



# Participatory science and co-management experiences from the GAP2 project in the Mediterranean - implications for shared stocks management

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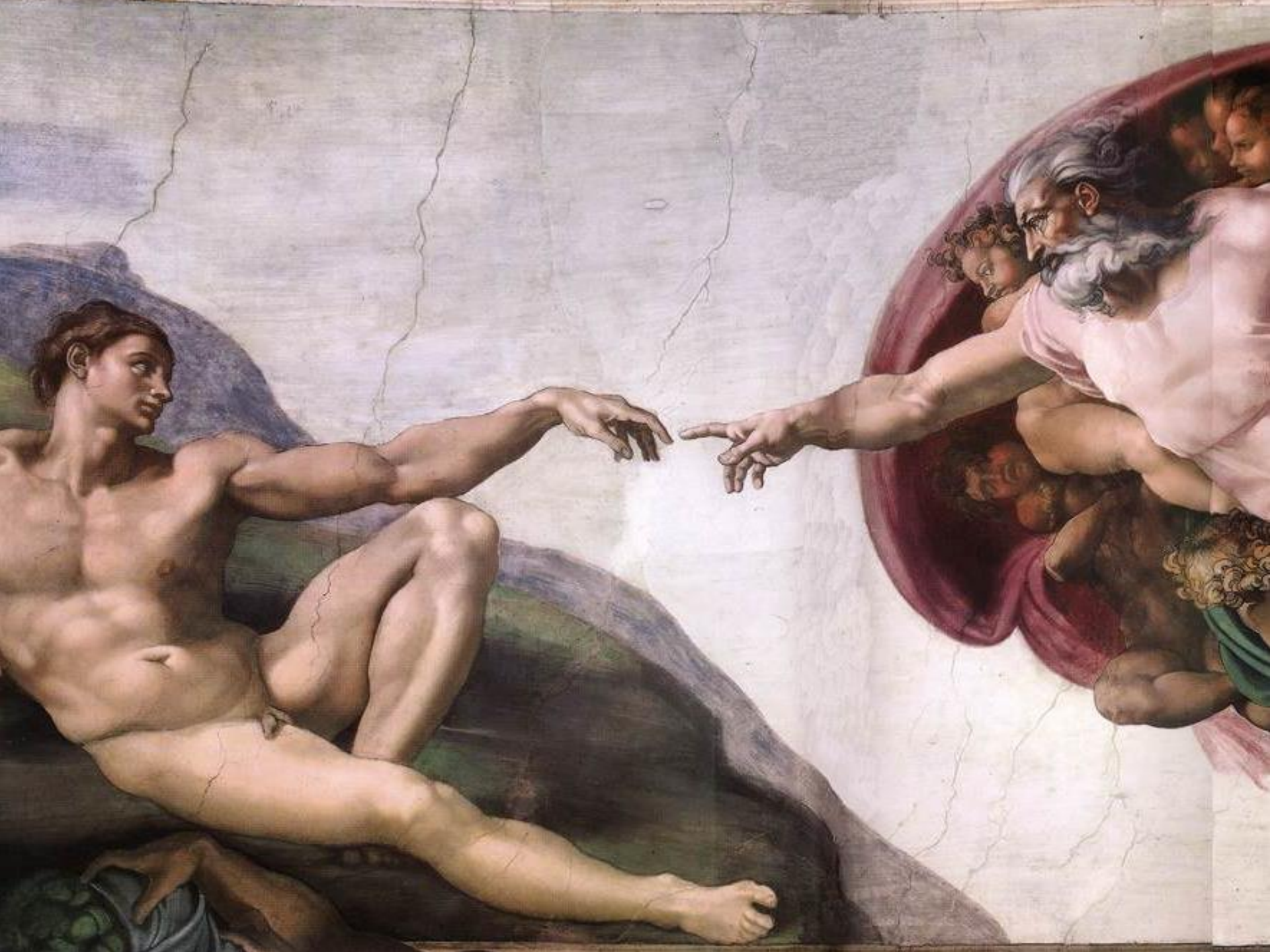
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GAP2 (2011-2015) – Bridging the gap between science, stakeholders and policy makers. *Phase II. Integration of evidence-based knowledge and its application to science and management of fisheries and the marine environment*

**“What I hear, I forget.  
What I see, I remember.  
What I do, I understand.”**

*GAP2’s purpose is to demonstrate the role and value of **stakeholder driven science** within the context of fisheries’ governance **working together on research actions aimed at solving problems of shared interest in fisheries management and science.***

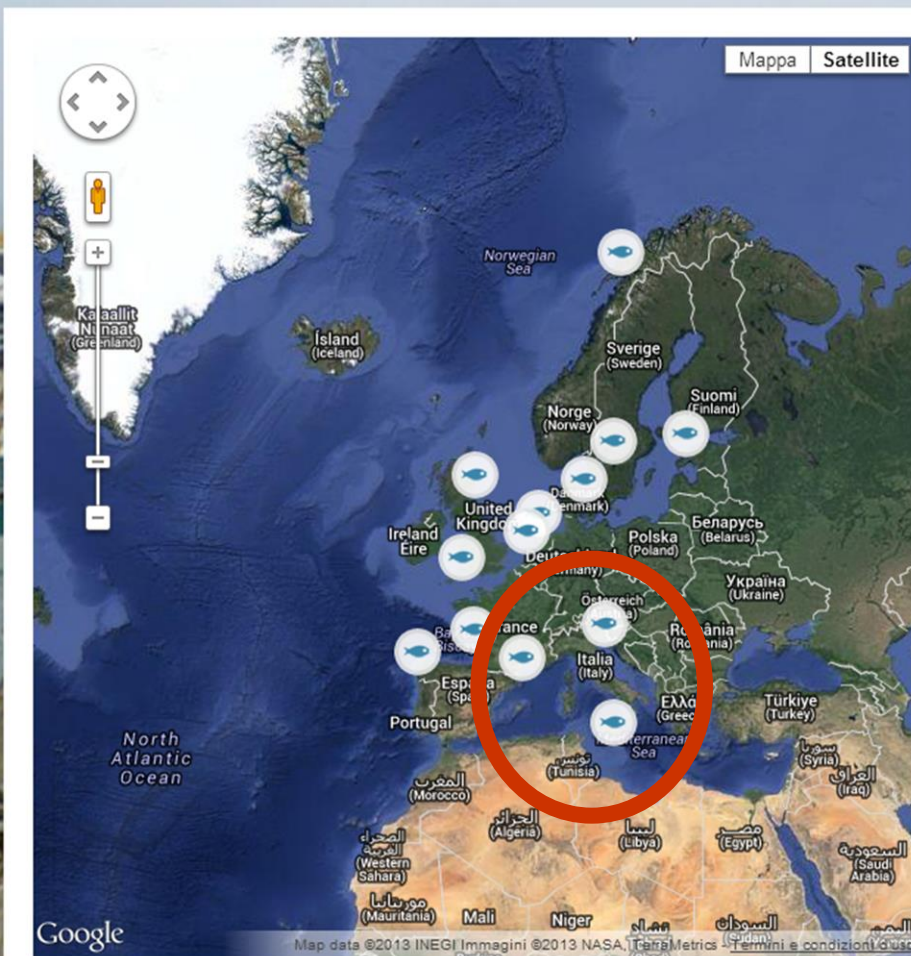


...science in support of fisheries management should be salient, legitimate and credible (Wilson, 2009)















This '**Participatory Research**' approach is rooted in GAP2's logic:

- 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;
- the support for policy and societal goals **to achieve responsible, sustainable, productive fisheries.**



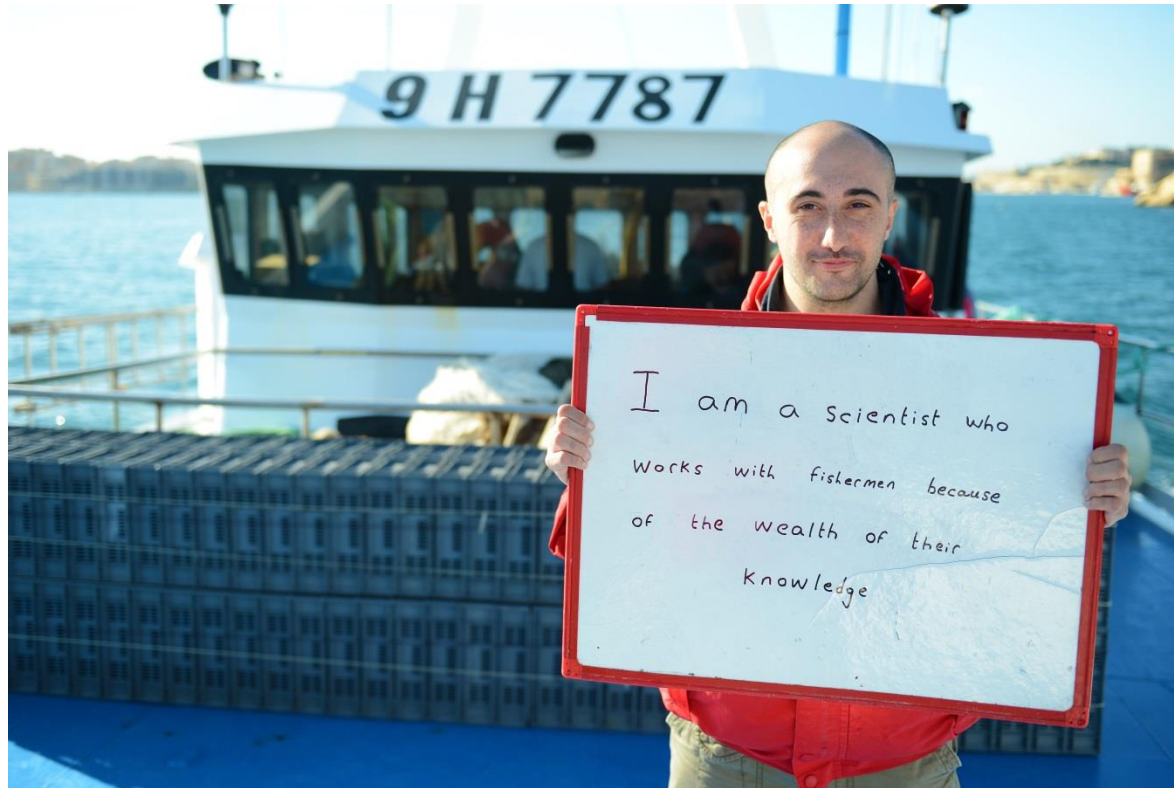


## CASE STUDIES IN DEPTH

-  Denmark – Herring Management
-  Estonia – Marine Spatial Planning
-  France/Spain – Tuna FAD Fisheries
-  Germany – Joint Fishery Management
-  Italy – Fish and Fishing Effort
-  Malta – Trawl Industry Management
-  Netherlands – Self-Sampling and Discards
-  Norway – Monitoring Coastal Cod
-  Spain – Galicia TURF Model
-  Spain – Mediterranean Red Shrimp
-  Sweden – Selective Whitefish Fishery
-  UK – Brown Crab Stocks
-  UK – Long-term Management Plans
-  Case Studies Map



# The Maltese Case-Study



# Aims (1/2)

- To learn more about the state of resources within the **25 NM Fisheries Management Zone (FMZ)** – particularly key commercial species targeted by **Maltese trawlers**:
  - Red mullet (*Mullus barbatus*);
  - Striped red mullet (*Mullus surmuletus*);
  - Hake (*Merluccius merluccius*);
  - Common octopus (*Octopus vulgaris*);
  - Giant red shrimp (*Aristaeomorpha foliacea*);
  - Rose shrimp (*Parapenaeus longirostris*);
  - Norway lobster (*Nephrops norvegicus*);



## Aims (2/2)

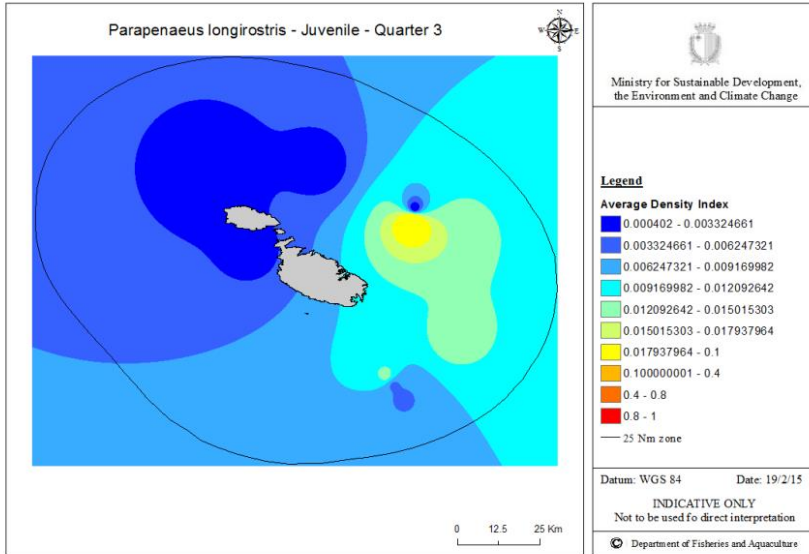
- To **engage fishers** in participatory research and to allow them input, using their **ecological knowledge**, and ensuring that they would be more likely to accept resulting management measures;
- To gain **knowledge about temporal / seasonal changes** in the distribution of these species;
- To obtain an indication of **potential nursery and spawning grounds** within Malta's 25 NM FMZ;
- To **update local and regional management plans**



# Implementation process

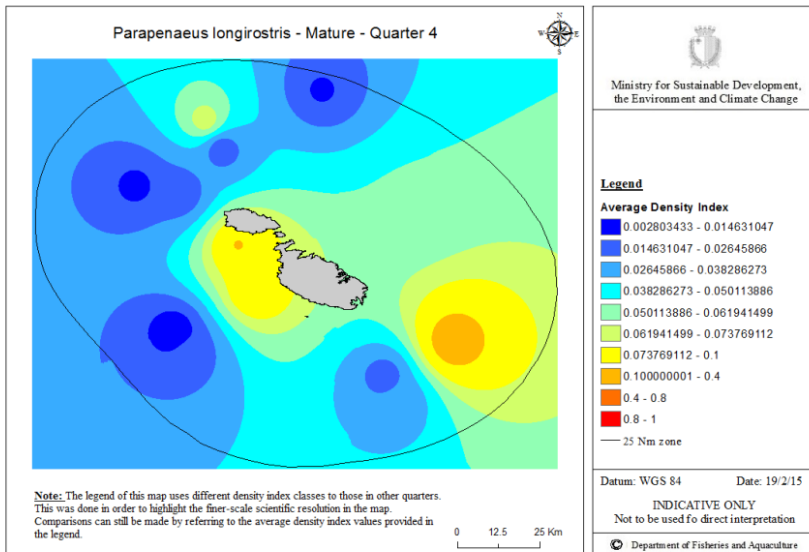
- A total of 12 trawlers were involved;
- Sampling carried out over 1 year, 30 hauls each month, 2 trawlers per month;
- Haul sites included both commercial and pristine sites within the 25 NM FMZ;
- Fishers were trained to self-sample, provide samples and provide details on the haul;
- Length, weight, sex and maturity stage was collected in the laboratory using the same methodology used for Medits;
- Biomass and density indices were calculated for juvenile and mature individuals of the target species;
- Seasonal maps were plotted in ArcGIS, using inverse distance weighting;

# Impacts



- Relations between fishers, scientists and policy-makers have started to improve (although there is still a long way to go!);

- Fishers can see the actual results – making them more liable to help next time;



- Although results are preliminary at present, scientific knowledge will be improved and can be used, for instance, to help improve management plans;

- Regional GFCM management plans for the Straits of Sicily;

# Future Plans

- Plans to extend sampling by one year using National funds;
- Results currently being discussed with fishers;
- Malta would support and attend a Mediterranean working group on participatory research.





# The Italian Case-Study





# Background information

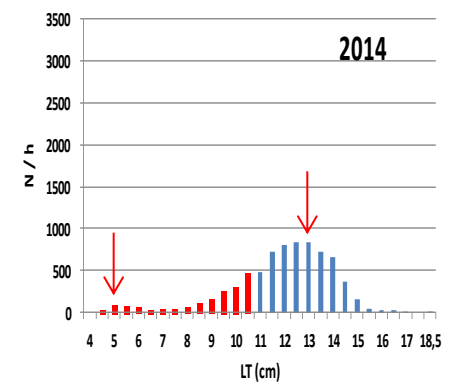
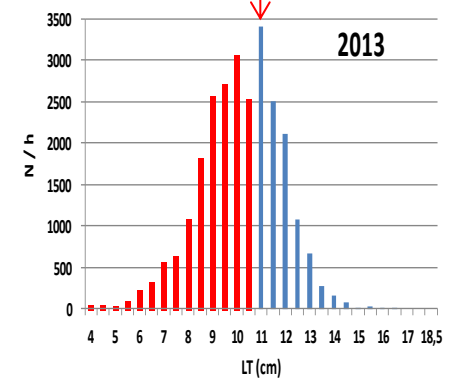
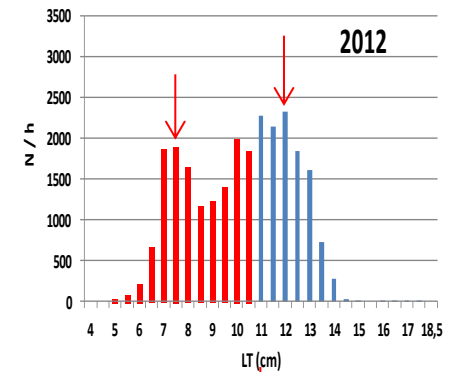
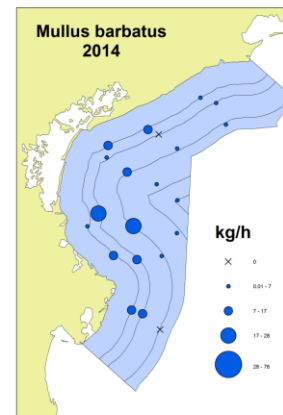
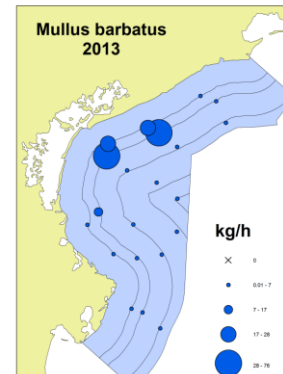
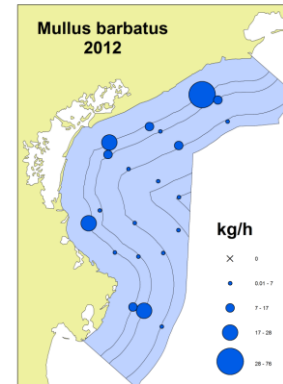
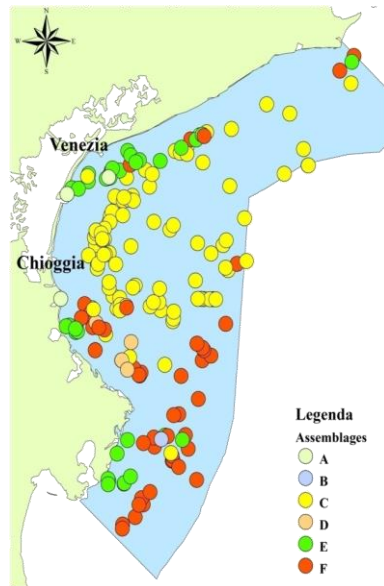
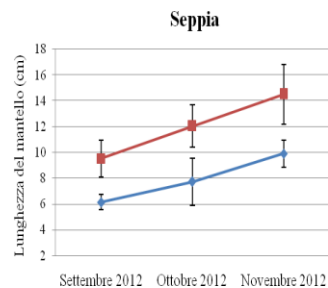
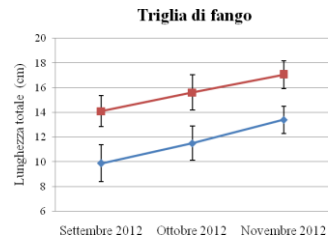
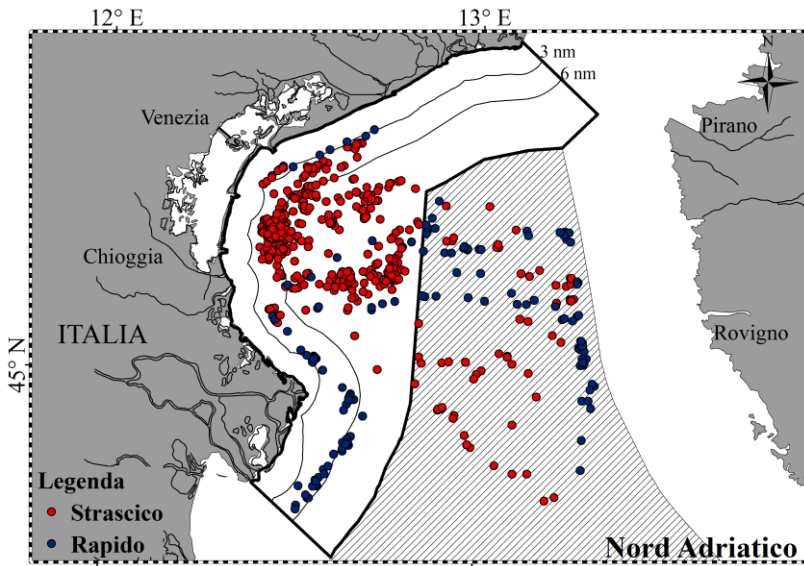
- GAP2 activities based in Chioggia, the most important fishing port in the Northern Adriatic Sea (~100 trawlers, 70 Hydraulic dredges, 30 SSF vessels);
- System perceived to be in crisis (reduction in fishing capacity, but most of the species over- or-fully exploited; reduction in fisher's profits);
- Some fisheries mainly rely on small-sized individuals (thus on the success of recruitment);
- Big gap between fishers, scientists and policy makers;
- Conflicts among fishers and between them and other users of the sea;
- Need to establish a better coordination among fishers and increase the “value” of the product.

# Aims

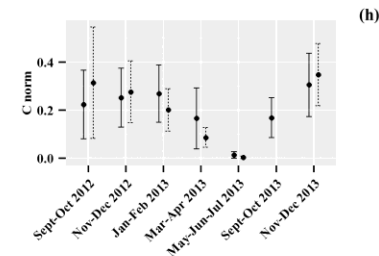
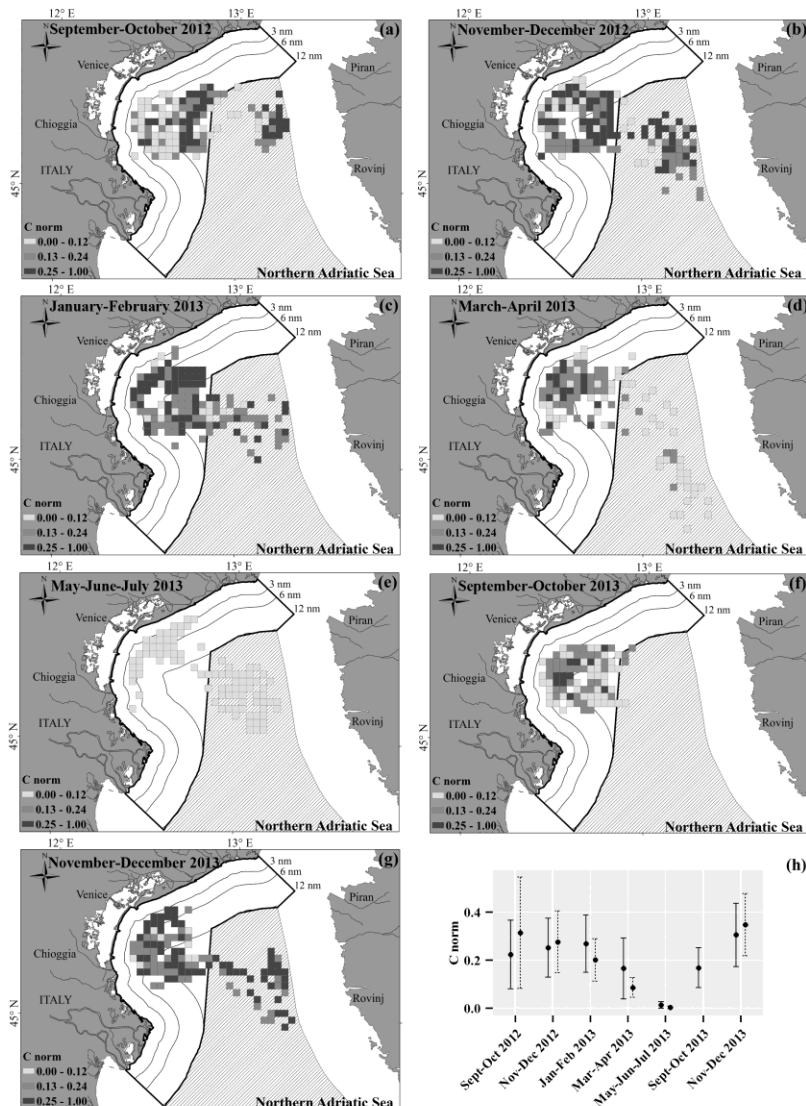
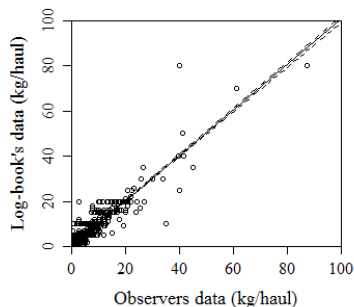
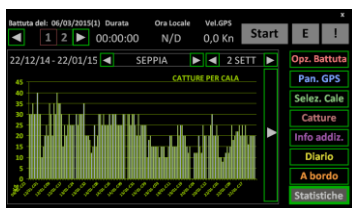
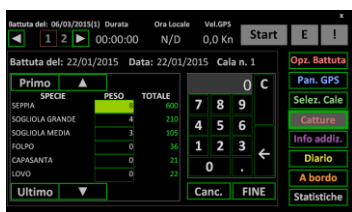
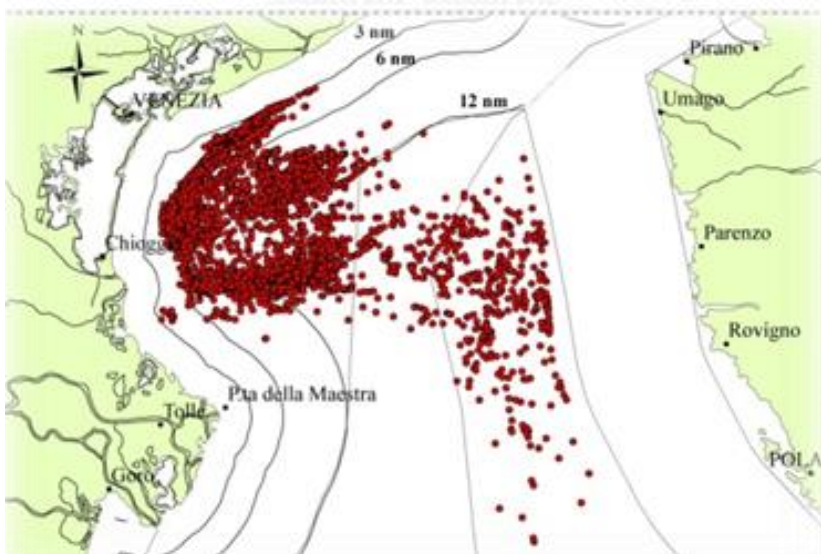
- **To built common shared knowledge** integrating scientific and fishers' ecological knowledge to describe **species status and life-cycle** in the Northern Adriatic:
  - Interviews and focus groups;
  - Observation on board;
  - Self-sampling with electronic logbooks;
  - Trawl-survey
- **To define a common management proposal** that allows to progress toward a sustainable fishery along with an increase in the responsibility and role played by fishers in the fisheries management:
  - Reflections on the efficacy of the trawling closure season (Summer fishing closure);
  - Proposals of modification, also considering fishing effort dynamic in the following period.

# Onboard observations (280 hauls)

# Trawl-survey (2012-2014)

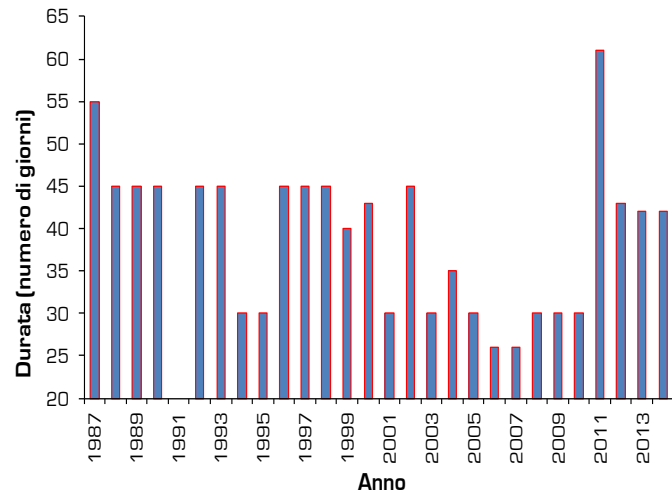


# Self-sampling by fishers (otter-trawlers and rapido trawlers) by using e-logbook (4800 hauls)



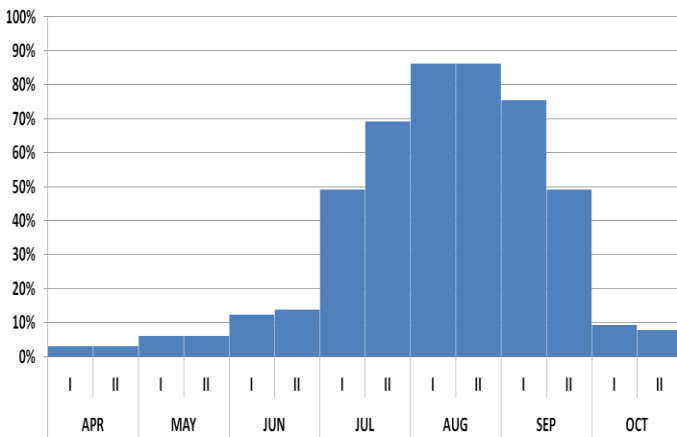


# Impacts and future plans



- Increased mutual trust between fishers, scientists (and policy-makers) establishing an equal group willing to contribute to the improvement of fisheries management;

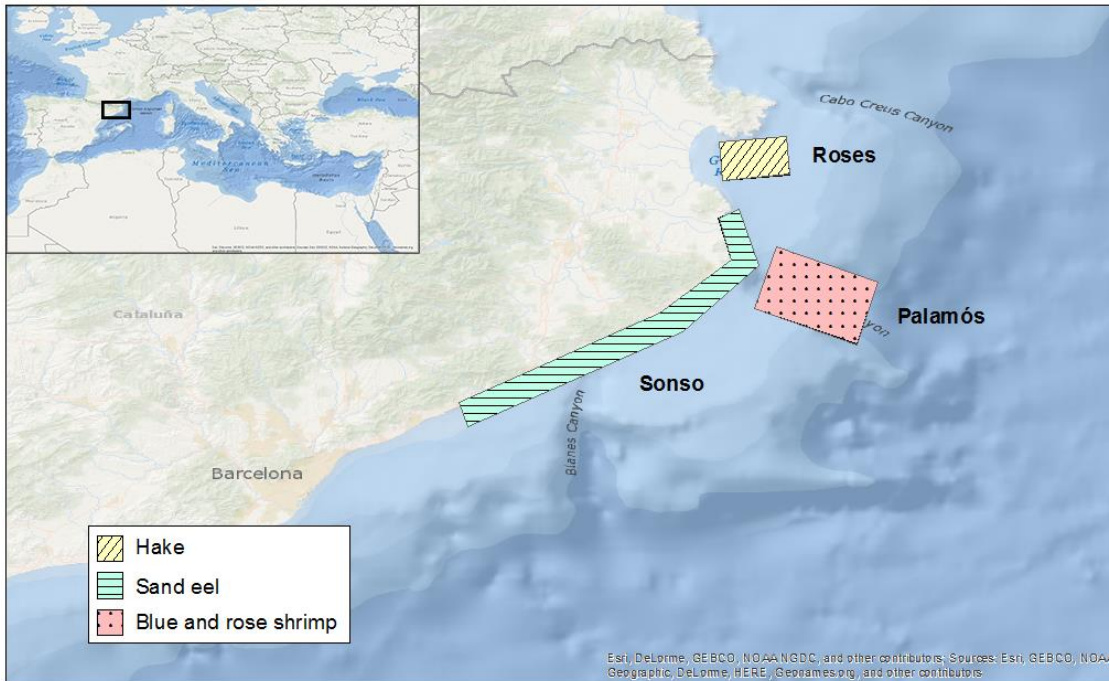
- Collected a valuable range of data to describe in details species and fisheries dynamics to be shared to support innovative fisheries management;



- Set up a detailed proposal for the revision of the Summer fishing ban in the Northern Adriatic Sea fisheries District;

- Established a collaboration with ADRIAMED project, along with dialogue with regional and national administrations and MEDAC to support the revision of the summer fishing closure.

# The Catalan Case-Study



Co-management experience: shrimp, sandeel and hake

# Deep-sea red shrimp fishery - Palamós

## Background

- Bottom otter trawling fleet based in Palamós harbor, Costa Brava, NE Spain
- Fleet size: 24 boats (2013), 17 boats (currently) – around 80 fishers
- Specialized fishery targeting the deep-sea shrimp *Aristaeus antennatus*, with very high market value (up to 150€/kg in high demand season, worth 4M€ per year)
- Monospecific fishery (an exception to the rule in the region) – based on 7 fishing grounds around the Palamós submarine canyon
- Landings auctioned on a daily basis in the local Fishermen Association's market

## What prompted fishermen to take action?

- **A sudden drop in shrimp catches and mean size in 2005** resulted in a dramatic income decrease - shrimp accounts for around 50% of total landings value in Palamós
- The highly reliance of the fishery on one single species pushed **fishers to look into urgent measures** tailored to shrimp
- **Fishers approached scientists to seek a solution to the suspected overexploitation**
- **Joint stakeholder discussions followed to agree on effective measures to manage this fishery**





## Measures adopted

- As a result of the participative approach, a LTMP was adopted under the Spanish Law (AAA/923/2013) including:
  - 7 fishing grounds designated within the LTMP area (Palamós canyon)
  - Closed census of vessels allowed to operate
  - 2-month closed season in winter to avoid juvenile catches
  - Fishing effort limits: maximum of 2 fishing hauls per vessel and day
  - Overall reduction of fishing effort (20%) at the end of the LTMP life span
  - Design and standardization of a more selective gear with less impact on the sea bottom
  - Establishment of a multi-stakeholder advisory and monitoring committee
- **The Fishermen Association is directly involved in control and enforcement, including imposing penalties**

# Results



- Social:
  - Fishers united around a common project – sense of empowerment
- Resource:
  - Decrease in juvenile catches
  - Increase in the catch of the most valuable population fraction (big adults)
  - Decrease in total shrimp catches (as a result of effort reduction)
- Economic:
  - Control on prices through managing supply to the market
  - 33% drop in total shrimp landings from 2013 to 2014
  - Only 3% decrease in total landing value in same period
- Management:
  - Overall reduction in fishing capacity: from 24 vessels in 2013 to 17 in 2014

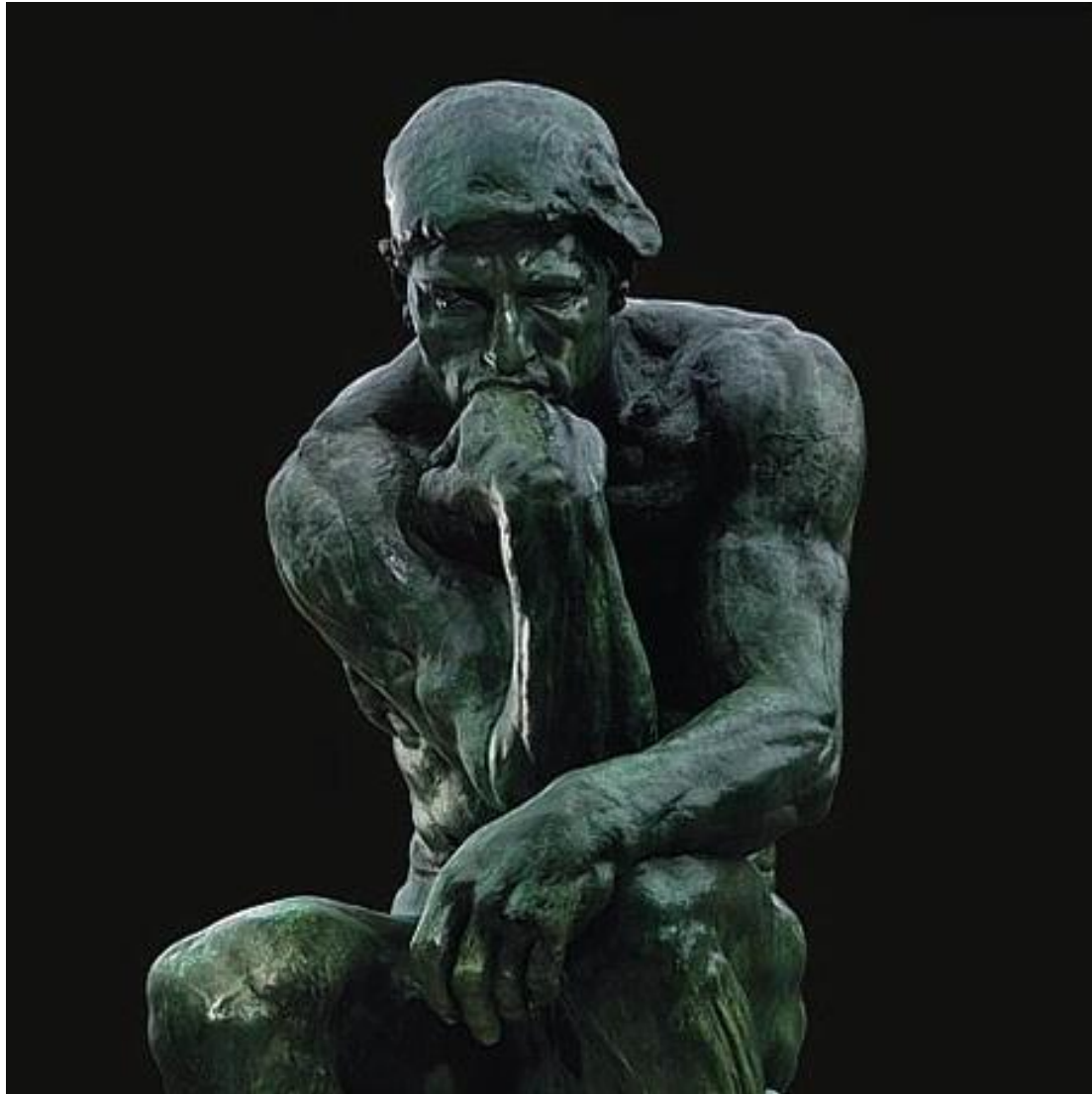
# Impacts

- Positive trend in the conservation and sustainable use of the red shrimp in the Palamós canyon
- General awareness on the importance the different stakeholders work together (scientists, fishers, administrations, NGOs ...)
- Positive effects of the empowerment of fishermen on management (self-regulations, control, etc.)
- Spill over effect of good practices to other fisheries/ports (“reducing effort is not the end of the world”)

***but.***

- Need to further smooth resistance from fisheries administrations to share management power
- Need for the administration to further recognize and reward the special effort made by the fishermen

**What can we learn from these experiences?**





- Participatory research allows to **increase the knowledge base** to support fisheries management and understand species' and fisheries dynamics resulting in an **empowerment of fishers** but also other stakeholders
- Fishers' involvement ensures an increased **focus on economic profit** which benefits the resource (“fishing for € instead than for kg”)
- Co-management **triggers synergies among stakeholders**, improving management efficiency (e.g. control, data collection, etc.) – radically strengthens sense of ownership on rules (e.g. reversal of the burden of the proof) and can deliver a **new “contract” between fishers and society** that links the ancient maritime cultural heritage with a viable, modern sustainable fishing activity
- A **clear legal framework** would be necessary in the long run, although solid political willingness facilitating “gentlemen agreements” can work at a first stage



# WHAT about the (co)management of shared stocks

- Participatory science can **enhance the knowledge base** used to the management of shared stocks and promote the visions of stakeholders (fishers);
- There is a **matter of scale**: at local scale this approach proved to be successful, but at larger scale (i.e. the scale of shared stocks, with multiple countries involved) the approach is more complicate (although positive experience on Hake in GSA7 shows it is possible);
- Virtually, promoting **parallel work on participatory science in each country sharing** the same stocks and building on the results to foster a common approach and joint agreements would be a possible option;

- In such context it would be necessary to have at least different **fishers' reference group** (for each country/stock), to allow their knowledge to enter into the management discourse and contribute to the establishment of LTMP;
- **Participatory Modeling**, could be, among others, a tool to be adopted in such context (e.g. assessemnt of data quality, contribution to model structure, scenario analysis, interpretation of results);
- There is, however the need, of establishing **mutual learning events** to align the understanding of the management framework, avoid the misuse of terminology (buondary objects), thus empowering fishers to participate to the process in a meaningful way.
- This process is, indeed, time consuming but potentially very rewarding, and the **MedAC can be the place were to integrate different visions and requests.**



# Concluding remarks 1/2

- Participation and co-management is not simply putting together different stakeholders in the same room (skills and methods are needed – GAP2 toolbox)
- The bottom-up approach empowers fishers but also fishermen organizations (win-win process) and policy makers
- It sharply increases the legitimacy, credibility and saliency of science in support of management

# Concluding remarks 2/2

- Fishers' experience is needed to define rules and find applicable and effective solutions/approaches
- The involvement of fishers in the setting of rules and monitoring also reduces the costs of management and increases compliance and enforcement
- This is the time to engage with fishers in participatory research and co-management to be proactive (otherwise fisheries will be marginalized)

**Thanks!**

