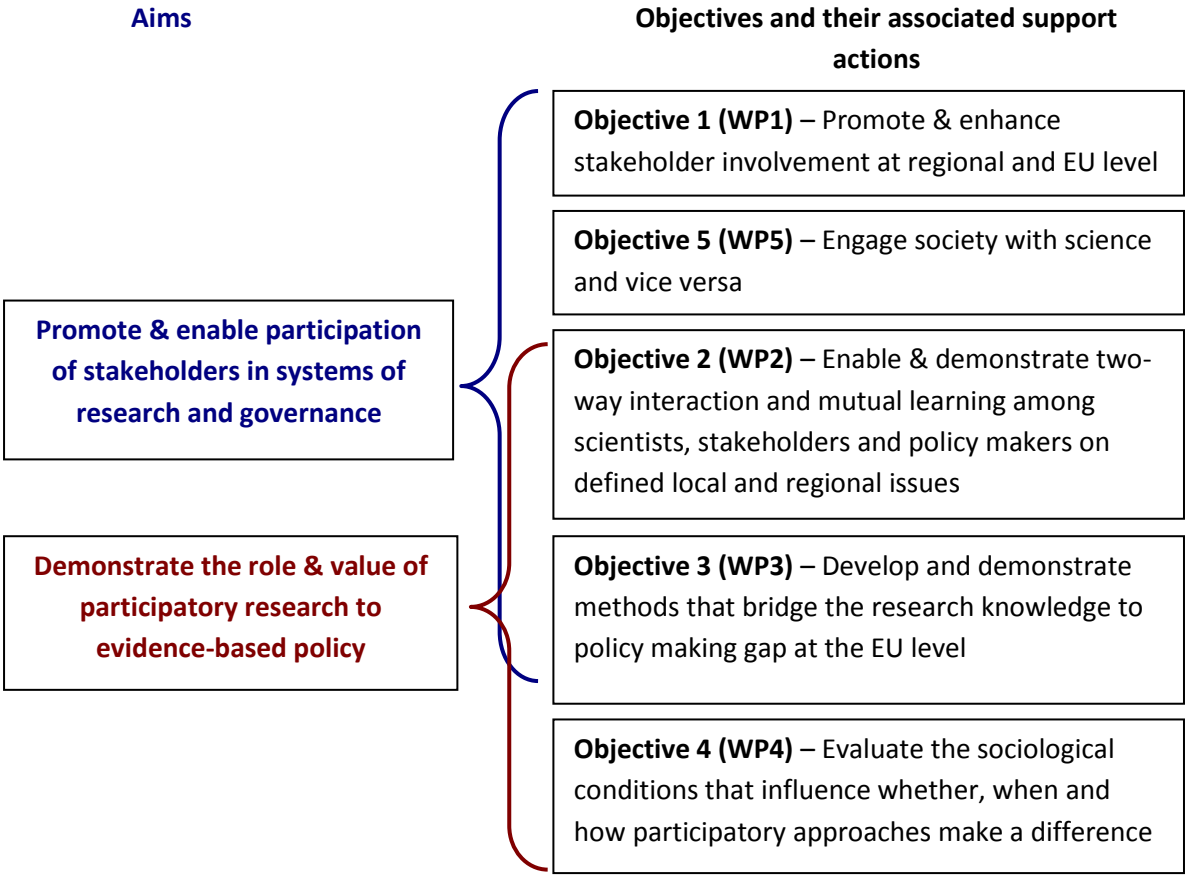


Figure 1. Schematic of how the objectives and associated **support actions** fulfil the aims of GAP2.

2. Key results and outcomes

Each work package and its associated tasks and deliverables were deliberately aligned with objectives, such that the complement of activities all worked to fulfil the project's aim. This section summarises the main results and outcomes in relation to the project's objectives, and refers readers to specific deliverables for in-depth material.

2.1 Objective 1: Promote and enhance stakeholder involvement in research and governance of fisheries and the marine environment, by improving engagement of research organisations, stakeholders and policy makers.

- **Task 1.1:** Strengthen multi-stakeholder engagement mechanisms towards fully embedding applied scientific knowledge into the sustainable management and governance of European fisheries and the marine environment.

Working closely with CEFAS, WWF UK coordinated efforts to engage with all of the Regional Advisory Councils (now 'Advisory Councils', or 'ACs')[1]. GAP2 successfully engaged with six of the seven ACs and collaborated with them in delivering specific workshops connected with existing case-studies or addressing newly identified areas of need. The task promoted information sharing and flow, and played an important role in supporting the ACs thinking about Regionalisation of the CFP and served establish and build the first steps towards the development of long-term management plans (LTMPs) in two key fisheries: mixed demersal fisheries in the North Sea, and the Channel scallop fishery. (See Deliverable 1.1.1 and Deliverable 1.1.2).

AC representatives, fishers and scientists gather on a scallop vessel in Brixham, UK, during a collaborative workshop.

[1] ACs are the main stakeholder bodies in fisheries, comprising a range of stakeholders, including catch-sector representatives (2/3rd seats) and other-interest sectors (e.g. NGOs, consumers, scientists – up to 1/3rd of seats).

- **Task 1.2:** Promote and maintain the structure and processes to enable active participation and mutual learning of stakeholders within and beyond the GAP_2 consortium.

The outcomes and products of the efforts on this task are varied and numerous. They contribute to the successful delivery of the overall project aims and delivery of other tasks. In particular, efforts focussed principally upon on activities that sought to promote uptake of GAP2s outcomes and try and embed them in the structure and processes, for example:

(i) Promoting active engagement as a mode of responsible research inside and outside the consortium. With an ever growing reach, the positive outcomes from GAP2 have created opportunities for a network of interactions to flourish. Inside the consortium, we welcomed new faces and helped facilitate and encourage new ideas that build on the track record established by others. Outside the consortium we built alliances with other similar research activities (e.g. Sharkbywatch, Fishing People, GEPETO, DAMARA, Myfish project). A key outcome of these new relationships was the preparation and submission of a H2020 proposal aimed at establishing a specific network. Unfortunately the proposal was not successful at this time.

Through demonstration and promotion of the project results, such as at the International symposium in February 2015, the GAP2 project is being reinforced by an ever growing diverse network of like-minded actors. One example of the fruits of our sustained efforts in this area was confirmation of the establishment of Fishing into the future as a charitable organisation. Dr Mackinson continues to serve as the Chair of the Science and Data Committee.

Scenes from at the 'Fishing in to the Future Event', June, Brixham UK.

(ii) **Working toward a deeper and more systematic engagement of stakeholders in the International Council for the Exploration of the Sea.** On 4-5th November 2013, for the first time in ICES, representatives from 5 Regional Advisory Councils attended the ICES Working Group on Maritime Systems and discussed ways to strengthen the engagement between scientists and stakeholders across the ICES regions. Detailed reports can be found at the following links; *ICES WGMARS* (report) and ICES-MIRAC meeting (report).

Joint research priorities shared by scientists and stakeholders

(iii) **Understanding the policy framework within which opportunities exist to facilitate a structured and sustained involvement of stakeholders in fisheries governance**. Continuous and varied efforts are necessary to get good engagement of policy makers, and this is something we have worked hard to achieve through planning of directed meetings, making the most of existing opportunities and forging closer relationships with individual policy makers through our institutional links. One example is the third annual workshop where we deliberately planned to coincide with a policy-focus day at the MARE conference (24th-28th June 2014). The coordinator gave a presentation at the policy day event entitled "Seeing is believing - New forms of knowledge for small-scale fisheries – some lessons from case studies around Europe".

Another example is planning the GAP2 Dialogue meeting (26th February 2014), the coordinator and Martin Pastoors (WUR) held a specific meeting with DGMARE (8th November 2013) to understand their needs in our preparations for the meeting. The learning from this provided the basis for our first Policy Brief (Policy Brief 1) and resulted in very well attended and successful meeting. A workshop report was completed and formed the basis of the 2nd Policy Brief.

(iv) **Contributing to Science with and for Society debate and promoting the GAP2 MML actions as models of Responsible Research and Innovation**. Steve Mackinson and other partners have been involved in various cross-programme activities and events that have helped establish and promote awareness about the aims and objectives of GAP2 and demonstrating that participatory actions in research and management are synonymous with Responsible Research and Innovation. For example, at the "Shaping public engagement in Horizon 2020" event (6-7th November 2013), coordinators of Science in Society projects shared experiences and identified needs and strategies for helping embed Public Engagement actions in Horizon 2020. Other contributions where GAP2's participatory actions have served as a role model for multi-actor engagement include the European Science Open Forum event on public engagement (26th June 2014) and the SIS-RRI Science, Innovation and Society: achieving Responsible Research and Innovation, Rome November 19th-21st 2014.

'Ideals' for Responsible Research and Innovation

As coordinator, Cefas received numerous requests to participate in surveys (FP7 related and from students) to unlock the potential of projects like GAP2. We have actively contributed to these and also provide advice to others following similar thinking. (e.g. we are on the advisory steering group of the PIER project).

- **Task 1.3:** Compare best practice on stakeholder participation in research and management of natural resources through trans and international exchange. Evaluate and integrate the lessons relevant to European research and policy.


Canadian fisher Kevin Squires gets stuck in during an exchange to the Netherlands. © CFRN

To provide the opportunity to learn from best practice examples of stakeholder participation outside of the GAP2 consortium, the project ran a wide-ranging international exchange programme. Groups of fishers, scientists, NGO staff and policy makers - in varying combinations – were able to apply for funding to visit fisheries elsewhere in the world from which they felt they could learn applicable lessons for their own work or research. The aim was to gain new perspectives and understanding, mainly through exchanges with other, well-functioning participatory research projects, but

also through exchanges within the project. Other important aspects of this task were to facilitate the development of individuals, and to provide a learning opportunity that would hopefully serve as inspiration for the project as a whole.

In total, around 20 applications were submitted and reviewed by an expert panel. Of these, eleven exchange activities were approved and completed (see Deliverable 1.3). These eleven exchanges involved over 120 different people. The completed exchange activities covered a diverse range of themes. The most common themes were related to participatory research processes and fisheries governance. Several exchange activities also dealt with exploration of innovations solving urgent problems within fisheries and conservation of marine biodiversity.

A 'reef net' fisher observed during a GAP2 exchange to Puget Sound, USA.

Four of the exchange activities involved contact with North American organisations, two activities involved host organisations in Australia/New Zealand, and the rest of the activities were related to exchanges within Europe. The exchange programme has strengthened the contacts with several important persons/organisations that are involved in similar attempts to facilitate participatory research in fisheries. It also strengthened the interactions within the GAP2 consortium by allowing more personal meetings between participants. Further, there has been an extensive number of communications activities highlighting the exchange activities (over 60 different blog posts and a number of video documentaries). This not only served to channel results from the exchanges specifically, but also helped raise awareness of the project as a whole.

The overall conclusion from these exchange experiences was that there is much common ground to be found internationally when discussing and working on the theme of participatory research. It was concluded that, from experiences gained internationally and within the project, some of the most critical areas that require attention to be able to develop and implement participatory research practices are:

1) Education of scientists, students and fishers is important to help enhance participatory research in fisheries.
2) Allowing local fishers to be involved, and given responsibilities in the assessment of their stocks and habitats may contribute towards a better long-term climate for participatory research.
3) Fitting participatory research to its purposes, making it cost efficient and management orientated.
4) The time it takes to build trust amongst collaborating stakeholders is important and will make it easier to reach success.

2.2 Objective 2: Enable meaningful two-way interaction between scientists and fisheries stakeholders, by working together on research of common interest, engaging in shared learning activities and by integrating knowledge in ways useful to management.

This objective focussed on implementing participatory research actions, monitoring and reporting their progress and results. A key output encapsulating the delivery of all of these tasks (listed in full below, with specific deliverables hyper-linked) was the 'case study summary' documents. These visually engaging, to-the-point summaries highlight the structure, aims, and achievements of each case study.

UK – Brown Crab Stocks

Investigating brown crab behaviour using fishers' and scientists' knowledge.

PURPOSE

'Tenacious', one of the vessels collecting data.

The main aim of this case study has been to work with fishers to develop methods that can be used by the fishers themselves to evaluate and manage the crab fishery they exploit. This work has to be set within the current management regime, which involves the local inshore management authority, the UK fisheries governance system and the European Union's Common Fisheries Policy.

WHO

Eight fishers from the South Devon and Channel Shell Fishermen's Association have been working with two scientists from the University of Leicester to document and describe the inshore crab fishery.

"In the past we have had people come and ask us for data and were not really given much of an explanation what it was for, and didn't receive any feedback on the data we collected for them. This left fishers very suspicious and unwilling to help again in the future."

Alan Steer, 4th generation fisher

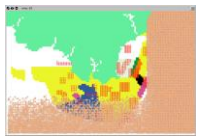
"Part of the project is intended to integrate fisher's knowledge about crab distribution and biology with what has been gathered scientifically in the past and more recently."

Professor Paul Hart, University of Leicester

Other organisations involved include the Devon and Severn Inshore Fisheries and Conservation Authority.

IMPACT

A key impact of this case study has be to raise awareness in some of the fishers of the main problems associated with running a fishery sustainably. It has also served to give fishers greater faith in working with scientists, through the clear communication of interim results.



The model world created to simulate crab movements within the study area

METHOD

A year was spent making trips on board crab boats to gather data on the temporal and spatial distribution of catches. Interviews have been used to collect information on fishers' ecological knowledge. We have run seminars to explain the basics of fish stock estimation and to gather input from fishers on how an individual based fishery model should be structured. We have also obtained data on crustacean larvae distribution from the Continuous Plankton Recorder survey.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

RESULTS

We have a comprehensive data set of catches showing the number of crabs retained of each gender, along with the number of crabs returned to the sea because they were too soft or too small. We have information on the **fishers' ecological knowledge** of the crab's behaviour and ecology in relation to the environment. We have also partly developed an **individual based model** of the crab population and the fishery on it. Several talks have been given at conferences and a poster presented at a forum in Plymouth on management of the Channel. The Devon fishers also had a very productive exchange with the Norwegian (Steigen) case study and with fishers in California.

LEGACY

A legacy can only be judged retrospectively. The participatory approach of the project has changed outlooks in a sub-group of the crab fishers and once the project is complete it is possible that the fishers will convert their new-found confidence into a more proactive approach to the management of their resource. There is no guarantee of this. It is also possible that they will use the model to assess sustainability. We are trying to develop an app where fishers can collect their own catch and discard data to inform management.

The Lofoten Islands, Norway, visited by the crab fishers in April 2013.

RESOURCES

- Case study web page – **www.gap2.eu/case-studies/case-study-1**
- Description of Participatory Modelling within GAP2 Methodological Toolbox - **www.gap2.eu/methodological-toolbox/participatory-modelling**
- Details of South Devon and Channel Shellfishermen's Association - **www.datalog.co.uk/browse/detail.php/CompanyNumber/IP19301R/CompanyName/SOUTH+DEVON+AND+CHANNEL+SHELLFISHERMEN+LIMITED**
- Website of the local inshore fisheries management and conservation organisation - **www.devonandsevernifca.gov.uk**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Spain – Galicia TURF Model

Mapping habitats and fishing grounds in coastal ecosystems of Galicia.

PURPOSE

Different co-management initiatives based on Territorial Use Rights in Fisheries (TURFs) have been successfully managing some invertebrate fisheries in Galicia. Fishers are therefore now seeking new bottom-up initiatives to manage other fisheries also. To support these new spatially explicit co-management models, we collected the fishers' Traditional Ecological Knowledge (TEK) and conducted a vessel monitoring program to integrate spatial information about habitats, species and seasonal activity in the Ría of Arousa.

Octopus fishing boat

WHO

Seven scientists from the University of A Coruña and six members of the Galician Federation of Fishers Organizations (FGCP) lead this research.

"The use of maps to collect the local knowledge of the fishers really matters at the right scale. Ignoring this knowledge in the management of the fisheries does not make much sense."

Mr Xoán López, Former Secretary of the Galician Federation of Fishers Organizations

"Beyond the development of cost-effective methodologies and tools specially designed for the management of natural resources in data poor situations, we achieved a great synergy with the fishers and their organizations, which will provide new perspectives for the management of coastal fisheries."

Dr Pablo Pita, researcher at the University of A Coruña

The Fishers Organizations of Aguiño, Cambados and Ribeira collaborated and contributed signficiantly to this work, as did 27 fishers from the Ría of Arousa, who kindly shared their time and rich knowledge.

IMPACT

Our results provide basic information about the fisheries' target species, as well as information relating to the performance of the entire coastal ecosystems. Such information can be used to support bottom-up management proposals made by the fishers to the fishery administration, ranging from single species management plans to comprehensive coastal management plans. Moreover, beyond the practical value of these results, we have built a stable partnership between fishers and scientists. This partnership will both shape future co-management of the region's fisheries and empower fishers in the decision making process. Current and future relationships among fishers, scientists and policy makers will be settled in a new collaborative scenario, providing a greater range of perspectives on the management of Galicia's coastal fisheries.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

METHOD

Semi-directed personal interviews with maps were performed with 19 fishers of the study area. Participants were selected by a snowball procedure, i.e. each fisher interviewed was asked to identify other fishers who may be interested in participating. The fishers sketched the location of their fishing grounds and of the substrates in the study area. The information was digitized and introduced into a Geographical Information System (GIS). In addition, 19 vessels entered into a voluntary one-year fisheries monitoring program. The fishers provided information about their daily catch in log-books and carried on board small GPS data-loggers to record their position along their fishing journey. With this information, we mapped the distribution of the intensity of effort and of the catch, by fishing gear and by species.

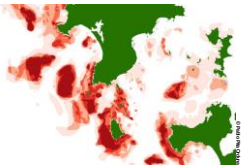
Fisher sharing his spatial knowledge during an interview

RESULTS

We obtained a highly detailed **habitat cartography** with the location of soft-bottom substrates: sand, mud, gravel and maërl; and different rocky formations: cabezos, laxas and touzas. We also identified the contact line between soft and rocky substrates (beiradas) as an important fishing habitat. In the **fishing ground cartography** we mapped the fishing areas of **48 target species**, mostly finfish. Furthermore, we obtained maps depicting the **distribution of effort and catches** by species of the different fleets operating in the study area, from purse-seiners to shellfish gatherers. We have presented our results in five communications in four international scientific conferences and we are finalising two articles to be published in scientific journals.

LEGACY

We demonstrated the value of alternative information sources in participatory environments. Such sources provide high quality information, complementary to traditional scientific knowledge, which is very useful for the management of natural resources. In data poor situations, we recommend gathering the fishers' traditional ecological knowlege, in combination with a voluntary monitoring program, using cost-effective GPS data-loggers and log-books. This can be used to map the habitats and fishing grounds and the distribution of the effort and the catches of the different fleets operating in a given area.



Distribution of the rocky substrates in the study area of the Ría of Arousa, based in the information provided by the fishers

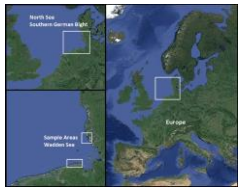
RESOURCES

- Case study web page – **http://recursosmarinos.udc.es/gap2/**
- Description of Participatory Mapping within the GAP2 Methodological Toolbox – **www.gap2.eu/methodological-toolbox/participatory-mapping**
- Website of the Galician Federation of Fishers Organizations (FGCP) - **www.confrariasgalicia.org/gal/php/inicio.php**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Germany – Brown Shrimp Fishery

Cooperative Research : Brown Shrimp Fishery in the Wadden Sea.



PURPOSE

Together with our stakeholders, we are developing a method to collaboratively define and quantify certain fish species of importance to marine directives such as the Flora-Fauna-Habitat Directive (FFH) and the Marine Strategy Framework Directive (MSFD). Successful application of this method could be adopted in monitoring programmes within the scope of the European MSFD. The results will contribute to our understanding of the species composition in the Wadden Sea and transitional waters, with a particular focus on rare and migratory fishes.

The shrimp vessel POLARIS, in the harbour of Neuharlingersiel

WHO

Two fishers, alongside their crew members, and one scientist were directly involved in this case study. Uwe Abken (Neuharlingersiel) is captain and owner of the shrimp vessel 'POLARIS'. He has been fishing for the past 35 years, starting at the age of 15. Dirk Dell Missier (Hallig Hooge) is the owner of 'DE LIEKEDEELERS'; he has been working for over 30 years. Kai Wätjen is a scientist at the Alfred Wegener Institute (AWI) in Bremerhaven. As a child he often spent his holidays on Germany's North Sea coast, by which time he was already fascinated with the Wadden Sea.

"In Gemany we need more research like GAP2. There is a need for collaborative work. Currently the burden rests alone upon the shoulders of fishermen. We need objective and value-free science to solve the problems brought to us in part by a partial lobbyistic fishery policy, and in part by over motivated environmentalists."

Dirk Dell Missier, Shrimper, Hallig Hooge

"In addition to their fishery expertise I also benefit from the fishermen's local ecological knowledge (LEK) e.g. the presence of former Sabellaria reefs, mass occurrence of different species or a special wreck fauna."

Kai Wätjen, Scientist, Bremerhaven.

While the case study's science partner is the AWI, the fishing industry partner is the 'German Producer Association of Brown Shrimp Fishers Ltd'. In addition to working on the case study, individuals involved from these two groups have founded "Sustain Seafood" - an association to support sustainable fisheries.

IMPACT

Our work shows that mutual learning and mutual trust are useful tools for engaging and encouraging stakeholder partners to deal with new and possibly uncomfortable situations. The cooperative research brought fishermen and environmentalists together in workshops, with GAP2 acting as a facilitator. Participants could then discuss important aspects of sustainable fisheries and other marine uses of the vulnerable Wadden Sea area. The case study has generated positive public awareness about different environmental, political and business aspects of the German Brown Shrimp fishery. Furthermore, fishermen took part in different events and meetings to present and promote their business and challenges to a wider public.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Film shooting onboard POLARIS

METHOD

Several meetings (including small workshops) to enable mutual learning and trust building were organised, mostly on board fishing vessels. In addition to the regular visits onboard, telephone calls were made. To generate data, the fishermen were supplied with protocols, identification cards, labels/bags, cameras, a CTD and a navigation system. To increase public awareness, the cooperative research was documented by regional TV teams.

RESULTS

We were able to demonstrate that rare fish species were more effectively traceable with **data gained from the fishery** than with data gained from scientific cruises; data limited temporally and spatially. This was particularly true for the more southerly distributed thermophile fish species, which were found at certain times regularly in the catches.

Founding an association to help sustainable fisheries prosper is a tangible, long-term outcome of the case study. **'Sustain Seafood'** is a consortium of different groups of stakeholders including members of the German producers, association, traders, NGO´s, authorities and consumers. The consortium is a perfect platform to **share knowledge and expertise** concerning upcoming new projects.

LEGACY

Fishing locally, as opposed to farther away from home, encourages a higher level of engagement amongst fishers regarding sustainability issues. Either way, fishermen are constantly making efforts concerning environmental issues, but a sustainable fishery can only exist if the fishers receive fair prices for their products. The brown shrimp industry faces a lot of obstacles, alongside new market challenges, rules and regulations. Cooperative research will be the key to developing new fishery techniques, and can provide information to fishing partners on a value-free basis, on questions concerning a variety of environmental and sustainable aspects.

Open ship in Neuharlingersiel.

RESOURCES

- Case study web page - **www.gap2.eu/case-studies/case-study-3**
- Sustain Seafood website – **www.sustainseafood.de**
- German Producer Association of Brown Shrimp Fishers Ltd website - **www.ezdk.de**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Denmark – Herring Management

Managing Western Baltic herring, combining fishers' and scientists' knowledge.

PURPOSE

Management of the Western Baltic Spring Spawning herring stock poses demanding scientific challenges and requires complicated political processes of resource allocation among fishing fleets. This case study set out to explore how to simplify and rationalise such a very complex and untransparent management regime by developing a Multi Annual Management Plan (MAMP).

Western Baltic herring on ice

WHO

Direct participants in this case study included: 4 representatives from the Danish herring fishery; 2 representatives from the Swedish herring fishery; 1 representative from the Baltic herring fishery; 2 representatives from the European Commission; 1 representative from the Baltic AC and Pelagic AC respectively; 2 researchers from DTU Aqua, Denmark; 1 researcher from IMARES, the Netherlands.

"To manage herring in the Skagerrak we have to juggle both scientific issues related to the migration and variable mixing of stocks, as well as sensitive political considerations."

Peter Hopkins, EC Policy Officer; Fisheries management in the North Sea

"The biology of this stock is very interesting, but complicates giving advice. I struggle with making a clear advice every year in the Assessment Working Group."

Lotte Worsøe Clausen; Researcher, DTU Aqua Denmark

"It is frustrating that year after year, the TAC is set as a result of horse trading. How are the vessel owners supposed to make sound long-term investments, when the basis for the economic return is so unpredictable?"

Christian Olesen, Chairman of the Danish Pelagic Producer Organisation

Overall, scientists, industry stakeholders from two Advisory Councils, as well as management representatives from national governments and the EU, collaborated to develop a robust MAMP.

IMPACT

This case study has managed to strengthen the bridge between science and stakeholders from around the EU, finding a common approach and position for the BSAC and PELAC. It has successfully created an environment of trust. Co-management has moved from being an extractive exercise to holding consultations and co-moving towards actually managing together. This case study has enabled the development of a mutual understanding of the limitations in the entire process. Moreover, the work has established the communication platform required to launch and undertake the MAMP process.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

METHOD

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 visualise perceptions of the MAMP's main issues for the complex herring stock in Western Baltic and adjacent waters. However, the main tool has been a good, positive, inclusive and multi-directional dialogue. This has taken place at meetings, as well as more informally through emails, phone calls, web-services and when the participants met on other occasions.

RESULTS

The case study has worked towards reaching a common ground for managing Western Baltic Spring Spawning **(WBSS) herring stock**. This has involved exploration of data on the stock dynamics as well as setting the terms for a MAMP. In terms of the herring's biology, the science was informed and matched observations in the fishery; the population diversity of the WBSS and sampling was optimised after taking advice from the stakeholders. In relation to management, the case study has created an arena where details such as stability clauses, the uptake of the by-catch ceiling Total Allowable Catch (TAC) or possible TAC transfers between areas, could be **discussed and agreed** upon; something not achieved in the past. Thus, the CS has managed to enhance the clarity of the management process from biological sampling for assessment and advice, to the final **political process**.

LEGACY

The case study has facilitated the development of a set of mutually agreed stock management rules - a big step towards a full MAMP for the stock. The study has also reduced the gap between science-stakeholders and policy, by informing the policy makers of all nuances of the problems with an MAMP for this stock. This has enabled a more integrated approach during the real negotiations, which in turn has increased the sense of inclusion in decisions made outside the remits of the case study.

Herring on deck

RESOURCES

- Case study web page – **www.gap2.eu/case-studies/case-study-4**
- Baltic Sea Advisory Council website - **www.bsrac.org**
- Pelagic Advisory Council website - **www.pelagic-ac.org**
- International Council for the Exploration of the Sea's website - **www.ices.dk**
- Paper on the biology of herring in the study area; migration patterns and population structure - **http://orbit.dtu.dk/en/publications/exploring-the-multidimensional-nature-of-stock-structure-a-case-study-on-herring-dynamics-in-a-transition-area(cda0a2ed-5dc0-4910-afe5-eb4863048081).html**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Norway – Coastal Cod Management

Collaboratively developing a fisheries based indicator system for coastal cod.

PURPOSE

Fisher Trygve Skogheim sorts cod onboard his boat MS Fix

The overall aim of the project is for local fishers and scientists to collaboratively develop a robust and effective fisheries-based monitoring system for marine resources. As an integral part of the development process, the project has collected data relevant to the assessment of the structure and status of key components of the coastal ecosystem, with particular emphasis on cod.

WHO

The Norwegian case study project has engaged two social scientists from UiT-The Arctic University of Norway. Three marine scientists from the Institute of Marine Research have also been involved. Two fishers from Steigen, using 10 meter coastal vessels has been directly involved with data collection, using 10 meter coastal vessels typical of Norwegian coastal fishery.

"It's all about establishing collaboration, building trust and reducing the gap in the perception of reality between fishermen and scientists."

Jan Andersen, fisher and local project coordinator, Steigen.

"This project is an investment in the future where we can expect results particularly in terms of actually obtaining knowledge and develop cooperation with fishermen."

Asgeir Aglen, marine scientist, Institute of Marine Science.

The Norwegian Fishermen's Association (NFA) has served as the industry partner. Jan Andersen, fisher and leader of the Steigen chapter of NFA, has served as local coordinator.

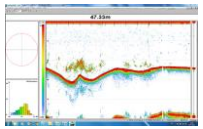
IMPACT

The project has demonstrated how fishermen and small-scale vessels can practically collect data and contribute to the systematic monitoring of coastal resources. The collaborative research process is important for both fishers and scientists. Fishermen gain access and insight into scientific methods and practices, and learn how such methods can be used to tackle resource management challenges. Scientists gain access to the fishers' skills and insights, and learn how to use fishing vessels as active research platforms. Working together, fishers and scientists can find common ground and reach further in figuring out the complexities of marine resources.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

METHOD

In the project, we used acoustic methods in combination with systematic biological sampling in order to monitor the status and trends in local fish populations. Science grade echo sounders were installed in coastal vessels. We collected acoustic data on fixed transects on a weekly basis throughout the year, verifying acoustic records through trial fishing (gillnet). In addition, genetic samples were taken to distinguish different varieties of cod.



Echo diagram from echo sounders installed in vessels

RESULTS

The project has demonstrated that collaboration between fishers and scientists is useful and **productive**. Nevertheless, the Steigen project has been too small and short-lived in order to deliver substantial results regarding the structure and status of local fishery resource in Steigen. While the project results strongly suggest that the **cooperative methodology** is working, a functional monitoring system for local resources would have to be designed with a more extensive **data collection** program, involving a larger number of participating vessels.

Coastal fishing vessels in Steigen

LEGACY

The Steigen case study shows that collaborative research works and can help secure a strong, common knowledge basis for fisheries management. On the basis of the case study, we hope that a research infrastructure designed to monitor coastal resources will be established. Whether this will happen remains to be seen.

RESOURCES

- Case study web page - **www.gap2.eu/case-studies/case-study-5**
- Particiaptory Research methodology on GAP2 Methodological Toolbox – **www.gap2.eu/methodological-toolbox**
- Norwegian Fishermen's Association website - **www.fiskarlaget.no**
- Case study scientific paper - Holm. P., M. Bjørkan, Jan I. Andersen, Asgeir Aglen, 2015. Trapped in the TAC machine. Making a fisheries-based monitoring system for coastal cod, Steigen. Forthcoming in P. Holm and M. Hadjimichael (eds) Bridging Gaps: Participatory research practices in the fisheries. Springer.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Sweden – Selective Whitefish Fishery

Using participatory approaches to improve selectivity in a lake fishery.

PURPOSE

Our case study's purpose was multi-faceted:

- To develop an economically profitable and sustainable whitefish fishery with minimum by-catch of sensitive species such as Arctic charr and trout.
- To improve the knowledge on whitefish ecology.
- To further establish and develop the collaboration and knowledge exchange between fishermen and scientists in Lake Vättern.
- To strengthen the Lake Vättern Fisheries Co-management Group by cooperating in a common project with clear objectives.

GAP2 scientist Johnny Norrgård pulling gillnets with fisherman Gunnar Fransson

WHO

This case study has been organised by a fisheries co-management group, moderated by Lake Vättern Water Conservation Society. The group consists of various fisheries organisations, local, regional and national authorities, water conservation groups, researchers and NGOs. The participatory research has mainly been conducted by three scientists from the Swedish University of Agricultural Sciences, thirteen commercial fishermen, one subsistence fishermen and three recreational fishermen.

"This project is the best to take place in Lake Vättern over the last 30 years."

Johnny Ståhl, a fisherman involved in the case study

"Our institute has a long tradition of working with fishermen but this project has really helped us to reflect upon our role and the very nature of such collaborations."

Alfred Sandström, researcher, SLU

METHOD

Planning, design and analyses of results was performed in a series of workshops with the participating scientists, fishermen and regional managers. Fishermen and scientists also collaborated in collecting data in the field. Besides workshops and formal meetings, interviews and focussed conversations were performed in less formal environments, close to harbours, in boats and in fishermen´s kitchens. These meetings, using maps, GIS and various images as communication tools served to survey the knowledge of fishermen and to design studies to suit each person's individual ideas. We also arranged public hearings and a national seminar.

IMPACT

The case study has built trust amongst stakeholders, enhanced the use of participatory research in Swedish fisheries and improved the selectivity and management of the fisheries in Lake Vättern. Moreover, it has facilitated collective learning on ecological processes of importance for Lake Vättern's fish stocks.

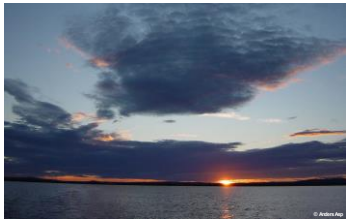
The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

RESULTS

The case study has tested **alternative fishing methods** with promising results, resulting in detailed recommendations to responsible authorities. The project has also fostered stronger collaboration between scientists and stakeholders, and thus strengthened the **co-management group** governing this fishery. We have published at least one and submitted at least two papers to scientific journals. Our work has also been of interest to **social scientists**. To our best knowledge, four scientific papers have been published about the co-management group and our work within this project. We have also trained a master's student and published two reports in Swedish.

LEGACY

During the GAP1 and GAP2 projects, some of the threatened species in Lake Vättern have increased in abundance considerably due to a unique set of new fishing regulations. In parallel, a co-management group has emerged, changing the previous governance structures. On top of these changes, the GAP2 project has demonstrated the potential strength and added value of participatory approaches. We expect that the combined activities and actions undertaken in the Lake Vättern fisheries will be a role model for the governance of all small-scale fisheries in Europe.



The sun rises on Lake Vättern

RESOURCES

- Case study web page - **www.gap2.eu/case-studies/case-study-6**
- GAP2 on SLU website - **www.slu.se/sv/institutioner/akvatiska-resurser/forskning/gap-connecting-science-stakeholders-and-policy**
- Stakeholders' website - **www.vattern.org and www.insjofiskare.se**
- Paper describing case study's work developing a generic selectivity model for this fishery - **www.nrcresearchpress.com/doi/abs/10.1139/cjfas-2012-0472**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

France/Spain - Tuna FAD Fisheries

Sustainably managing tuna fisheries using Fish Aggregating Devices.

PURPOSE

Missing information has a real impact on fisheries using Fish Aggregating Devices (FADs). Due to a lack of data, stakeholders hold varying perceptions of the potential impacts of FADs on ecosystems. Our aim was to work collaboratively towards the sustainability of a tuna FAD fishery in the Seychelles, in order to:

- Develop exchanges between stakeholders to improve the flow of information and data.
- Identify actions to encourage sustainable fishing with FADs.
- Identify the responsibilities of different stakeholders participating in the project.

Tropical Tuna Purse Seiner

WHO

Two scientists from IRD (France) and 2 scientists from AZTI (Spain) research institutions participated, alongside 1 representative from ORTHONGEL and 1 from ANABAC (French and Spanish ship-owner associations respectively). Many fishers from both countries took part within our case study exchanges. French facilitators, Laurent Tezenas and Manon Airaud, and a Spanish facilitator, Olga Ruiz, were also involved.

"Our intention was to create a dialogue platform between scientists and fishers, to bridge the knowledge gap between the two sectors. This exchange can drive scientists to a better informed position within RFMOs (Regional Fisheries Management organizations). Now, this motor doesn't have to stop."

Mr. Michel Goujoun, Director of ORTHONGEL, french shipowner's interprofessional organisation

"At the beginning of the project, we only had our scientific questions in mind. We have learnt that it is necessary to improve communication between the stakeholders, to understand which are the important questions to solve."

Dr. Gala Moreno Scientist from AZTI, Spain

IMPACT

This case study has led to better understanding of all stakeholders' concerns and expectations. This has also improved communication and trust *between* stakeholders. It is after these steps – implementing the improved exchange of knowledge and data – that the impacts of FAD use can be better understood. Within GAP2 we have set the structure to improve the exchange of information between all stakeholders participating in the case study. GAP2 is developing a participative research framework between stakeholders and thanks to this, a strategic plan for FAD management.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

METHOD

Firstly, **interviews** were conducted with each set of stakeholders, i.e. fishers, ship owners, associations of ship owners and scientists. This lead to a better understanding of the roles, needs, interests and concerns of each actor involved in the process. We also held meetings that served the exchanges between them, and formed a **"community"** tackling the problem. **Facilitated joint workshops** gathering stakeholders were also conducted in each country to prioritize the actions necessary to sustainably manage the use of FADs.

Meeting between Spanish fishers and scientists

RESULTS

Within this case study we were able to improve the exchange of information between all stakeholders as well as reflect upon the work we do as scientists. From this point, we could collaboratively prioritise the actions required to work towards the sustainable use of FADs, as well as the responsibilities of each stakeholder participating in the project. Finally, we used for the first time, fishers' echo-sounder buoys to obtain independent estimates of fish biomass around FADs. We then validated this observational tool belonging to fishers as potential aids to solve scientific questions. We published a review on fishers' echo-sounder buoys (see resources below).

LEGACY

This case study contributed to understanding the concerns, interests and expectations of each stakeholder. It also helped to re-build a new relationship and framework to work towards the sustainable use of FADs. We demonstrated that fisher´s echo-sounder buoys are powerful tools to study pelagic fishes.

Workshop between French scientists and fishers

RESOURCES

- Case study web page - **www.gap2.eu/case-studies/case-study-7**
- Particpatory Research methodology on GAP2 Methodological Toolbox - **www.gap2.eu/methodological-toolbox**
- Industry partners' websites - **www.anabac.org** ; **www.orthongel.fr**
- Case study scientific paper - **Lopez, J., Moreno, G., Sancristobal, I., and Murua, J. 2014. Evolution and current state of the technology of echo-sounder buoys used by Spanish tropical tuna purse seiners in the Atlantic, Indian and Pacific Oceans. Fisheries Research, 155: 127-137. 14.02.033**
- Forthcoming publication - **Manon Airaud et al. A "research-action" beside tropical tuna fish stakeholders : thoughts and perspectives.**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Italy – Fish and Fishing Effort

Mapping marine species and fishing effort in the Northern Adriatic Sea.

PURPOSE

The case study's aim is to stimulate and support a bottom-up approach for the inclusion of fishers' proposals into the management discourse. To this aim, we have conducted participatory research, collecting data on the distribution of biological resources and fishing effort in the Northern Adriatic Sea. Data are integrated with fishers' experience-based knowledge in order to formulate joint proposals which contribute to local and regional fisheries management practices.

A GAP2 meeting with fishers, at ISPRA branch in Chioggia

WHO

11 skippers and fishers from Chioggia's trawling fleet took part in the project's core activities, alongside 10 scientists from ISPRA institute and 3 researchers from the stakeholder partner UNIMAR. The stakeholder group also included personnel from the Veneto Region's fishery office, the Mediterranean Advisory Council and the FAO Adriamed project.

"By participating we hope to change things"; "We invest time in meetings and sampling activities because we believe in this working group"; "The rules from Brussels are made by people who do not know our real situation, they have the wrong data - we should provide them the real data."

GAP2 fishermen Renzo Zennaro, Elio Dall'Acqua and Denis Padoan.

"We learned a lot from fishermen, and we are all committed to improving fisheries management, increasing our responsibility and building common knowledge and actions - together."

GAP2 Italian scientist Saša Raicevich.

Alongside the above participants listed, fishers and the representatives of National Fishermen Organizations Federcoopesca, Legapesca, AGCI Agrital, Federpesca and Marinerie d'Italia e d'Europa were also involved.

IMPACT

This project has established a truly collaborative group of fishermen and scientists, from which empirical and research based knowledge is transferred to the fishery's managers. In particular, the case study's main impacts are: its validation of both scientific and traditional knowledge; the involvement of fishermen in gathering data (self-sampling); the establishment of open meetings where scientific data are presented, discussed, and challenged. All this entails an on-going bottom-up participatory process, providing a broader, more credible and legitimate knowledge base, which is contributing to setting evidence-based management proposals. This case study has determined an approach to building trust and bridging gaps between scientists and fishermen and to a lesser extent between scientists, fishers and policy makers. In particular, this approach has enabled policy makers to better understand the nature of collaborative research. It has also furthered collaboration with the Veneto Region administration and enabled participation in meetings from which the group was previously excluded.

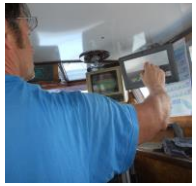
The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

METHOD

Field activities included i) the collection of catch and biological data by scientific observers during commercial fishing activities (89 fishing trips monitored; 7 trawlers), ii) the development and adoption of **electronic logbook** to allow fishermen to **self-sample** geo-referenced data on commercial catches (4800 self-sampled hauls so far; 7 trawlers) and iii) the realization of a **trawl-survey** in the Veneto Region administrative waters (3 trawl-surveys from 2012 to 2014, 21 stations). Open **meetings and interviews** aimed to discuss management issues, verify activities' progress and share information and knowledge, reflecting the typical collaborative approach of our case study.

RESULTS

The case study's main impact upon management has been its contribution to the revision of the summer trawl-fishing ban, a typical management tool adopted in Italy. This process started thanks to the presentation of the GAP2 data (logbook, observers and survey data) to Adriamed FAO, instigating the establishment of an ad hoc working group on this topic. The case study also allowed both participatory research knowledge (data and expert knowledge) and fishermen themselves to enter into management discourse, contributing to the setting of its agenda. Knowledge developed in the project is being condensed in several formats, including among others, three natural science publications dealing with field work results and a social science paper representing the participatory process (all under revision). Meanwhile a book inspired by GAP2 and dealing with fisheries management and anthropology was published in Italian in 2013.



A GAP2 fisher self-sampling data through electronic logbook

LEGACY

The legacy of our work is the establishment of an equal group of scientists and fishermen sharing common goals. We work to define and propose sustainable and innovative management measures based upon a combination of scientific data and fishermen experience base knowledge. We also work to ensure a sustainable exploitation of marine resources, from an economic, social and environmental perspective. Through this group and the working group called "Reti di conoscenza" ("Nets of knowledge"), established within the Fisheries Foundation of Chioggia, we will act at the interface between fisheries stakeholders at local and regional levels, to promote participatory research and action contributing to the management of fisheries resources.

GAP2 fishers and scientists celebrating the end of the Summer trawl-survey 2013

RESOURCES

- Case Study web page – **www.gap2.eu/case-studies/case-study-8**
- ISPRA website - **www.isprambiente.it**
- UNIMAR website - **www.unimar.it**
- Mediterranean Advisory Council website - **www.racmed.eu/index.php**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Malta –Trawl Fisheries Management

Identifying nursery and spawning grounds of key target species by combining fishers' and scientists' knowledge.

PURPOSE

The purpose of this case study is to identify the nursery and spawning areas of the seven main species targeted by trawl fisheries within Malta's 25 Nautical Miles (NM) Fisheries Management Zone (FMZ), and to determine any seasonal changes in their distribution. This will serve to give a better idea of the state of key stocks within the FMZ and enable better management of Maltese trawl fisheries.

MFA0047 "Eolo", one of the trawlers involved in the case study

WHO

The project has involved a total of six scientists, three policy makers and twelve fishing vessels, coming from Malta's Department of Fisheries and Aquaculture, The Malta Fishing Trawler Owners Association, and Ghaqda Kooperattiva tas-Sajd (a Maltese fisheries cooperative).

"Management decisions are being made, based upon insufficient data on the waters around the Maltese island. This is hurting local fishers."

Paul Piscopo, Secretary of Ghaqda Kooperattiva tas-Sajd

"There is currently very little spatial and seasonal information available with respect to ecologically important areas for key target species. Basing decisions on improved information would be of considerable help."

Nicholas Flores Martin, Scientist at the Department of Fisheries

IMPACT

The case study's work will enable Maltese fisheries scientists to obtain information on the state of key stocks targeted by trawl fishers, as well as a better spatial and temporal picture of the species of interest. This will be used, in conjunction with other fisheries independent data, to improve Malta's trawling management plan.

METHOD

In addition to scientific methods for analysing data and sample design, the method used involved a combination of:

- **Participatory planning** – liaising with fishers to determine the most effective way to sample the target species, and to design nets for the study.
- **Participatory data collection** – training the fishers to sample and collect the trip data required.
- **Oral histories** – learning from fishers' ecological knowledge through conversation during sampling trips and meetings.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

RESULTS

The Maltese case study is currently in the process of publishing two scientific papers – one dealing with the three crustacean target species and a second with the three target fish species. A series of maps will be published, showing the temporal changes in the distribution of these target species within Maltese waters. At present, the Maltese case study story has been submitted and will form part of a larger volume detailing the stories of all the GAP2 Case Studies.

LEGACY

The legacy of the case study is expected to be improved knowledge of the fisheries resources around Malta, in addition to paving the way towards better collaboration between fishers and scientists. The knowledge gained from the study will be used to update Malta's national management plan for trawl fisheries. The fishers themselves have shown eagerness to participate in other, similar studies in the future.

Close-up of a typical catch from a deep water trawl taregeting red shrimp

RESOURCES

- Case study web page – **www.gap2.eu/case-studies/case-study-9**
- Ministry for Sustainable Development the Environment and Climate Change – **Department of Fisheries and Aquaculture website - www.vafd.gov.mt**
- Malta Fisheries Cooperative website – **www.fishkoop.com**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

Spanish (NW Mediterranean) – Deep-sea Red Shrimp Management

Ecological impact and alternative management strategies for the NW Mediterranean red shrimp fishery.

PURPOSE

This case study aims to identify the main recruitment areas and main season for juvenile capture of the deep-sea red shrimp, ***Aristeus antennatus***. Our final objective is to establish a long-term policy that will allow the fishery sector to sustainably exploit the most important fishery resource of our region (Catalonia, NE Spain), and one of the most valuable of the entire Mediterranean Sea. Through doing this, we want to validate the knowledge obtained by fishermen.

Fisher at work

WHO

"We need to understand why there is a need to avoid juvenile catches from our nets and how to make this possible."

Conrad Massaguer – Skipper of the red shrimp trawler "Nova Gacela".

"The global goal of making fisheries a long term sustainable resource will only be realised if we scientists convince fishers of a realistic way of achieving this."

Joan B. Company – Scientist at the Marine Science Institute (ICM-CSIC).

Together with scientists from the Marine Science Institute of the Spanish Research Council (ICM-CSIC), the partners that participated in this case study are: the Regional Federation of Fishermen Organisations of Girona; the Mediterranean Fisheries Programme for the World Wildlife Fund (WWF Med) and the General Directorate for Fisheries and Marine Affairs of the Regional Government of Catalonia.

IMPACT

The case study's main impact is that we, scientists and fishermen and other stakeholders (NGO's and policy makers), have learned how to share information and how to implement specific actions with the common goal of making this fishery (as well as the overall resource exploitation of our seas) more sustainable. When a clear final objective is shared and agreed amongst all actors, everyday activity becomes easier and the path to success more feasible.

METHOD

The Mutual Learning methodology was structured in two main actions:

1. **Onboard fishing vessels.** After more than two years of working together, scientists now better understand fishers' "everyday" problems, while fishermen have learned from scientists how scientific methodology can help solve (or mitigate) their problems.

2. **Conferences, Meetings and Workshops.** Many meetings have taken place since the GAP projects first started (GAP1 and GAP2). Stakeholders continuously working throughout the entire 'GAP period' has led to a strong, long-term relationship and sense of trust.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

RESULTS

Our main achievement has been the publication of a ***Long Term Management Plan (LTMP)*** for the NW Mediterranean Sea's deep-sea red shrimp fishery, in Spain's official state bulletin - the Boletín Oficial del Estado (BOE). Initiated during the GAP1 project, a working document of a Management Plan for the ***Aristeus antennatus*** fisheries was discussed and drafted by three parties: the Catalan Autonomous Government; the Regional Federation of Fishery Associations of Girona and the Marine Science Institute (ICM-CSIC). The official document of the LTMP was published in the BOE on May 27th, 2013 and can be downloaded at the link below.

Meeting with fishers

The LTMP's publication in the BOE made a significant impact on the mass media. Several articles appeared in Spain's most important national and regional newspapers, meaning that GAP2's tasks and aims have received ***wide-ranging attention***.

LEGACY

The case study's main legacy is that after all these years of fishers, policy makers, NGOs and scientists working together, this fishery's future is now more sustainable. Issues such as more selective nets (see image on the left), closed seasons in the fishing grounds, restrictions on fishing engine power, total number of vessels, and more, have all been discussed and agreed. Although we still have a way to go, we have made significant progress working together.

Comparison of old (left) and new (right) mesh sizes

RESOURCES

- Case study web page - **www.gap2.eu/case-studies/case-study-10**
- A film featuring the case study, exploring the value of collaboration and co-management - **www.gap2.eu/launch-of-gap2themovie**
- Fishers explain the deep-sea red shrimp's LTMP on the Palamós Fishery Association's website - **www.confraria.cat/qualitat/pla-de-gestio-de-la-gamba-de-palamos**
- PhD student Giulia Gorelli was awared a scholarship by the Marine Stewardship Council for her work on the case study - **www.msc.org/business-support/science-series/volume-02/management-strategies-for-red-shrimp**
- LTMP for NW Mediterranean's *Aristeus antennatus* fishery published in the BOE, 27th May 2013 - **www.boe.es/boe/dias/2013/05/27/pdfs/BOE-A-2013-5555.pdf**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

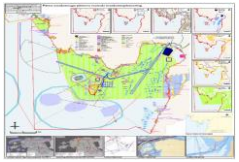
Estonia – Maritime Spatial Planning

Mapping Baltic fisheries in support of Maritime Spatial Planning.

PURPOSE

The aim of the case study is:

- To identify and map competing sea uses and assess their impact upon spatial and temporal fishing allocations.
- To develop salient, credible and legitimate arguments for balancing environmental, economic and social interests.
- To improve the fishers' capacity for informed interest and collaborative participation in the process of Maritime Spatial Planning (MSP).



Maritime Spatial Planning outline of Pärnu County's marine area in Estonia

WHO

Those directly involved in this project include: Mr Arne Tagg, a fisher from Pärnu Bay, Chairman of the Board of Association of Fisheries of Gulf of Liivi; Mr Mart Undrest, Chairman of the Estonian Fishermen Association; Ms Esta Tamm, Managing Director of Association of Fisheries of Gulf of Liivi; Dr Robert Aps and Dr Markus Vetemaa both scientists from the Estonian Marine Institute, University of Tartu.

"During Maritime Spatial Planning, we shall consider all economic, social and environmental aspects supporting sustainable development and growth in the maritime sector, (including fisheries), and those in line with EU Blue Growth aspirations."

Ms Merje Frey, Fisheries Economics Department, Estonian Ministry of Agriculture.

"This case study is building on Mutual Learning as a basic principle of trans-disciplinarity that incorporates processes, methodologies, knowledge and goals of stakeholders from science, industry, and politics."

Dr Robert Aps, Estonian Marine Institute, University of Tartu.

This case study's reach is far ranging due to its contribution to the current planning of Pärnu County's marine area in Estonia. This process involves many Estonian government ministries, as well as representatives of local communities, NGOs and stakeholder groups ranging from tourism to fisheries to renewable energy.

IMPACT

Pärnu County marine area's MSP-related stakeholders' mutual learning meetings in 2013-2014 (based on the GAP2 step-by-step approach toward collaboration) have contributed to 1) collaborative identification and mapping of problems relating to the fishery and its interests, 2) further development of salient, credible, and legitimate arguments to be used in balancing environmental, economic and social interests in a process of MSP, and 3) improving stakeholders' capacity for informed interest based on collaborative participation in MSP.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

METHOD

The case study is using **'Mutual Learning'** to advance collaborative problem solving between public authorities and stakeholders involved in the MSP process. The focal question is: how to increase collaboration between a range of stakeholders negotiating during the process? This case study has developed and applied a step-by-step Mutual Learning methodology: 1) move towards interest-based **collaborative negotiations**, 2) understand the other side's thinking, 3) focus on shared interests, 4) look for solutions to common problems, and 5) apply the **Participatory GIS based Mutual Learning** tool. **(http://baltfishplan-web.eu/)**.

Mutual Learning – discussing the fishery related environmental issues

RESULTS

This case study continuously contributes to Pärnu County's Maritime Spatial Plan through delivering mutual learning events, resulting in data/map layers, methodology, presentations and on-going participation. Special attention is paid to fishers' concerns regarding potential damage to fish stocks in connection to planned wind farm development phases - construction, operation and decommission. The BaltFishPlan website is developed, and up and running as a Participatory GIS tool for spatial visualization and analysis of fisheries interests'. Results have been presented at 25 international conferences and seminars, and 2 conference papers have been published.

LEGACY

The stakeholders' shared vision of Pärnu Bay as "a cradle of marine life, including fish" is the accepted basis for planning. Fishers' knowledge on various fish habitats was drawn onto a map for analysis and inclusion into the MSP. Regarding the planned development of wind farms, it has been suggested that the EC Marine Strategy Framework Directive's "Qualitative descriptors for determining good environmental status", relating to the introduction of underwater noise and electromagnetic field, should be observed - thereby avoiding damage to the marine environment. Establishing a 'Kihnu Island's National Park', has also been proposed, with the aim of protecting both the sensitive ecosystems and fish spawning grounds of the area, as well as the unique coastal fishing community's culture and history.

Fishery and nature in harmony

RESOURCES

- Case study web page – **www.gap2.eu/case-studies/case-study-11**
- GAP2 Mutual Learning method – **www.gap2.eu/outputs/d2-1-mutual-learning-events**
- Participatory GIS tool for spatial visualization and analysis of fisheries interests' related information – **www.baltfishplan-web.eu**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

The Netherlands – Discards

Research cooperation, discards and self-sampling.

PURPOSE

Trawlers in the harbour of Stellendam

In this case study we have explored the ongoing practice of research cooperation in the Netherlands, between the research institute IMARES and the demersal flatfish sector. The research focused on the issue of fish discards, and specifically on projects in which fishers are using self-sampling as a data collection method. The purpose was to reflect upon the ongoing cooperation and to learn lessons which could be applied to future research, by both looking back and monitoring ongoing efforts.

WHO

Thirteen researchers have been directly involved in the Dutch case study, as well as one student. The fishermen who have been most involved are René Sperling (OD6) and Johan and Albert Baaij (TH10), while Inger Wilms contributed in her capacity as a Policy Officer for the industry organisation CVO.

'Most of the time scientists and people of the government are talking about the thoughts of fishermen. But fishermen need to be included!'

Johan Baaij, Fisher, Th10.

'Research cooperation brings best results if you manage to have true teamwork'.

Marloes Kraan, Researcher.

Research cooperation has been ongoing in the Netherlands for over 10 years. In 2012, 162 fishing vessels were involved, or had been involved, in research projects. In this GAP2 case study we have studied ongoing research projects in which self-sampling was used as a method. These were the cod monitoring project (40 vessels), the pulse-trawl monitoring project (25 vessels), and the discards sampling for the Data Collection Framework (DCF) of the EU (23 vessels).

IMPACT

GAP2's impacts have been indirect and varied. The project has led to better working practices (including the production of a self-sampling guide, and the termination of less effective projects) and a better understanding of the use of self-sampling as a method. It has also led to a better appreciation of cooperation structures and to understanding that communication is crucial to the success (or failure) of research cooperation. Similarly, continued monitoring of progress in both projects and surrounding policy-developments, while not taking cooperation for granted, is key to achieving results.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

METHOD

Self-sampling was the method central to the projects that were studied. What is **self-sampling?** How does it work? What does it deliver, at what expense? How should **uncertainty** and trust issues be dealt with? These were some of the core questions relating to this method. In the case study as a whole, we used mainly **interviews, observation and discourse analysis** to answer the research questions.

Observer Kees Groeneveld evaluating a discards trip with fisher Cees Sperling (OD6)

RESULTS

The case study has resulted in improved communication and working practices in ongoing research cooperation projects in the Netherlands. The GAP2 exchange programme has been valuable for the fishermen and researchers involved, building trust and facilitating networking in the countries visited. The stories about the exchange visits also served to demonstrate the value of research cooperation, in which both fishermen and scientists each have their own expertise that can gain in strength and effectiveness when combined.

The crew of the OD6 with observer Kees Groeneveld

LEGACY

Research cooperation is about effectively and respectfully bringing knowledge together from different sources. The aim is to improve the knowledge base which underpins both fisheries policy development as well as decisions directly impacting both fishermen and marine ecosystems. One of the lessons learned in the GAP2 project is that the process of cooperation is equally important as the 'content' of cooperation. Social scientists have been trained in working with people to gather information, and as such can make a valuable contribution to fisheries science, together with natural scientists and fishermen. The key to research cooperation is the involvement of different experts: fishermen, natural scientists and social scientists.

RESOURCES

- Case study web page – **www.gap2.eu/case-studies/case-study-12**
- Blog collection describing the exchange between CFRN and Dutch case study participants - **http://gap2.eu/the-gap2-exchange/the-gap2-exchange-blogs/cfrn-gap2**
- Cooperatieve Visserij Organisatie website - **www.cvo-visserij.nl**
- Self-sampling article published in the Journal of Fish Biology - **http://onlinelibrary.wiley.com/doi/10.1111/jfb.12192/full**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

UK – Long-term Management Plans

Ecosystem-based Management Plans for North Sea mixed demersal fisheries.

PURPOSE

Our aim was to evaluate how food-web* interactions in the North Sea affect the performace of management strategies aiming to achieve Maximum Sustainable Yield for Europe's fisheries. In particular, we wanted to look at what alternative options under the reformed Common Fisheries Policy (CFP) might lead to better management of mixed demersal fisheries, where discarding has been a perennial problem.

Typical Scottish whitefish trawler

WHO

This case study brought together ecosystem modellers from the UK Centre for Environment, Fisheries & Aquaculture (Cefas) and members of the North Sea Regional Advisory Council's Demersal Working Group. We worked together to identify needs, so that the modelling tools were fit-for-purpose.

"The North Sea Advisory Council has been taking a holistic view of long term management plans for a number of years and has been working with scientists to understand what multi-species and ecosystem considerations we need to take into account in preparing our advice. With CFP reform, these dimensions will be important, both for developing regional multiannual plans and meeting the requirements to achieve Good Environmental Status."

Barrie Deas and Mike Park, North Sea RAC Demersal Working Group.

"We managed to work together successfully, despite a few delays. Collaboration will continue to be important, as the new CFP emphasises the need to understand the ecological and fishery trade-offs of alternative management options."

Dr Steven Mackinson, Cefas, UK and GAP2 Coordinator.

Learning to talk the same language was important in making the collaboration useful and meaningful for both groups. Technical development drew upon expertise from Cefas and the University of British Columbia, Canada.

IMPACT

This case study will mainly impact the scientific methods used to establish integrated ecosystem advice. It demonstrates how fisheries science can be designed and conducted in liaison with stakeholder groups. This knowledge is contributing directly to the European Commission's Scientific, Technical and Economic Committe for Fisheries (STECF) and working groups at the International Council for the Exploration of the Sea (ICES), which are using science to support the development of a multianual plan for mixed fisheries. To have impact at the EU management level, our advice will need to be taken onboard by the North Sea Advisory Council and by the managers responsible for developing regional multiannual management plans within the Scheveningen Group's member states.

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

METHOD

We developed a **modelling tool** to evaluate the performance of alternative management strategies (all achieving MSY) for mixed demersal fisheries. The tool was based upon an ecosystem model of the North Sea. Several scientific innovations were made in the development of the tool, such as representing **uncertainty** in the state of the ecosystem and the possibility to have management constraints on one species contingent on the conservation status of others. RAC members helped steer the researchers' work by expressing their needs and priorities – in particular, by wanting tools to evaluate **'options'** for management of mixed demersal fisheries. Key conversations led to the development of model outputs which could be **readily understood** by stakeholders and policy makers.

***Food-web models describe the interactions amongst predators and prey in the ecosystem and are used to investigate the knock-on effects of fisheries and climate**

RESULTS

The tools are being applied to evaluate MSY management options for mixed demersal fisheries, concurrently taking into account the need to eliminate discarding (CFP articles 2 & 15). These investigations are essential for the development of regional Multiannual plans (CFP article 9-11) in the North Sea and thus of direct value to regional policy makers and stakeholders. The modelling tools will be made available to the international scientific community through release in the widely-used software Ecopath with Ecosim. Full technical details are being published together with two scientific peer-reviewed publications. Reflections on the collaborative process are being published too, as part of a GAP2 compilation.

LEGACY

The legacy of the case study will be in the development of regional plans for managing fisheries, which explicitly take account of the complexity of the ecosystem in which the fisheries operate. We have sought to demonstrate that including science in regionalised plans demands a collaborative approach, where needs are matched with scientific capabilities in a timely way. Our experience shows that it takes time and constant awareness of how changes in policy focus affect the need and relevance of research.

RESOURCES

- Case study web page **www.gap2.eu/case-studies/case-study-13**
- North Sea Advisory Council - **www.nsrac.org**
- ICES Working Group on Multispecies Assessment Methods (WGSAM) - **www.ices.dk/community/groups/Pages/WGSAM.aspx**
- ICES Working Group on Mixed Fisheries (WGMIXFISH) - **with www.ices.dk/community/groups/Pages/WGMIXFISH.aspx**

The GAP2 project (www.gap2.eu), funded by EU FP7 Science in Society programme. Read about the project's regional case studies or explore our outputs so far. Grant Agreement: 266544

- **Task 2.1:** Facilitate and maintain effective dialogue and mutual learning.

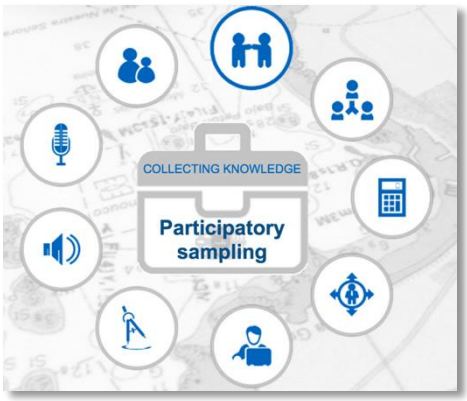
In addition to the ongoing demonstration actions in each case study and the influencing actions associated with Objective 1, a focus was given to the evaluation of approaches and outcomes of specific mutual learning events carried out across the project (see Deliverable 2.1). Conclusions underlined the importance of the negotiating process in establishing the parameters and methods of research, and reaching a consensus on research conclusions. Successful mutual learning was found to be that which focuses not only on the collaborative gathering of data, but also on stakeholders' different and often contradictory interests.

- **Task 2.2:** Capture and integrate stakeholder and scientific knowledge.

Several workshops (Deliverable 2.2.1 and Deliverable 2.2.2) among partners helped generate information to develop the project's 'Methodological Toolbox', and establish a common understanding of key concepts such as 'Participatory Leadership' - *'a more advanced, more democratic and more effective model of leadership, it harnesses diversity, builds community, and creates shared responsibility for action. It deepens individual and collective learning yielding real development and growth'*. These were important in in the development of a range guidance documents and policy briefings.

"Methodological toolbox – implementation process".

Supporting both the capture and dissemination of scientific and stakeholder knowledge, the methodological toolbox (Deliverable 2.2.3) is an important resource for others. Available as a paper document and an interactive web-based platform, the toolbox was produced based on knowledge gathered in workshops and during the practical application of participatory research methods during the project's lifespan. It acts as guide for those interested in carrying out participatory research. It's also a live-document where new tools can be added.



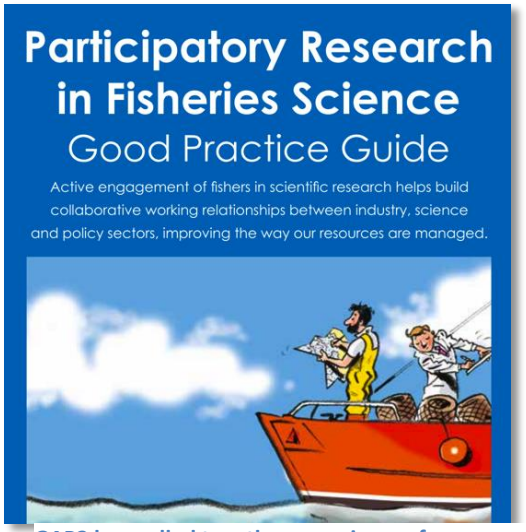
The Methodological Toolbox is an interactive, web-based platform on the GAP2 website.

Crucially, the toolbox has been completed in a way which is easy to interact with, and easily digestible by a range of audiences, supporting the overall objective of creating meaningful interaction between science and stakeholders, and producing management-friendly research outputs. The toolbox is as relevant to a policy audience as to a researcher, and is based on methods tried and tested by and with groups of fishers across Europe.

- **Task 2.3:** Make the research outcomes accessible and promote their uptake.

  (See also section 4, Dissemination and exploitation activities)

With the aim of making research outcomes from GAP2 accessible to a wider audience, a submission was made to 'Springer' publishers, for a special volume focusing on the emergence of research practices and advice frameworks that allow for the co-creation of common knowledge bases for fisheries management (Deliverable 2.3.1). Centred around the 13 GAP2 participatory research case studies, the submission details how each chapter examines how the collaborative processes worked over the lifetime of each individual case study, and the volume as a whole examines overarching lessons learnt about the task of integrating collective research into management decisions.



GAP2 has pulled together experiences from across 4 years and 13 case studies to produce this guide.

Throughout the project, considerable effort was made to ensure the accessibility of research outcomes to a variety of audiences (see section 4). One particular example is the 'Participatory Research Handbook', a 'good practice guide' to enacting collaborative research methods, and building relationships across different groups within research processes.

Alongside the provision of guidance for researchers and others interested in participatory research, the work of the GAP2 case studies was also shared with a wide audience, across Europe, through non-scientific publications, or media coverage. Several of the case studies have appeared on television, and all have appeared in regional and national print/online media. This has been a key way in which civil society has engaged with the project, and a real boost to the profile of participatory research. (See Deliverable 2.3.2).

2.3 Objective 3: Establish and demonstrate concepts and mechanisms that enable uptake of participatory research knowledge and promote application of stakeholder know-how to European policies on fisheries and the marine environment.

- **Task 3.1:** Analysis of the use of shared concepts in transferring the knowledge required for evidence-based policy making.

Analysing published and non-published materials from the project's participatory research activities helped to establish the concepts and mechanisms allowing the uptake of co-produced knowledge in science-stakeholder research partnerships (Deliverable 3.1.1). This analysis concluded that participation has become incorporated into EU policies – including the CFP – as an acknowledged element of good governance. It also showed that involving stakeholders in participatory research can be a way of expanding the knowledge base supporting EU fisheries management.

The paper concludes that participatory research can be difficult to do well, and especially challenging within contexts where fisheries management problems are being addressed. It clearly highlights the care that needs to be applied to the design of the research process.

A cartoon drawn to show the participatory process in the North Sea LTMP case study.

Focusing on an initiative led by the North Sea Advisory Council (NSAC) to develop a long-term management plan (LTMP) for nephrops fisheries in the North Sea (a process which started in 2006, and still on-going), the mobilisation of different types of knowledge in interactions between stakeholders, scientists and policy makers was investigated in detail (Deliverable 3.1.2). The sharing of knowledge between different actors was analysed using insights from organisational management, focusing on boundary processes and the kinds of resources and efforts that are needed at different boundaries to allow knowledge sharing and knowledge production to take place.

Conducted at a time of rapidly emerging new policy framework for the CFP, the analysis revealed the difficulties of producing a management instrument which can be flexible enough to takes into account biological, ecological, economic and social aspects of management. An important aspect of achieving that flexibility lies in the need transform the knowledge base and the way it is accessed and applied.

- **Task 3.2:** Develop and apply concepts and mechanisms that effectively bridge the gap between different actor groups.

A number of policy briefs were produced across the lifespan of the project. The short format style of these briefings provides easy-to-digest relevant information to policy makers. Their purpose is to provoke thought, and stimulate debate on topical issues relating to deepening the engagement of stakeholders in governance of EU fisheries. The first two policy briefs focussed on the knowledge needs, and their application, in the regionalised approach to fisheries management adopted under the 2014 reform of the Common Fisheries Policy (Deliverable 3.2.1).

Conducted as part of one of the GAP2 PhD's a specific analysis of the collaborations by Irish and Danish industry stakeholders and scientists in filling knowledge gaps in the rapidly expanding Boarfish fishery, provided an in-depth examination of how stakeholder participation can help improve the knowledge base for assessment and management of data poor fisheries (Deliverable 3.2.2). It was found that the efficiency with which new knowledge was mobilised and brought forward to the scientific community and to managers in the setting analysed, was remarkable. It was considered that the efficiency observed might be explained by the clear separation of roles within the collaboration work, in combination with good communication. Each actor in the process contributed by doing tasks they were already good at, and keeping other updated on their progress. The fact that a small number of fishers were involved with the boarfish fishery facilitated direct dialogue with stakeholders and their producer organisations (POs). This helped build common understanding, which again helped the stakeholders move forward with joined forces.

It was found that clear communication is key to the success of participatory research. Here, a fisher and a scientist work together at sea.

Another PhD paper looked in detail at the processes involved in stakeholder-led initiatives to make long-term management plans for Western horse mackerel, boarfish, and North-sea nephrops, showing how LTMPs provide the entry point for enagaging stakeholders participation in EU fisheries management (Deliverable 3.3.2).

- **Task 3.3:** Engage policy makers, stakeholders and scientists in formulating expectations for research needs and contributing to the establishment of mechanisms for the uptake of participatory research outcomes consistent with the needs of the CFP, MSFD and Natura 2000.

Three further briefs targeted at the policy-making audience were delivered in the final year of the project (Deliverable 3.3.1). Delivering easy-to-digest information on complex topics, these were circulated to as many EU policy makers as possible, in digital and print format.

- Policy brief 3 provides a two-page breakdown on the production, use and value of GAP2's 'Methodological Toolbox', underling the use of participatory research in reducing tensions between different stakeholders, leading to productive working relationships, and inspiring innovation in research and management. The brief includes background information on what participatory research is as well as how it is conducted, and links to the interactive web-based platform for the toolbox.

- Policy brief 4, covering the GAP2 International Symposium, contains summaries of sessions that took place throughout the 3-day event, which focussed on 'participatory research and co-management in fisheries'.

- Policy brief 5 outlines key outcomes that have come about due to long-term collaboration between fishers and scientists, explaining the overall philosophy of the GAP2 project, and listing important milestones and physical outputs of the project's work in Europe.


GAP
Connecting Science Stakeholders and Policy

GAP2 Policy Brief No. 5
March 2015

Building Bridges through Participation

Concrete Outcomes and Cementing Change

The philosophy: **"What I hear, I forget. What I see, I remember. What I do, I understand."**

The GAP2 Project

Since 2012, 38 partner institutions from 11 European countries have been engaged in mutual 'learning by doing'. This work has centred around 13 case studies, where fishers, scientists and sometimes policy makers, have worked together on research aimed at solving problems of shared interest in fisheries management and science. GAP2 has focused upon the 'Participatory Research' approach because:

- *The evidence-base for management improves if knowledge of fishers and their experience is integrated in a meaningful way with scientific and policy knowledge.*
- *If knowledge is shared and co- constructed it improves the implementation and effectiveness of management measures and;*
- *If knowledge is shared and co- constructed it improves the support for policy and societal goals to achieve responsible, sustainable, productive fisheries.*

© Karoline Pettersen

GAP2 briefs are circulated widely across policy and scientific institutions across the EU.

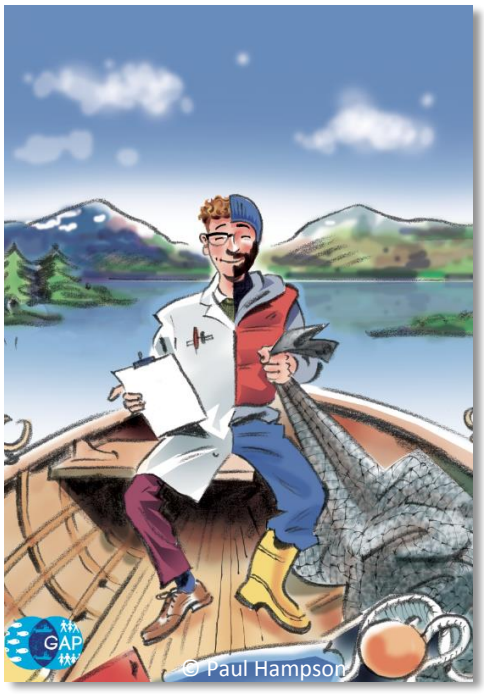
2.4 Objective 4: To evaluate, whether, when and how collaborative research makes a difference to empirical knowledge and to management.

- **Task 4.1:** Examine the overall institutional framework for each participatory research case study.

Centred around knowledge, social process and the success of participatory research, this work involved evaluating 'whether, when and how collaborative research makes a difference to empirical knowledge and to management'. As a first step, an evaluation of the institutional framework of participatory research was undertaken in order to try and understand the institutional conditions that shape participatory research designs and influence how knowledge can be mobilised for management purposes in different contexts (Deliverable 4.1).

The method for examining these institutional frameworks included three steps. Firstly a framework was established for classifying different approaches to, and dimensions of, participatory research. This framework consists of an assessment of the different levels of stakeholder engagement in research projects, and distinguishing between situations according to how the projects or activities in question are related to management decision-making. Together, these two dimensions – depth of participation and degree of separation between research and management - allowed a matrix or map to be established, by which different types of collaborative research projects or activities could be characterized and compared. A literature review was also conducted in order to develop and refine this analytical framework. This refined analytical framework was then used to discuss six of the individual case studies within GAP2.

It was determined that the most interesting aspect of this assessment process was not, in fact, the result, but rather was the attempt to identify the main objective of the project, how it got to be that way, and the role of stakeholder engagement in the process.



Here, another original cartoon for the GAP2 project shows Swedish fishers' dual lives - as both fishers and scientists. Embodying EBK and RBK.

- **Task 4.2:** Establish how participants' attitudes change through collaborative research.

Research was conducted into the attitudes of scientists, fishers and policy makers undertaking collaborative research (Deliverable 4.2.1). A comparison was made between these groups of people in six different GAP2 case studies, with particular emphasis on their

views of stakeholder participation, collaborative research and the relationship between Experience Based Knowledge (EBK) and Research Based Knowledge (RBK) in the area of fisheries management.

Following the sorting of statements by strength of agreement with their content, work package four assessed the results as showing that the gap between stakeholders and scientists was less 'deep and dark' than conventionally described. It was found that in general GAP2 participants had a more developed cooperative attitude than non-GAP2 participants, but that the contrast between these groups was not as great as anticipated.

A number of explanations for this were considered, including that the broad acceptance of the gap itself had contributed a first step towards its bridging. It was also considered possible that the many initiatives and institutions – including GAP2 case studies – enabling stakeholder participation over the last 10 years are already starting to have an effect on the industry, and others, in general.

A second analysis of attitudes was submitted 12 months after this initial assessment, to examine if and how perceptions of (the value of) collaborative research were changed throughout the research process (Deliverable 4.2.2). It revealed that the project's initial academic conceptualization of fisher knowledge, how it interacted with science, and how collaborative research worked was in some ways unhelpful and in need of revision.

It showed that collaborative research is not so much about bridging the gap by providing a melting pot in which fishers knowledge is combined with scientific knowledge, but rather to engage fishers as active agents in the knowledge-production process; something which partners have been actively doing in their activities. In collaborative research, then, the focus shifts from fishers' knowledge items towards the role and capacity of fishers as knowledge agents. In this sense, GAP2 case studies can then be seen as allowing fishers access to the resources of science for their own purposes, rather than working as arenas for negotiating knowledge gaps and dismantling preconceptions.

- **Task 4.3:** Examine the fit between collaborative research and management decision making and **Task 4.4:** Examine the dynamics of the interaction between management requirements and stakeholders.

Using scientific papers written on the process of each of the 13 GAP2 case studies, and in-depth interviews with the case study leaders, an analysis of the impact of participatory research on three variables: saliency, legitimacy and credibility, was completed (Deliverable 4.3.1). These terms were defined as follows:

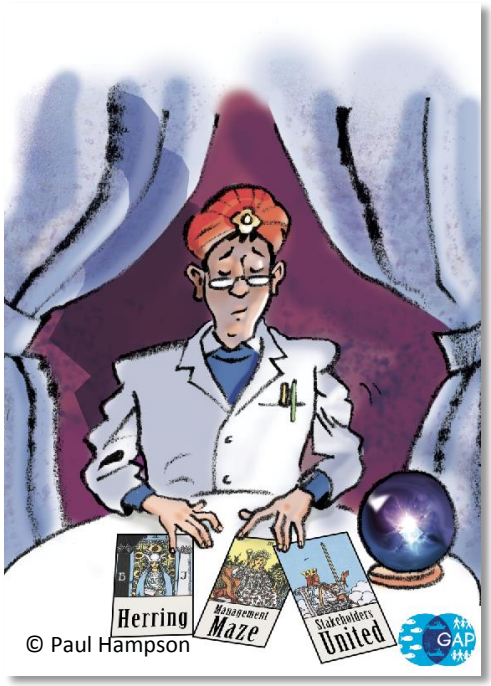
- **Saliency** reflects whether an actor perceived the assessment to be addressing questions relevant to their policy or behavioural choices.

- **Credibility** reflects whether an actor perceives the assessment's arguments to meet standards of scientific plausibility or technical adequacy.
- **Legitimacy** reflects whether an actor perceives the assessment as unbiased and meeting standards of political fairness.

It is considered that these three factors are strong influencers in whether or not research will successfully be taken up by management.

The analysis showed that whilst not all case studies were successful in terms of the initial goals set, there were positive steps towards changing the credibility, legitimacy and/or saliency of the results produced and the perceptions of the different stakeholders against each other.

Through a second analysis of scientific papers produced on the process of each of the GAP2 case studies, and in-depth interviews with case study leaders, an assessment of the use (or potential use) of the data produced by these collaborative research case studies in management was conducted (Deliverable 4.3.2). The information was analysed with a focus on whether or not the knowledge product (data) was used in management, and why. The results suggested some of the case studies were successful in directly influencing management. It was concluded that this depended on the flexibility of the management system in question, the reliability of the data, the involvement of the management side, and sometimes even the persistence with which the case study teams engaged with policy makers.



In this cartoon, a 'fisheries fortune teller' looks into the future, taking into account the 'management maze' to be faced.

3. Impact and future potential

3.1 Impacts – on different audiences / end users

The inclusive approach has reaped many rewards, with the outcomes of our work coming in different forms relevant to different people, at different organisational levels. In addition to the case-specific concrete outcomes relevant to local and regional fisheries stakeholder and management authorities (e.g. see Box 1), GAP2 has played an important role in facilitating multi-actor debate on fisheries policy development and implementation among EU member state governments, the Commission, Parliament and Regional Advisory Councils (comprising industry and NGO stakeholders). A particular issue where GAP2 has had an impact is the establishment of the dialogue the roles and structures for implementing Regionalisation of the CFP (e.g. Policy Brief 2). Other issues where GAP2 has been a catalyst and support include: collaborative development of management plans for octopus fisheries in Northern Spain, UK-French collaboration on the Channel scallop fishery, multi-stakeholder workshops on Irish Sea herring management plans, and Spanish and French collaboration on sustainable FAD fishing for tuna in the Indian Ocean.

Box 1 Specific concrete outcomes

1. A long-term management plan for the red shrimp fishery in Palamós, Spain, endorsed by the regional and national Governments and an exemplar in the Mediterranean. Read more.
2. Facilitated a set of stock management rules for western Baltic Herring, mutually agreed by member states, Norway, the Pelagic and Baltic RAC. Read more.
3. Proposed, through a process of co-management, the adoption of new technical measure regulations (pop-up traps) for selective fishing on whitefish in Lake Vättern. Read more.
4. Developed an ecosystem modelling tool used by STECF to evaluate options for a North Sea multiannual plan, taking account of mixed fisheries and the landing obligation. Read more.
5. Contributed towards the revision of a summer trawl-fishing ban in the Adriatic Sea, as a result of providing GAP2 data to FAO Adriamed, and the GFCM. Read more.
6. New data on the distribution of IUCN Red List species around German coast, and the establishment of the 'Sustain Seafood' consortium. Read more.
7. Facilitated development of a strategic plan for FAD management in Indian Ocean tuna fisheries. Read more.

The wealth of new knowledge and data produced by the case studies has been complemented by the contributions to learning about participatory science and good governance of fisheries (Box 2). As experiments in the transition to more inclusive ecosystem-based management, the case-studies have revealed the challenges and benefits of the participatory approach. This learning has been made accessible to researchers around the world, through publication of critical evaluations of the learning process, training

courses and the provision of a toolbox for Responsible Research and Innovation (Methodological Toolbox and PR handbook).

Box 2 – Sharing lessons on how to do it

1. Developed practical advice on how to do participatory research effectively, based on in-depth experience from examples around Europe. Read more.
2. Provided participatory researchers tools for the job. Read more.
3. Delivered courses for natural scientists to learn about social science methods in participatory research. Read more.
4. Highlighted collaborative research methods as a pathway to co-management. Read more.
5. Demonstrated how exchanging experiences can help to develop new ideas and strategies on how to make collaboration effective and useful to fishers, scientists and policy makers. Read more.
6. Showed how establishing a common language enables actors to share knowledge and build common ground. Read more.

A re-occurring theme of GAP2 has been the importance of establishing trust and developing the 'common language' to work effectively together. It's not surprising then that good communication at all levels has been central to our work. We have used a range of tools and approaches to reach different audiences, making our work transparent, visible and accessible to everyone (Figure 2). Tailoring communications to different audiences has been key to the project's success and visibility, both with the marine stakeholder community and the interested public. GAP2's social media activities have made it the go-to source for relevant and engaging content, with a storyline focussed on active participation in research and management (see Section 5 for details). It can all be found at www.gap2.eu.

GAP2's twitter account has become to go-to source for bite-sixed chunks of information on collaboration in fisheries science.

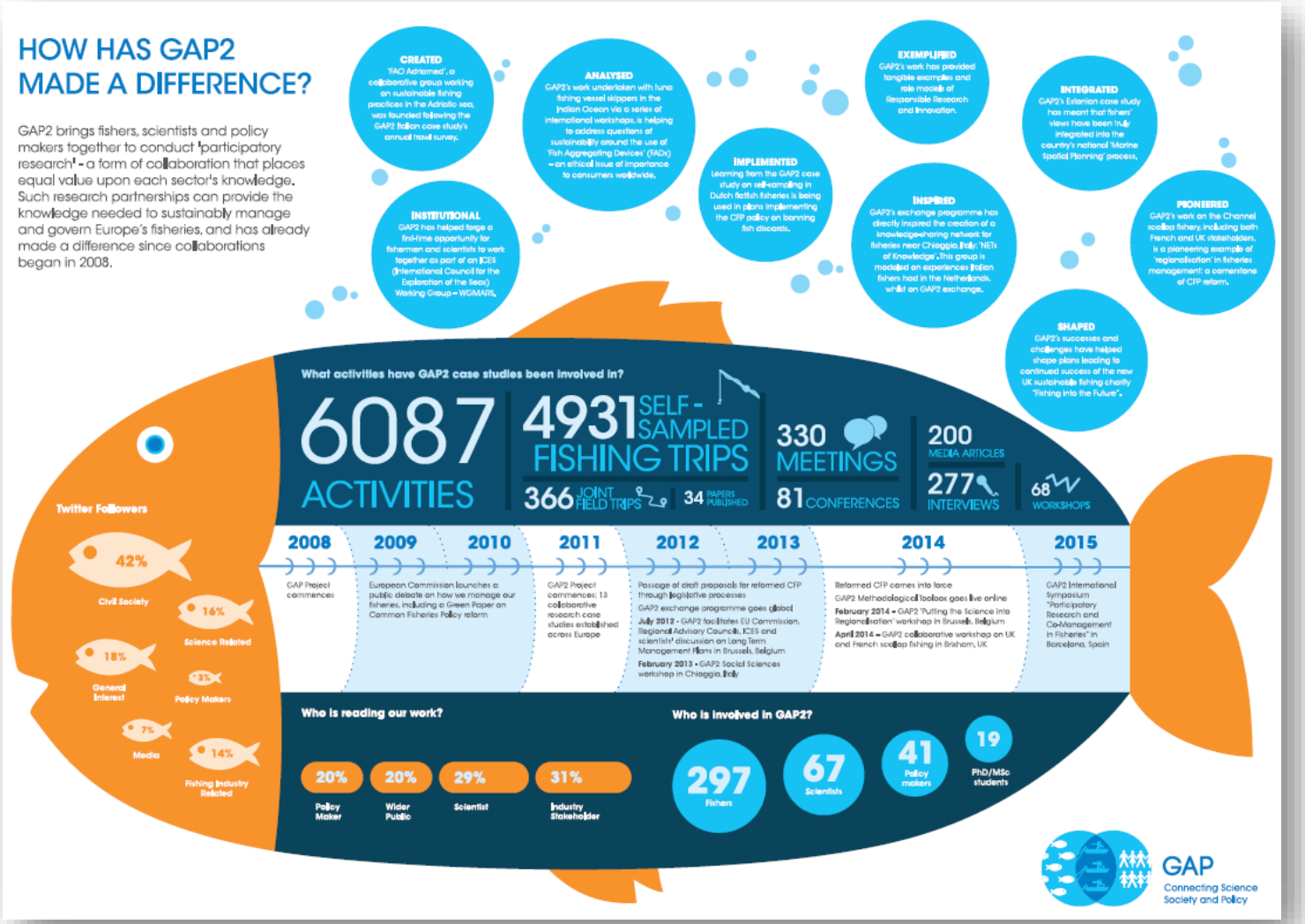


Figure 2: GAP2 infographic – a snapshot of activities and impacts.

3.2 Future potential

Building successful participatory approaches is a necessity of good governance that requires the will and support from all actors: fishers, scientists, civil society (NGOs) and policy makers throughout Europe.

Releasing the value of the experience gained during GAP2 requires making local scale outcomes relevant and useful to regional and European level decision-making. It also requires evolving the institutional processes and structures that enable co-created knowledge to be applied and made useful. Rather than standing on the outside and trying to enact change externally, we have worked on cementing change from within by connecting outcomes with the institutional processes and structures that legitimise and enable them. Specifically, we have sought to connect the project outcomes with the institutional structures and delivery of the principal EU-wide Marine Research Performing Organisations: the International Council for the Exploration of the Sea, the Scientific Technical and Economic Committee for Fisheries, and the General Fisheries Council for the Mediterranean. (see Box 3).

Box 3 – Cementing change - connecting outcomes with the institutional processes and structures that legitimise and enable them. Examples from GAP2.

1. Established and sustained ToRs for Stakeholder and Scientist collaboration in ICES scientific working groups. Read more.
2. Tuna – ISSF across the world hold's participatory approach GAP2-type meetings for skippers to discuss best selective fishing practices. Read more.
3. Channel Scallop – English and French fishermen agree to work towards joint, regional management plan for this economically important fishery. Read more.
4. Influenced European and regional research funding programmes – demonstrating good practice in Responsible Research and Innovation and evolving what it means in in practice.
5. Catalyst for an initiative on participatory science and co-management in small scale fisheries, directed through the General Fisheries Council for the Mediterranean.
6. Played a leading role in establishing new organisational structures championing collaborative research approaches (e.g. Fishing into the Future, UK.) Read more

4.3 Report on societal implications

- Questionnaire also completed online, but repeated here due to errors in the online form.

A General Information *(completed automatically when **Grant Agreement number** is entered.*

Grant Agreement Number:	266544
Title of Project:	Bridging the gap between science, stakeholders,
Name and Title of Coordinator:	Dr Steven Mackinson

B Ethics

1. Did your project undergo an Ethics Review (and/or Screening)? • If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports? Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 *'Work Progress and Achievements'*	***Yes the project had an Ethics Review. The conclusion was No requirements.***
2. Please indicate whether your project involved any of the following issues (tick box) :	
RESEARCH ON HUMANS	
• Did the project involve children?	N
• Did the project involve patients?	N
• Did the project involve persons not able to give consent?	N
• Did the project involve adult healthy volunteers?	N
• Did the project involve Human genetic material?	N
• Did the project involve Human biological samples?	N
• Did the project involve Human data collection?	Y
RESEARCH ON HUMAN EMBRYO/FOETUS	
• Did the project involve Human Embryos?	N
• Did the project involve Human Foetal Tissue / Cells?	N
• Did the project involve Human Embryonic Stem Cells (hESCs)?	N
• Did the project on human Embryonic Stem Cells involve cells in culture?	N
• Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	N
PRIVACY	
• Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	N
• Did the project involve tracking the location or observation of people?	Y

RESEARCH ON ANIMALS	
• Did the project involve research on animals?	Y
• Were those animals transgenic small laboratory animals?	N
• Were those animals transgenic farm animals?	N
• Were those animals cloned farm animals?	N
• Were those animals non-human primates?	N
RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	N
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	N
DUAL USE	
• Research having direct military use	N
• Research having the potential for terrorist abuse	N

C Workforce Statistics

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator	1	2
Work package leaders	2	3
Experienced researchers (i.e. PhD holders)	20	26
PhD/ Msc Students	6	1
Other	6	12

4. How many additional researchers (in companies and universities) were recruited specifically for this project?	4 PhD students 2 Communications staff 3 postdoc researchers
Of which, indicate the number of men: 1	

D Gender Aspects

5. Did you carry out specific Gender Equality Actions under the project? **NO**

6. Which of the following actions did you carry out and how effective were they?

		Not at all effective				Very effective
❑	Design and implement an equal opportunity policy	○	○	○	○	○
❑	Set targets to achieve a gender balance in the workforce	○	○	○	○	○
❑	Organise conferences and workshops on gender	○	○	○	○	○
❑	Actions to improve work-life balance	○	○	○	○	○
○	Other:	No specific gender actions were designed. An equal opportunities policy applied in institutes that employed new people for the project				

7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?

NO

E Synergies with Science Education

8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?

Yes- Research provided opportunities for PhD students – see above

9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?

No- nothing directed specifically for an educational curriculum but educational materials in the form of methodological tools and best practice guides were produced and made available on the website.

F Interdisciplinarity

10. Which disciplines (see list below) are involved in your project?

○	Main discipline[2]: **4.1**		
○	Associated discipline[2]: **5.4**	○	Associated discipline[2]: 1.4

G Engaging with Civil society and policy makers

11a	**Did your project engage with societal actors beyond the research community?** *(if 'No', go to Question 14)*		**YES**

11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?

[2] Insert number from list below (Frascati Manual).

YES - in determining what research should be performed

YES - in implementing the research

YES- in communicating /disseminating / using the results of the project

11c In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?		**YES**

12. Did you engage with government / public bodies or policy makers (including international organisations)

YES in framing the research agenda

YES in implementing the research agenda

YES in communicating /disseminating / using the results of the project

13a Will the project generate outputs (expertise or scientific advice) which could be used by policy makers?

YES – as a **primary** objective (please indicate areas below- multiple answers possible)

YES – as a **secondary** objective (please indicate areas below - multiple answer possible)

13b If Yes, in which fields?

		Fisheries and Maritime Affairs **Environment**		**Research and Innovation** **Information Society**	

13c If Yes, at which level?

Local / regional levels
National level
European level
International level

H Use and dissemination

14. How many Articles were published/accepted for publication in peer-reviewed journals?	33
To how many of these is open access[3] provided?	20
How many of these are published in open access journals?	7
How many of these are published in open repositories?	0
To how many of these is open access not provided?	13
Please check all applicable reasons for not providing open access:	
❑ publisher's licensing agreement would not permit publishing in a repository ❑ no suitable repository available ❑ no suitable open access journal available ❑ no funds available to publish in an open access journal ❑ lack of time and resources ❑ lack of information on open access ❑ other[4]: ……	

15. How many new patent applications ('priority filings') have been made? *("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).*		**NONE**
16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).	Trademark	**NONE**
	Registered design	**NONE**
	Other	**NONE**
17. How many spin-off companies were created / are planned as a direct result of the project?		**NONE**
Indicate the approximate number of additional jobs in these companies:		

18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:

❑	Increase in employment, or	❑	In small & medium-sized enterprises
❑	Safeguard employment, or	❑	In large companies
❑	Decrease in employment,	X	**None of the above / not relevant to the project**
❑	Difficult to estimate / not possible to quantify		

[3] Open Access is defined as free of charge access for anyone via Internet.
[4] For instance: classification for security project.

19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (*FTE = one person working fulltime for a year*) jobs:	*Indicate figure:*
Difficult to estimate / not possible to quantify	X

I Media and Communication to the general public

20. As part of the project, were any of the beneficiaries professionals in communication or media relations?

YES

21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?

YES

22 Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?

√	Press Release	√	Coverage in specialist press
√	Media briefing	√	Coverage in general (non-specialist) press
√	TV coverage / report	√	Coverage in national press
√	Radio coverage / report	√	Coverage in international press
√	Brochures /posters / flyers	√	Website for the general public / internet
√	DVD /Film /Multimedia	√	Event targeting general public (festival, conference, exhibition, science café)

23 In which languages are the information products for the general public produced?

√	Language of the coordinator - English	√	English
√	Other language(s) – where appropriate		

***Question F-10*:** Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

FIELDS OF SCIENCE AND TECHNOLOGY

1. NATURAL SCIENCES

1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]

1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)

1.3 Chemical sciences (chemistry, other allied subjects)

1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)

1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)

2 ENGINEERING AND TECHNOLOGY

2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)

2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]

2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

3. MEDICAL SCIENCES

3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)

3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)

3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

4. AGRICULTURAL SCIENCES

4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)

4.2 Veterinary medicine

5. SOCIAL SCIENCES

5.1 Psychology

5.2 Economics

5.3 Educational sciences (education and training and other allied subjects)

5.4 Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary , methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

6. HUMANITIES

6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)

6.2 Languages and literature (ancient and modern)

6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]

4. Dissemination activities and exploitation of results and foreground

4.1 Section A - Dissemination measures and publications

Table 4.1 List all scientific (peer reviewed) publications relating to the foreground of the project.

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
1	Steven Mackinson and Douglas Wilson	Building bridges among scientists and fishermen with participatory action research. In Social Issues in Sustainable Marine Fisheries Management. Chapter 7.	2014	Book chapter	Springer, Mare publication	Netherlands	121-139	Mackinson, S. and Wilson, D.C.K. 2014. Building bridges among scientists and fishermen with participatory action research. . In Social Issues in Sustainable Marine Fisheries Management. Springer, Chapter 7. Mare publication series 9, Urquhart, J., Acott, T., Symens, D., Zhao, M.	http://link.springer.com/book/10.1007/978-94-007-7911-2	No
2	Maaika Hoeksema	Knowledge co-production and integration guide	2011	MSc Thesis	.	.	.	Hoeksema, Maaike. 2011. A report on GAP2, written for project work placement of the study Coastal Zone Management of the Van Hall Larenstein, University of Applied Sciences Report on MSc thesis report.	.	Yes on request to author
3	Aps, R.; Fetissov, M.; Holmgren, N.;	Fisheries management: from linear to collaborative science-policy interface	2011	Paper	In: C.A. Brebbia, S.S. Zubir	UK	3-14	Aps, R.; Fetissov, M.; Holmgren, N.; Norrstöm, N.; Kuikka, S. (2011). Fisheries management: from linear to	DOI: 10.2495/RAV110011	Yes

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
	Norrström, N.; Kuikka, S.				(Eds.). Management of Natural Resources, Sustainable Development and Ecological Hazards III. UK: WIT Press.			collaborative science-policy interface. In: C.A. Brebbia, S.S. Zubir (Eds.). Management of Natural Resources, Sustainable Development and Ecological Hazards III. UK: WIT Press, pp. 3 - 14.		
4	Kopti, M.; Aps, R.; Fetissov, M.; Suursaar, Ü.	Integration of fishery management into the process of Maritime Spatial Planning	2011	Paper	In: C.A. Brebbia, S.S. Zubir (Eds.). Management of Natural Resources, Sustainable Development and Ecological	UK	183-194	Kopti, M.; Aps, R.; Fetissov, M.; Suursaar, Ü. (2011). Integration of fishery management into the process of Maritime Spatial Planning. In: C.A. Brebbia; S.S. Zubir (Eds.). Management of Natural Resources, Sustainable Development and Ecological Hazards III. Southampton, Boston: WIT Press, pp.183 - 194.	DOI: 10.2495/RAV110181	Yes

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
					Hazards III. UK: WIT Press.					
5	Rikke B Jacobsen, Douglas C K Wilson & Paulina Ramirez-Monsalve	Empowerment and regulation – dilemmas in participatory fisheries science	2011	Paper	Fish and Fisheries	.	1467-2979	Jacobsen, R. B., Wilson, D. C. K. and Ramirez-Monsalve, P. (2012), Empowerment and regulation – dilemmas in participatory fisheries science. Fish and Fisheries, 13: 291–302. doi: 10.1111/j.1467-2979.2011.00434.x	Fish and Fisheries, DOI: 10.1111/j.1467-2979.2011.00434.x	No
6	Joan Baptista Company	Submarine canyons from the Catalan Sea (NW Mediterranean): megafaunal biodiversity patterns and anthropogenic threats. In: Mediterranean Submarine Canyons: Ecology and Governance	2012	Paper	IUCN Editor.	.	250pp.	Company, J.B, Ramirez-Llodra, E, Sardà, F. et al. (2012). Submarine canyons from the Catalan Sea (NW Mediterranean): megafaunal biodiversity patterns and anthropogenic threats. In: Mediterranean Submarine Canyons: Ecology and Governance. IUCN Editor. 250 pp.	https://cmsdata.iucn.org/downloads/2012_035.pdf	Yes on request to author
7	Marta Carretón	Seasonal fleet movements vs population dynamics of the deep-sea red shrimp Aristeus antennatus (NW Mediterranean)	submitted 2013	Thesis	University of Barcelona	Spain	.	Carretón, Marta (ongoing). Seasonal fleet movements vs population dynamics of the deep-sea red shrimp Aristeus antennatus (NW Mediterranean). Graduation Final Degree Thesis, University of Barcelona (To be submitted September 2013). Supervisor: Joan B. Company	.	Yes on request to author

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
8	Marloes Kraan & Josien Steenbergen, Edwin van Helmond and Luc van Hoof	The optimal process of self-sampling in fisheries. Lessons learned from the Netherlands	2013	Paper	Journal of Fish Biology	Edinburgh, UK	963-973	Kraan, M., Uhlmann, S., Steenbergen, J., Van Helmond, A. T. M. and Van Hoof, L. (2013), The optimal process of self-sampling in fisheries: lessons learned in the Netherlands[a]. Journal of Fish Biology, 83: 963–973. doi: 10.1111/jfb.12192	doi: 10.1111/jfb.12192	No
9	Marta Blanci	Discards generated by the deep-sea red shrimp fleet of Palamós (Girona, NW Mediterranean)	September 2012	Thesis	University of Barcelona	Spain	.	Blanco, Marta (September, 2012). Discards generated by the deep-sea red shrimp fleet of Palamós (Girona, NW Mediterranean). Master Thesis, University of Barcelona, 35pp. Supervisor: Francesc Sardà.	.	Yes on request to author
10	Giulia Gorelli	Fishery dynamics of the deep-sea red shrimp Aristeus antennatus	September 2012	Thesis	University of Barcelona	Spain	30pp	Gorelli, Giulia (September, 2012). Fishery dynamics of the deep-sea red shrimp Aristeus antennatus. Master Thesis, Autonomous University of Barcelona, 30 pp. Supervisors: Francesc Sardà and Joan B. Company.	.	Yes on request to author
11	Jonsson, T., Setzer, M., Pope, J. G., Sandström, A.	Addressing catch mechanisms in gillnets improves modeling of selectivity and estimates of mortality rates: a case study using survey data on an endangered stock of	2013	Paper	Canadian Journal of Fishery and Aquatic Sciences	.	1477-1487	Jonsson, T., Setzer, M., Pope, J. G., Sandström, A. 2013. Addressing catch mechanisms in gillnets improves modeling of selectivity and estimates of mortality rates: a case study using survey data on an endangered stock of Arctic charr.	http://www.researchgate.net/profile/Tomas_Jonsson3/publication/261107469_Addressing_catch_mechanisms_in	Yes

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
		Arctic charr						Canadian Journal of Fishery and Aquatic Sciences 70:1477-1487	_gillnets_improves_modeling_of_selectivity_and_estimates_of_mortality_rates_a_case_study_using_survey_data_on_an_endangered_stock_of_Arctic_char/links/54d4ac580cf2970e4e636d96.pdf	
12	Bulian G. & Raicevich S.	"In mare altrui – Pesca e territorialità in ambito interidisciplinare" (In other people's sea. Fishery and territorial uses in an interdisciplinary context). BULIAN G., RAICEVICH S. (Eds.), Aracne Editrice, pp. 1-22. (ISBN: 978-88-548-6600-3).	2013	Book+Book chapters	.	.	.	"In mare altrui – Pesca e territorialità in ambito interidisciplinare" (In other people's sea. Fishery and territorial uses in an interdisciplinary context). BULIAN G., RAICEVICH S. (Eds.), Aracne Editrice, pp. 1-22. (ISBN: 978-88-548-6600-3).http://www.aracneeditrice.it/aracneweb/index.php/pubblicazione.html?item=9788854866003	(ISBN: 978-88-548-6600-3).	No
13	Giulia Gorelli, Joan B. Company & Francesc Sardà	Management strategies for the fishery of the red shrimp in Catalonia	2014	Article	Marine Stewardship Council Science Series	Spain	116-127	Giulia Gorelli, Joan B. Company & Francesc Sardà. 2014.Marine Stewardship Council Science Series 04/2014; 2:116-127.	https://www.msc.org/business-support/science-series/volume-02/management	Yes

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
					04/2014; 2:116-127.				-strategies-for-red-shrimp	
14	Mackinson, S and Middleton, D.	Evolving the ecosystem approach in European fisheries. What can policy moves for a stronger involvement of stakeholders in fisheries research and governance learn from experience in New Zealand?	in review	Paper	.	.	.	Mackinson, S and Middleton, D. Evolving the ecosystem approach in European fisheries. What can policy moves for a stronger involvement of stakeholders in fisheries research and governance learn from experience in New Zealand? In review Marine Policy	.	No
15	Kari Stange, Jan van Tatenhove and Judith van Leeuwen	Stakeholder-led knowledge production: Development of a long-termmanagement plan for North Sea Nephrops fisheries	27th June 2013	Paper	Science and Public Policy	.	1-13	Science and Public Policy (2014) pp. 1–13	doi:10.1093/scipol/scu068	No
16	Camilla Piras	Caratterizzazione della comunità bentonica della Regione Veneto ed implicazioni gestionali della pesca (Characterization of the benthic communities of the Veneto Region and management implications for fishing activities)	2013	Thesis	.	University of Padua, Dept. of Marine Biology, Chioggia (Italy)	.	.	.	Yes on request to author
17	Monica Mion	Distribuzione spazio-temporale delle catture commerciali nelle acque	2013	Thesis	.	University of Padua,	.	.	.	Yes on request to

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
		della Regione Veneto ed implicazioni gestionali (Spatio-temporal distribution of commercial catches in the Veneto Region and management implications)				Dept. of Marine Biology, Chioggia (Italy)				author
18	Lopez, J., Moreno, G., Sancristoba, I., Murua, J	Evolution and current state of the technology of echo-sounder buoys used by Spanish tropical purse seiners in the Atlantic, Indian and Pacific Oceans	06-Jul-05	Paper	Fisheries Research	.	127-137	Fisheries Research **155** 127 (2014	DOI: 10.1016/j.fishres.2014.02.033	No
19	Sardà, F., Coll, M., Heymans, J. J. and Stergiou, K. I.	Overlooked impacts and challenges of the new European discard ban	September 2013	Paper	Fish and Fisheries	Spain	175-180	Sardà, F., Coll, M., Heymans, J. J. and Stergiou, K. I. (2015), Overlooked impacts and challenges of the new European discard ban. Fish and Fisheries, 16: 175–180. doi: 10.1111/faf.12060	http://onlinelibrary.wiley.com/doi/10.1111/faf.12060/full	Yes
20	van Mastrigt A.	Fishery co-management; a sustainable way to develop fisheries? A multi disciplinary assessment of the fisheries in Lake Vättern, Sweden	2013	Thesis	University of Groningen	.	69pp.	van Mastrigt A. 2013. Fishery co-management; a sustainable way to develop fisheries? A multi disciplinary assessment of the fisheries in Lake Vättern, Sweden. University of Groningen. 69pp.	.	Yes on request to author
21	Raicevich S., Minute F., Finoia M.G.,	Synergistic and antagonistic effects of thermal shock, air	2014	Paper	PLOSone	.	.	Raicevich S., Minute F., Finoia M.G., Caranfa F., Di Muro P., Scapolan L., Beltramini M. . 2014.Synergistic and	doi:10.1371/journal.pone.0105060	Yes

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
	Caranfa F., Di Muro P., Scapolan L., Beltramini M.	exposure, and fishing capture on the physiological stress of Squilla mantis (Stomatopoda), PLoS ONE 9(8): e105060.						antagonistic effects of thermal shock, air exposure, and fishing capture on the physiological stress of Squilla mantis (Stomatopoda), PLoS ONE 9(8): e105060.		
22	Fortibuoni T., Borme D., Franceschini G., Giovananrdi O., Raicevich S.	Rare or extinct? The integration of different sources reveals common angelshark (Squatina squatina) near loss in the Northern Adriatic Sea (Mediterranean). Submitted to PLOS ONE	December 2014, under revision	Paper	PLOSone	.	.	Fortibuoni T., Borme D., Franceschini G., Giovananrdi O., Raicevich S. . Rare or extinct? The integration of different sources reveals common angelshark (Squatina squatina) near loss in the Northern Adriatic Sea (Mediterranean). Submitted to PLOS ONE	.	Yes
23	Lynam, C and Mackinson, S.	How will fisheries management measures contribute towards the attainment of good environmental status for the North Sea ecosystem? Ecosystem services	in review	Paper	Canadian Journal of Fishery and Aquatic Sciences	.	.	Lynam, C. and Mackinson, S. How will fisheries management measures contribute towards the attainment of good environmental status for the North Sea ecosystem? Ecosystem services. In review	.	No
24	Stephenson, R.L., Stacey Paul, Martin Pastoors, Marloes Kraan, Petter Holm, Melanie	Comment/Reply: Future of fishers' knowledge research. ICES Journal of Marine Science	in review	Paper	ICES Journal of Marine Science	.	.	Stephenson, R.L., Stacey Paul, Martin Pastoors, Marloes Kraan, Petter Holm, Melanie Wiber, Steven Mackinson, Dorothy Dankel, Kate Brooks, Ashleen Benson. Comment/Reply: Future of fishers' knowledge research. ICES Journal of	.	No

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
	Wiber, Steven Mackinson, Dorothy Dankel, Kate Brooks, Ashleen Benson.							Marine Science		
25	Stäbler, M. Alexander Kempf, Steven Mackinson, Jan Jaap Poos, Clement Garcia, Axel Temming.	Combining efforts to make maximum sustainable yields and good environmental status match in the southern North Sea. Ecological modelling	in review	Paper	Ecological modelling	.	.	Stäbler, M. Alexander Kempf, Steven Mackinson, Jan Jaap Poos, Clement Garcia, Axel Temming. Combining efforts to make maximum sustainable yields and good environmental status match in the southern North Sea. Ecological modelling	.	.
26	Dankel, D.J., Kari Stange, Kåre Nolde Nielsen, Robert Aps1, Jennifer Bailey, David Goldsborough, Friederike Lempe, Sebastian Linke, Steven Mackinson,	What hat are you wearing? A reflection on the multiple roles of fisheries scientists in the ICES community	in review	Paper	.	.	.	Dankel, D.J., Kari Stange, Kåre Nolde Nielsen, Robert Aps1, Jennifer Bailey, David Goldsborough, Friederike Lempe, Sebastian Linke, Steven Mackinson, Christine Röckmann, Jörn Schmidt, Harry Strehlow, Martin Pastoors. What hat are you wearing? A reflection on the multiple roles of fisheries scientists in the ICES community	.	No

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
	Christine Röckmann, Jörn Schmidt, Harry Strehlow, Martin Pastoors.									
27	Garcia-Carreras, B, Dolder, P., Engelhard, G.E., Lynam, C.P and Mackinson, S.	(accepted) review) Recent experience with effort management in Europe: implications for mixed fisheries	in press	Paper	ICES Journal of Marine Science (check)	.	.	Garcia-Carreras, B, Dolder, P., Engelhard, G.E., Lynam, C.P and Mackinson, S. (accepted) review) Recent experience with effort management in Europe: implications for mixed fisheries	.	No
28	Piras C., Mion M., Fortibuoni T., Franceschini G., Punzo E., Strafellla P., Despalatovic M., Cvitkovic I., Raicevich S.	A photographic method to identify benthic assemblages based on demersal trawler discards. Submitted to Fisheries Research for the special issue "Fishing Vessels as a Scientific Platform"	in review	Paper	.	.	.	.	http://en.calameo.com/books/003435700d2831f39a138	Yes
29	Monica M, Camilla P., Fortibuoni T., Celić I.,	Collection and validation of self-sampled electronic logbooks fishery-dependent data in the	in review	Paper	.	.	.	.	http://en.calameo.com/books/003435700d2831f39a138	Yes

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
	Franceschini G., Giovanardi O., Belardinelli A., Martinelli M., Raicevich S.	Northern Adriatic Sea. Submitted to Fisheries Research for the special issue "Fishing Vessels as a Scientific Platform"								
30	Raicevich S., Bullo M., Sabatini L., Giovanardi O. (Editors); contributions from: Bullo M., Casson M., Dall'acqua E, Fabris G., Fortibuoni T., Franceschini G, Fusari A., Giovanardi, Mariani A,, Mion MK., Nalon M., Padoan D., Perini M., Perini W., Penzo R., Piras C.,	Un futuro per la pesca in Alto Adriatico. Risultati e proposte del percorso partecipativo GAP2 tra ricercatori e pescatori di Chioggia (A future for the Northern Adriatic Sea fisheries. Results and proposals from the participatory process GAP2 involving scientists and fishers of Chioggia) _ISBN available soon	2015	Book+Book chapters	.	.	.	BOOK: ISPRA, Quaderni – Ricerca Marina n. 7/2015, pp. 112, in press	.	Yes

#	Author	Title of presention / paper	Year of publication	Type	Publisher	Place of publication	Pages	Full reference	Permanent identifier	Is/Will open access[2] provided to this publication ?
	Raicevich S., Sabatini L., Scarpa D., Serra S., Zennaro S., Zennaro R., Zennaro R.									
31	Sandström, A., Jansson, E., Dannewitz J., Bergek, S., Palm, S., Prestegaard, T. Holm, P. & J. Norrgård	Cryptic or not so cryptic after all – collaboration between fishermen and scientists confirm divergence in a lake whitefish (submitted to Ecology and society)	in review	Paper	Ecology and Society	.	.	Sandström, A., Jansson, E., Dannewitz J., Bergek, S., Palm, S., Prestegaard, T. Holm, P. & J. Norrgård. Cryptic or not so cryptic after all – collaboration between fishermen and scientists confirm divergence in a lake whitefish (submitted to Ecology and society)	.	.
32	Coll, M., Carreras, M., Ciércoles, C., Cornax, M.J., Gorelli, G., Morote, E., Saez, R.	Assessing fishing and marine biodiversity changes using fishers' perceptions: the Spanish Mediterranean and Gulf of Cadiz case study.	2014	Paper	PLOSone	.	1-15	Coll, M., Carreras, M., Ciércoles, C., Cornax, M.J., Gorelli, G., Morote, E., Saez, R. 2014. Assessing fishing and marine biodiversity changes using fishers' perceptions: the Spanish Mediterranean and Gulf of Cadiz case study. PLoS ONE, 9(1): e85670.	PLoS ONE (Impact Factor: 3.53). 01/2014; 9(1):e85670.	Yes
33	Mackinson, S. Wilson, D.C. Galiay, P. Deas, P.	Engaging Stakeholders in Marine Research.	2011	Paper	Marine Policy	.	18-24.	Mackinson, S. Wilson, D.C. Galiay, P. Deas, P. 2011. Engaging Stakeholders in Marine Research.Marine Policy 35, 18-24.	.	No

Table 4.2 Lists of all dissemination activities (publications, conferences, workshops, web sites/applications, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters).

Table 4.2 is published as an electronic document, allowing the user to filter the information to see dissemination activity types carried out over the lifetime of the project. It is attached a separate Microsoft excel file that contains the following information, according to the final reporting specification:

NO.	Type of activities[5]	Main leader	Title	Date/Period	Place	Type of audience[6]	Size of audience	Countries addressed

4.2 Section B (Confidential[7] or public: confidential information to be marked clearly)

There are no applications for patents, trademarks, registered designs, etc. arising from the work of undertaken in GAP2.

[5] A drop down list allows choosing the dissemination activity: publications, conferences, workshops, web, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

[6] A drop down list allows choosing the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias, Other ('multiple choices' is possible).

[7] Note to be confused with the "EU CONFIDENTIAL" classification for some security research projects.

4.3 Evaluation and impact of outreach activities and plans for future dissemination of foreground

Two evaluations of the impact of GAP2 outreach activities were conducted during the lifetime of the project. Detailed reports (D5.1.2 and D5.1.3) assessed the utility of different modes and their effectiveness on target audiences. The results of the 28 month evaluation (D5.1.2) in combination with a formal review by the Steering Group (D6.2), were used to adapt dissemination activities in the latter part of the project to ensure (i) that maximum impacts were achieved, (ii) the project's end and exit plan was communicated effectively, (iii) GAP2's audiences were empowered to continue the work in other ways.

The final evaluation concluded that:

- GAP2's communications activities successfully engaged target audiences with the project's key messages regarding aims, activities and outcomes.
- Beyond the lifetime of the project (and the GAP2 Communications Exit Plan), further impact can be achieved by Commission officials supporting participatory research in both spirit and financially, and by embedding the approach in EC-funded research.

During the GAP2 International Symposium in February we solicited delegate's responses to the question:

"GAP2 finishes in March 2015. What could we do between now and then to engage more people in participatory research?"

Certain responses required no action. For example: *"continue to do what you are doing (e.g. informing, reaching out)"*. Others included: *"all channels are in use already"*; *"keep trying to get the message to as many groups and people as possible*". Other answers suggest actions beyond our remit: *"Plan for a GAP3"* (mentioned by 4 different respondents out of 26), or *"Keep developing additional case studies"*. However, other responses were actionable. For example: *"connect with other networks, e.g. Eye on Earth Initiative",* or *"contact more research institutions about the GAP2 Methodological Toolbox"*. Another response given twice was to set up meetings with officials from the Commission *"to push outcomes"* and to *"continue working at increasing involvement of policy makers in government".*

We took on board all these responses and have (and will continue to do) what is possible within the opportunities available to us.

In addition to exploring what we (within the GAP2 project) could do, we also asked delegates to make recommendations as to what European Commission officials could do to further participatory research. We asked the question:

"The GAP2 Project has been funded by the European Commission's Framework 7 Capacities Programme, Science in Society. What actions do you think policy makers in research could undertake to facilitate further participatory research?"

Responses fell into two main categories (listed in order of frequency):

1) Funding. EC policy makers could secure more funding.

2) Legitimise participatory research. EC research policy makers should legitimize and institutionalize the participatory research approach.

1) Providing Funding

11 out of the 26 responses included some direct reference to the provision of more funding for participatory research. Example responses include:

- *"Provide financial support to enable increased communication and exchange of knowledge between researcher teams and fishermen."*
- *"Give further project money."*
- *"Make it clearer where the funding for such projects can be found."*
- "*Fund it [participatory research], set up clear objectives and needs, ease the funding administration."*
- *"In the EU context, facilitate applications by stakeholders for EMFF funding for such research (education, training, web portals for decision-making tools, etc.)*
- *Improve funding and engagement - make sure that there is a GAP3*

2) **Legitimise participatory research**

7 out of the 26 responses included some direct reference to enabling and legitimizing participatory research. Example responses include:

- *"Empower the decision making capacity of collaborative networks."*
- *"Build it [participatory research] into the data collection framework."*
- *"Require research to be collaborative/participatory, as it helps ensure relevance, trust and awareness."*
- *"Produce a more flexible framework in which co-management and sustainable practices are promoted and adopted."*
- *"Participate!!! And make it legitimate among the science community. Make it credible".*

We also asked the question:

"What actions do you think policy makers in fisheries management could undertake to facilitate further participatory research?"

This time, responses fell into three main categories (listed in order of frequency):

1) Legitimise participatory research. EC research policy makers need to legitimize participatory research, by supporting the method.

2) Funding. EC policy makers could secure more funding.

3) Practical Suggestions to EC policy makers.

1) Legitimizing participatory research through support.

14 out of the 26 responses related to fisheries policy officers supporting and legitimizing participatory research:

- *"Learn to value it"*
- *"Provide legal frameworks."*
- *"Prioritise and support more examples of co-management."*
- *"Make it clear, which processes one can anticipate being "closed" and for what reason."*
- *"Facilitate participatory meeting frameworks to sustain interaction between stakeholders regularly."*

2) Providing Funding

5 out of the 26 responses related to funding in answer to this question. Example responses include:

- *"Fund it, resource it, support it!"*
- *"Fund and get scientists & fishers to carry on this work".*
- *"Ensure funding is assigned appropriately and research and funding are aligned to meet the needs of society or the fisheries sector. Participatory research could also be made a key requisite for funding allocation."*

3) Practical Suggestions

There were a number of practical suggestions made, for example:

- *"At sea basin level in EU, establish (as first step) an MOU with the relevant RACs to lay down rules of engagement. Scheveningen Group has rejected overture from the NSAC."*
- *"Speak with stakeholders and encourage them to collaborate with the scientists."*
- *"Hold regular meetings with protagonists."*
- *"Provide powers to co-management committees to make sure that successful projects/studies are shared with other areas/countries."*

Date of latest version of Annex I (Description of Work):
22/01/2014

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