CREAM FINAL REPORT. ATTACHED DOCUMENT

Project logo

Project banner

CREAM Consortium

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Final Report

PROJECT FINAL REPORT

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Project acronym:	CREAM
Project title:	Coordinating research in support to application of EAF (Ecosystem Approach to Fisheries) and management advice in the Mediterranean and Black Seas
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Final Report

Please note that the contents of the Final Report can be found in the attachment.

4.1 Final publishable summary report

Executive Summary

The project “Coordinating research in support to application of EAF (Ecosystem Approach to Fisheries) and management advice in the Mediterranean and Black Seas " with acronym CREAM has been funded by the EU-FP7 Programme (Call: FP7-KBBE-2010-4, Grant agreement no: 265648) with the purpose of establishing an effective collaboration network among key role players in Mediterranean and Black Sea fisheries research and management addressed to provide scientific bases to promote the Ecosystem Approach to Fisheries (EAF) in the Mediterranean and Black Seas.
The CREAM consortium has included 22 partners from 17 countries (Bulgaria, Croatia, Cyprus, Egypt, France, Georgia, Greece, Italy, Lebanon, Malta, Morocco, Romania, Russia, Spain,Tunisia, Turkey and Ukraine), from national research institutes and one international organisation, from Mediterranean and Black Sea countries, with a long history and active participation in fisheries research and assessment, and who provide advice to national, regional and international fisheries management organisms. The project has also maintained an active collaboration with regional and international fisheries management organisms (FAO, GFCM, BSC, ICCAT and RAC/SPA). The project developed a strong training and capacity building and dissemination components in order to help to harmonize data collection and methodologies used in fisheries assessment and management in the Mediterranean and Black Sea.
As specific tasks carried out in order to provide a sound background to the establishment of the network, CREAM has reviewed current knowledge and the state of the art in data collection and methodological practices in stock assessment and management and fishery effects on marine ecosystems of the Mediterranean and Black seas. It has provided meta-analysis of existing data in terms of needs, quality, harmonization, and the available methodologies and models for EAF, and the possibility of their application to the region. CREAM has also established coordination with the assessment and management international/regional bodies, such as the GFCM or the BSC, and has strengthened the scientific basis of EAF application in Mediterranean and Black Sea fisheries. As a final product, CREAM has created, under the acronym EMBASEAS, a scientific network in support of the application of EAF in the Mediterranean and Black Seas, with the overall objective of enhance technical co-operation among concerned national, regional and intergovernmental organizations, particularly the exchange of information and experience among the members in order to promote the scientific approach of EAF in the region.
In quantitative terms, CREAM has provided 32 deliverables, amongst which 22 made available to the general public, has organised 4 coordination meetings, 7 specific workshops or meetings, 2 training courses and one international dissemination conference.
Regarding publications, CREAM has produced two collective and peer-reviewed publications: the especial issue in the Scientia Marina Journal “The Ecosystem Approach to Fisheries in the Mediterranean and Black Seas” (Sci. Mar. 78S1: 2014), with 11 original research articles, and the article “The scientific strategy needed to promote a regional ecosystem-based approach to fisheries in the Mediterranean and Black Seas” in the journal Reviews in Fish Biology and Fisheries (Volume 23, Issue 4, December 2013, pp 415-434) signed by 16 members of the CREAM consortium. There have been other 9 peer-reviewed publications by the members of the consortium. As for capacity building and formative actions, the two training courses organised within the framework of the project have been mentioned. The first one, “Ecosystem approach to fisheries in the Mediterranean and Black seas. Scientific bases”, Varna (Bulgaria), 3-7 February 2014, had 12 lecturers, 67 applicants and 31 participants from 16 countries. The second “Ecosystem approach to fisheries in the Mediterranean and Black seas. Management and decision making”, Zaragoza (Spain), 10-14 March 2014), had 12 lecturers, 66 applicants and 27 participants from 14 countries. In the International Dissemination Conference (Barcelona, 9-10 April 2014) there were 82 participants from 18 countries. Other 12 dissemination activities have been organised by the consortium members, in Morocco (6), Russia, Ukraine, Egypt and Georgia..

Summary description of project context and objectives

Concern for sustainable exploitation of fishing resources and conservation of natural resources has been integral to the agenda of international organizations and States during the last two decades, and the over exploitation of stocks and impact of fishing activities on the environment has led to widespread demands for sustainable and responsible exploitation of stocks. Initiatives such as the FAO Code of Conduct for Responsible Fisheries (1995) calls for States to make fisheries management decisions based on the best scientific evidence available. Management of fishery stocks is often complex and difficult, a situation that is exacerbated in the case of highly migratory, straddling and transboundary stocks. Data for the assessment and management of such stocks is gathered by different countries and Regional Fisheries (Management) Organizations (RF(M)Os); however, due to the complexity of addressing research and management of shared stocks, coordinated efforts to develop scientific knowledge between the RFOs and coastal States are not always carried out. Given that cooperative research is the first step to effective management of stocks exploited by various States, initiatives are required to coordinate actions in data collection and to gather the best scientific methodologies for assessment and associated management advice. Currently this is also the case in both Mediterranean and Black Seas where the management of available marine biological resources is fragmented. Evidently, there is a need to move towards a wider geographic and regional management of the fishery stocks. A first step for the EU Member States was made with the establishment of the DCR (Data Collection Regulation) in 2000 (EU Council Reg. No1543/2000, Commission Reg. No1639/2001, and Commission Reg. No1581/2004), replaced by the DCF (Data Collection Framework (Council Reg. No199/2008, Commission Reg. No665/2008 and Commission Decision No2008/949) entered into force in 2009. This is not the case for the non-EU States of the Mediterranean and Black Seas. Further, the current GFCM (General Fisheries Commission for the Mediterranean) structure is dissimilar to ICES (International Council for the Exploration of the Sea), but does not restrict the harmonization of data collection/analysis (e.g. GFCM and DCF métiers definitions) and the formulation of common scientific advice in support of the fisheries management system in Mediterranean and Black Seas Member states.

With few exceptions, current advice on the utilisation of fish stocks in the Mediterranean and Black seas is based on single-species assessments, whereas there is a pressing need towards more ecosystem-oriented fisheries management and integrating ecosystem and socioeconomic considerations into assessment procedures. Although single-species assessments are useful for the ecosystem approach (Froese et al., 2008) it is increasingly apparent that fisheries not only impact on fisheries resources, but also on ecosystem health and human well-being. Likewise, fisheries resources are impacted by factors other than fishing pressure. This awareness, in addition to the increasing number of users and pressures on aquatic systems, has led to calls for the implementation of an Ecosystem Approach to Fisheries (EAF) management (Garcia and Cochrane, 2005; Cochrane and de Young, 2008). EAF is neither inconsistent with, nor a replacement for current fisheries management approaches, and it is likely to be adopted as an incremental extension of current fisheries management approaches (FAO, 2003).

In the Mediterranean and Black seas, existing national fisheries research agencies and international bodies related to management (GFCM, ICCAT, BSC, RAC/SPA, FAO) have conducted, jointly or individually, a considerable amount of research on fisheries assessment and management, conducive to the application of EAF in both regions. However, a network of research organisations capable of applying an EAF in a coordinated manner is still lacking.

In response to the call from the EU, the CREAM (Coordinating Research in support to Application of Ecosystem Approach to Fisheries and Management Advice in the Mediterranean and Black Seas) CA (Concerted Action) has supported the development of a network of research organisations to coordinate fisheries research for the effective application of the EAF in Mediterranean and Black seas. The CA has progressed beyond the original situation by fulfilling the following partial objectives:

i) Establishing the mechanisms for the coordination of data collection and data exploitation through common methodologies across both regions in order to identify data and research gaps and opportunities for greater research coordination that could be promoted by the EU and concerned States in support to scientific advice to fisheries management and EAF; ii) Coordinating methodologies to assess the ecosystem and socio-economic impacts of fishing; iii) Reinforcing a participatory dialog between researchers and assessment and management bodies in order to identify data and research gaps and opportunities for greater research coordination that could be promoted by the EU and concerned States in support to scientific advice to fisheries management and EAF; iv) Developing recommendations on how to improve cooperation with third parties in order to enhance research and resource status and reinforce social and economic welfare from exploitation of fishing

resources and where practical to strength frameworks for Monitoring, Control and Surveillance (MCS) in order to counteract Illegal, Unreported and Unregulated (IUU) fishing; and v) Contributing to the dissemination of the CFP principles and challenges through the improvement of dialogue with research communities, policy-makers and stakeholders in the concerned geographic areas.
In order to fulfill these objectives, CREAM has reviewed current knowledge and the state of the art in data collection and methodological practices in stock assessment and management and fishery effects on marine ecosystems of the Mediterranean and Black seas. It has provided meta-analysis of existing data in terms of needs, quality, harmonization, and the available methodologies and models for EAF, and the possibility of their application to the region. CREAM has also established coordination with the assessment and management international/regional bodies, such as the GFCM or the BSC, and has strengthened the scientific basis of EAF application in Mediterranean and Black Sea fisheries. As a final product, CREAM has created, under the acronym EMBASEAS, a scientific network in support of the application of EAF in the Mediterranean and Black Seas, with the overall objective of enhance technical co-operation among concerned national, regional and intergovernmental organizations, particularly the exchange of information and experience among the members in order to promote the scientific approach of EAF in the region.
Scientific references
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FAO. 2003. The ecosystem approach to fisheries. FAO Technical Guidelines for Responsible Fisheries, No. 4 (Suppl. 2). FAO Fisheries Department. Rome, FAO. 112 p.
Froese, R., A. Stern-Pirlot, H. Winker and D. Gascuel. 2008. Size matters: How single-species management can contribute to ecosystem-based fisheries management. Fisheries Research 92 (2008) 231–24.
Garcia, S.M., and K.L. Cochrane. 2005. Ecosystem approach to fisheries: a review of implementation guidelines. ICES J. Mar. Syst., 62(3): 311-318.

Description of main S & T results/foregrounds

INTRODUCTION

CREAM has produced a relevant amount of knowledge regarding the Ecosystem Approach to Fisheries in the Mediterranean and Black Seas, according to the DoW (Description of Work) of the contract signed with the European Union.

These results are presented in this section. The presentation follows to a great extent the structure of Work Packages and Deliverables of the DoW and, in many cases, there is a link to the section of CREAM Website (www.cream-fp7.eu/) where the detailed results are available.

CURRENT UNDERSTANDINGS IN THE FRAMEWORK OF ECOSYSTEM APPROACH TO FISHERIES IN THE MEDITERRANEAN AND BLACK SEAS: SUMMARY AND CRITICAL ANALYSIS OF THE AVAILABLE INFORMATION ON THE ANTHROPOGENIC ECOSYSTEM IMPACTS AND RESOURCE ASSESSMENT

The 1st Workshop of Workpackage 2 ("Current understandings in the framework of Ecosystem Approach of Fisheries in the Mediterranean and Black Seas: summary and critical analysis of the available information on the anthropogenic ecosystem impacts and resource assessment") was held at FAO/GFCM headquarters in Rome on 30-31 May 2012.

The main objective of workshop was to perform a common task, with all the partners, to summarize and critically analyse the current understandings on EAF available for the Mediterranean and Black Seas.

The Workshop was attended by 21 participants representing all the partners of CREAM. The synthesis of the information received from the partners on the understandings, at partner/country level, related to EAF and fishery management aspects was discussed.

In total, 180 files have been compiled by all the partners involved in WP2. Existing information available at country level, from research and monitoring projects was explored, as well as other types

of activity.

Broad and, in many cases, very detailed information has been gathered, even though a rather heterogeneous picture on how the EAF issues are addressed in each country has emerged. Each partner was requested to act as an expert to evaluate, by means of an overall assessment of the activities/projects or initiatives performed in his country, the capacity to address several issues related to the implementation of EAF in the Mediterranean and Black Sea. These issues were grouped into the following main topics, which reflect the FAO's Technical Guidelines in research for the EAF implementation:

1) Fisheries structure and fleets.
2) Fisheries impacts and other anthropogenic impacts.
3) Species/habitat knowledge.
4) Socio economic aspects and modeling (ecosystem and bioeconomic).
5) Assessment of management measures.
6) The management process.
7) Monitoring and assessments.

The capacity to address each issue has been evaluated according to a qualitative scale (from "none" to "high") translated into a simple score system (from 0 to 3).

The results were presented according to radar graphs in a semi-quantitative manner. This exercise provided an overview of the CREAM expert's evaluation on the capacity to address the EAF issues in the Mediterranean and Black Seas.

The results highlighted an overall low-medium degree of fulfilling the requirements of EAF in the Mediterranean and Black Seas, with some differences related to the different issues considered. In general, the highest scores were reported for the knowledge related to fleet structure/behaviour as well as species/habitats, while the lowest scores were noticed for modeling, socio-economic and management issues. These results despite being only semi-quantitative, provided an initial global picture on a wide geographical level, which can provide useful information to properly address the implementation of EAF in the Mediterranean and Black Sea.s

See more detailed public information at:
http://www.cream-fp7.eu/pdf/CREAM WP2 Workshop Rome 30-31 May 2012.pdf
More detailed information restricted to the CREAM Consortium is available in Deliverable 2.1 CREAM Report of Workshop 1 Coordination.pdf

COMPARATIVE ANALYSIS OF THE MANAGEMENT SYSTEMS ADOPTED IN DIFFERENT COUNTRIES/GSAS OF THE MEDITERRANEAN AND BLACK SEAS

A Workshop was held in, Malta, on 18th April 2013. The main objective of workshop was to perform a common task, from the partners, to summarize and critically analyse, from a comparative perspective, the management systems in force in each country/GSA of the Mediterranean and Black Seas.

Preparatory work was done during the two months before the workshop, collecting information from all the partners of CREAM about the main fishing management measures existing in the Mediterranean and Black Seas at country/GSA level. Standardised forms/tables were prepared and distributed to all partners who were asked to provide detailed information on the current management systems, according to their knowledge.

In general, very detailed information was received from the partners, proving an exhaustive picture of the measures and provisions related to fishery management in the Mediterranean and Black Seas. As a general picture, the fishing regulations contain many common aspects among all the areas considered. In general, in all the countries the current management measures foresee limitations of the fishing capacity, implemented through regulations of the number of licenses or according to a level of the total GT of the fleet considered.

Only in some countries (e.g. Spain, Greece), are limitations of the fishing capacity of the single vessel (with a limit of 500-600 hp) are in place, even though the partners commented that this measure is not fully enforced.

Fishing activity, in particular of trawling and purse seining, is regulated everywhere; in general by a maximum number of fishing days per week. Only in a few cases (e.g. in some GSAs of Spain) there is a limitation of the fishing hours per day (12 hours per fishing trip, with some local exceptions).

Technical measures, mainly concerning the mesh size or the length/drop of set nets are present in almost all the GSAs considered. The EU Mediterranean countries are standardised by means of the EU Regulation 1967/2006 (only in a few cases have some restrictions to this provision been noticed). More diversity was reported for the non EU countries.

Spatial restrictions are present everywhere, in particular for trawling or for bottom gears (usually in the coastal waters). The EU Reg. 1967/2006 also has provisions regarding spatial restriction and sensitive habitats.

No Take Zones have been established in a few areas in the recent years, mainly targeted to the protection of essential fish habitats, as nursery or spawning grounds of economically relevant species.

A large number of small MPAs exists in the Mediterranean, but they are of little relevance to EAF.

Temporal restrictions are present practically everywhere, especially for trawling. Seasonal closures are implemented in many countries, with some differences in their application on a yearlu basis. In the EU countries, the seasonal closure for trawling ranges from a minimum of 30-40 days in Italy and Spain to 120 days in Greece and 160 days in Cyprus.

See more detailed public information at:
http://www.cream-fp7.eu/pdf/Deliverable 2.4 CREAM Summary Report of Workshop 2 website Dissemination.pdf
and
http://www.cream-fp7.eu/pdf/Deliverable 2.5 CREAM Web.pdf

STATE OF THE ART ON DATA COLLECTION, BACKGROUND AND LIST OF POTENTIAL INDICATORS FOR AN EAF IN THE MEDITERRANEAN AND BLACK SEAS

The work carried out on this topic has been subject to a 33 page report with full details, tables and figures, available at:
http://www.cream-fp7.eu/pdf/Deliverable 3.1 CREAM State of the art, background and list of potential indicators for an EAF Dissemination.pdf

In this “Final publishable summary report” we only provide a summary and conclusions.

The reception of 114 files of information by all partners proved that all CREAM partners were committed to extracting the information requested from their archives and routine monitoring programmes.

The spatial gaps identified correspond to countries which are not part of the consortium such as Libya and Algeria, or regions (Sardinia, East of Italy) not covered by CREAM partners.

In terms of temporal information, only the last 20 years can be used, and apart from some exceptions it will be impossible to create indicators prior to the 90s. There also are some gaps in the most recent years, in particular linked to the fact that Greece ceased to collect data from 2008 onwards.

In general all data available are in Excel files, which could lead to inconsistencies in references used when compiled at a supra-national level. In the Western Mediterranean, a major part of the data are stored in a structured database which usually implies better quality. A large amount of information

was based on reports and outcomes of research projects and even a book. This kind of information is much more difficult to process.

There was an extensive amount of information provided by seaDataNet to the project for the abiotic component. This information collected by buoys or other electronic data collection devices is useful when implementing EAF, in particular in the elaboration of abiotic indicators. It is expected that the outcomes of LaMed project will contribute to the knowledge of the institution component of the EAF. The anthropogenic activities (other than fishing) are an essential part of the understanding of the trends and status of ecosystems. These activities are, amongst others, aquaculture, pollution, construction, modification of habitats, etc… Several partners listed some of these activities, but it was agreed between the partners that without guidance on what information is important, we should not seek this kind of data.

The gaps identified are often confirmed. For example, the national inventories of marine and coastal species and habitats are not homogeneous. For most countries they are incomplete; but when RAC-SPA says that the effort made is more focused on the north-western Mediterranean, this current data mining suggests that it is more in the eastern Mediterranean and the Black Sea. This is not surprising considering the specificities of the region with countries' economies ranging from low-income food-deficit to highly developed; their coastlines from deserted to heavily urbanised; and their fisheries from unindustrialized and labour intensive to modern and capital intensive. Although often overlooked in the statistics, these fisheries play important livelihood, food security, cultural, and recreational roles.

OVERVIEW OF DATA AVAILABLE IN SUPPORT OF AN EAF IN THE MEDITERRANEAN AND BLACK SEAS, AND EVALUATION OF THEIR QUALITY

The work carried on under this topic has been subject to a 21-page report with full details, tables and figures, available at:
http://www.cream-fp7.eu/pdf/Deliverable 3.2 CREAM Overview of data available in support of an EAF Dissemination.pdf

In this "Final publishable summary report" we only provide a summary and conclusions.

There is a large amount of data available for EAF in the Mediterranean and Black Seas, but of varying quality and not easily exploitable in EAF. The time series may be discontinued at some locations and the formats range from paper to structured databases. There is no scientific institution in the Mediterranean or Black Seas gathering all the data needed for EAF.

The possibilities to use SeaDataNet for abiotic parameters should be further investigated. Fleet and fisheries statistics are compiled through GFCM Task 1 and, although still incomplete, are available on the GFCM public website. Status of marine resources and level of fishing pressures are provided by FAO sub-regional projects, agreed and validated in GFCM and EU/STECF relevant working groups. Fishermen's awareness should be undertaken on the ongoing initiatives for a better quantification of by-catches of vulnerable species.

Scientific surveys are an important means to collect biological information and habitat description, but the addition of all surveys in a given year never encompasses the whole Mediterranean and Black Sea area. Biological information and habitat description are predominantly in published documents. Whether the original samples are available for computing or not will have to be investigated if this information is required, or an area-based overview will need to be compiled. The occurrence and spatial distribution of non-indigenous species is also available in published documents.

Economics information is often considered as confidential and is difficult to gather and share for analysis. The Mediterranean and Black Sea are no exception to this rule, and very few partners reported economic data, and when available, it was only in aggregated form. Similarly, pollution and contaminants were scarcely reported, but some EU projects are under way and may lead to progress in this field of knowledge.

Spatial planning is an essential tool for management in an EAF, and a comprehensive overview of existing marine protected areas in the Mediterranean is available within the MedPAN network. The EU project MESMA (2009-2013) (http://www.mesma.org/) conducted research on integrated management plans for designating or proposing sites. Their approach will make it possible to compare pressures on an inter-regional level (e.g. Offshore wind farms in the North Sea, Black Sea and Baltic), or a multi-pressure level for a specific region (e.g. Spatially Managed Areas in Fishing, Wind-energy, Geo-hazards and Tourism in the Central Mediterranean or the Black Sea).

Considering quality issues, there is no doubt that the data collected by all CREAM partners is the best available, and that it is predominantly validated and reliable. They are often incomplete or discontinued, they are scattered in terms of geographical dimension and scientific surveys all together do not cover the whole Mediterranean and Black Sea.

Standard outputs and aggregated information are generally available to the public, whereas original datasets have restricted access. Data is often stored in Excel format which may lead to difficulties for sharing and exploiting the information. Data collection protocols are difficult to find or are inexistent. Only national protocols are referred to, and agreements on regional data collection protocols would be welcome.

When formulating an EAF management plan, lack of data or uncertainty about the impact of the fishery should not be used as an argument for delaying the plan (FAO guidelines for an EAF). Given the uncertainties associated with the lack of knowledge, data, and understanding about the ocean and living marine resources, the precautionary approach is a fundamental and inextricable feature of implementing EAF (Meltzer, 2009).

REPORT ON PROPOSED INDICATORS, MODELS, METHODOLOGIES AND REFERENCE POINTS FOR THE EAF IN THE MEDITERRANEAN AND BLACK SEAS

The work carried out on this topic has been subject to a 30-pages report with full details, tables and figures, available at:
http://www.cream-fp7.eu/pdf/Deliverable 3.3 CREAM Report on proposed indicators for the EAF Dissemination.pdf

In this “Final publishable summary report” we only provide a summary and conclusions.

The context of the Mediterranean and Black Sea may be seen as difficult for the implementation of an Ecosystem Approach to Fisheries (EAF). Working with the similar concept of Ecosystem Based Fisheries Management (EBFM), Hilborn expressed that there are “core” and “extended” aspects of EBFM. The “core” consists of three primary features:
(a) A correct single species management right, i.e., keeping fishing mortality at or below FMSY, and keeping the fleet capacity in line with the potential of the resources,
(b) preventing by-catch of non-target species, which can be achieved by gear modification, providing incentives for by-catch avoidance, or by area and seasonal closures, and
(c) the avoidance of habitat-modifying fishing practices primarily by closing areas or banning specific fishing methods or gears in sensitive areas.
Consideration of trophic interactions and area-based management characterize “extended” EBFM. Hilborn concludes that we will have great difficulty in moving EBFM beyond the core components of eliminating overfishing of the main species, reducing by-catch and habitat impact, and protecting endangered or charismatic species without firmer policy guidance regarding the social objectives of fisheries and their impact on marine ecosystems and human communities. This policy guidance was given recently since UNEP-MAP agreed that, as a starting point, the 11 EU MSFD descriptors will be used as a basis for defining the Mediterranean ecological objectives taking into account the regional specificities. This approach was confirmed in December 2013 (Istanbul, COP 18) by the 21 Mediterranean Countries Contracting Parties to the Barcelona Convention and the European Commission.

In terms of scientific developments, IndiSeas provides a way forward and the steps that the scienti#c community as a whole need to take to make EAF a reality:
1. Combining and integrating multi-disciplinary indicators. These include indicators of climate,

ecological and human dimensions that represent different facets of the EAF. Integration should be quantitative to compare, classify and rank the status of exploited marine ecosystems. It should also be graphical so that we can communicate ecosystem status to a broad spectrum of stakeholders including managers, decision-makers and the public.
2. Developing a synergy between model- and data-based approaches. This will allow the testing of the sensitivity and specificity of ecological indicators to #shing versus climate, the performance of indicators for decision support, and the fishing identification of reference levels and tipping points of ecosystems submitted to different drivers. This important step allows models to handle explicitly multiple drivers, their impacts, and expected feedbacks in marine ecosystems. It will therefore enable ecosystem indicators to be tested in a fully integrated way under various scenarios of global change and fsheries management.
3. Using research survey data. Global comparisons of states of marine exploited ecosystems have previously relied almost exclusively on commercial catch data. Catch data have advantages of easy access through FAO and Sea Around Us Project (http://www.seaaroundus.org) databases, extensive geographical coverage, and existence of long time series, but have biases associated with sampling by commercial vessels.

SUMMARY REPORT ON SCIENTIFIC KNOWLEDGE FOR THE ASSESSMENT AND MANAGEMENT OF MEDITERRANEAN AND BLACK SEA FISHERIES

The work carried out on this topic has been subject to a 79-pages report with full details, tables and figures, available at:
http://www.cream-fp7.eu/pdf/Deliverable 4.2 CREAM Summary report on the knowledge in the assessment and.pdf

In this “Final publishable summary report” we only provide a summary and conclusions.

This Work Package of the CREAM Project has as main objective to “Coordinate and harmonize data collection, research and management activities carried out by international/regional bodies regarding the EAF implementation in the Mediterranean and Black Seas” With the objective of collecting information on activities carried out by international organizations in relation to the Ecosystem Approach to Fisheries in the Mediterranean and Black Seas, the CREAM project launched a questionnaire asking the representatives of these organizations about their regional research programmes and management actions. In this document the different organizations and their main activities in the field of interest to CREAM and the answers to the questionnaires are presented, including their main worries about the implementation of EAF to the Mediterranean and Black Sea. Among the various international organizations developing activities related to the implementation of EAF in the Mediterranean, some of them recognized gaps, shortcomings and synergies and coordination in data collection, assessment, advice and management. Management is the item where more difficulties were identified. The importance of the cooperation projects funded by EU and EU countries and managed by FAO, as well as several EU research projects, must be highlighted.

The implementation of EAF in the Mediterranean and Black Seas is far from coordinated. Many activities and projects are carried out, some may be redundant and a good deal of overlapping has been identified by the organizations themselves. Although cooperation is very close in some cases, especially the FAO Cooperation Projects and GFCM, in other cases the organizations do not work so closely, for instance regarding MPA implementation.

The limitations identified for the correct application of EAF in the Mediterranean and Black Seas derive, at least partially, from the fact that the organizations are underfunded and understaffed, but also because of the redundancy in their mandates and objectives. Rationalizing the number of actors on the Mediterranean and Black Sea fisheries scene and enhancing coordination would help improve the effectiveness of their actions.

A SCIENTIFIC STRATEGY TO ACHIEVE EAF OBJECTIVES FOR 2020

The work carried on this topic has been subject to a 135 pages report with full details, tables and figures, available at:
http://www.cream-fp7.eu/pdf/Deliverable 6.1 CREAM Exec Report of the interm meeting incl a

scientific.pdf

This section of the results is an outcome of the workshop entitled “Scientific Strategy for a Global Approach to Promote Regional Ecosystem-based Approach to Fisheries (EAF) in the Mediterranean and Black Seas” organised by CREAM in Sète (France) in July 2012. The main aim of the workshop was to discuss what was needed to advance on a robust scientific strategy to promote EAF in the Mediterranean and Black Seas. Participants discussed a series of scientific recommendations for promoting the coordination of initiatives with the aim of contributing to an operational EAF. Discussion was carried out on (i) what can be learnt from case studies that promote EAF worldwide, (ii) how a scientific strategy for EAF can be built, and (iii) which are the future scientific networking activities to promote EAF. Here we summarize the discussions and conclusions of the workshop, and we present the recommendations and future initiatives proposed to advance EAF in the Mediterranean and Black Seas region.

Participants to the workshop agreed that the achievement of a common vision regarding the Mediterranean and Black Seas region should be one of the first and most important elements for a successful EAF. A common vision should recognise the need to promote the reconciliation of conservation and exploitation, and to aim for a good socioeconomic and ecological status. The vision should also promote the recovery of ecosystems and rebuilding of marine commercial stocks and predator species. EAF initiatives, carried out worldwide, illustrated that whilst the development of relevant science is essential to render the EAF process operational, the involvement of stakeholders is the key factor that characterises successful initiatives. This is especially important in the Mediterranean and Black Sea context, where many stakeholders show conflicting interests and associated trade-offs.

During the workshop, it became clear that numerous overlapping and poorly coordinated initiatives for EAF exist in the region. The group discussed the coordinated integration of the existing initiatives and the conclusion that a scientific network to promote coordinated and operational EAF initiatives created by the scientific community is needed. The discussion focused on how to build such a network and how to proceed to consolidate the regional scientific vision, with a clear scientific strategy and roadmap, including a diversified toolbox. In the short term, the EAF network should (i) document and coordinate scientific initiatives, (ii) promote the sharing of scientific information and capabilities, (iii) promote data availability, integration, harmonization, and interoperability, (iv) promote training capabilities and capacity building of the scientific community and stakeholders, (v) establish mechanisms to disseminate knowledge, and communicate EAF benefits, and (vi) promote concrete regional scientific initiatives. In the long run, the network should promote scientific advice on EAF to inform adaptive management and move towards a knowledge-based management approach, and promote EAF implementation at different geographical scales (from local to regional) using a transversal approach. The ultimate goal of the network should be to link management advice to good scientific information and transform policy strategies and goals into operational objectives following a pragmatic, flexible and adaptive approach.

HOW TO BUILD AN OPERATIONAL SCIENTIFIC NETWORK FOR IMPLEMENTING EAF IN THE MEDITERRANEAN AND BLACK SEA. CONSTITUTIONAL FRAMEWORK OF THE “EMBASEAS NETWORK”

The work carried out on this topic has been subject to a 52 page report with full details, tables and figures, available at:
http://www.cream-fp7.eu/pdf/Deliverable 6.2 CREAM Exec. Report of the final meeting incl. an operational scientific network for implementing EAF Dissemination.pdf

This report is the main outcome of the second workshop of WP6 entitled “Building an operational scientific network for implementing EAF in the Mediterranean and Black Sea” held in Split (Croatia) in October 2013. The main aim of the workshop was to discuss how to build an operational scientific network for implementing EAF in the Mediterranean and Black Sea. Here we summarize the discussions and conclusions of the workshop, and present the recommendations and future initiatives proposed to advance EAF in the Mediterranean and Black Seas region.

This workshop followed a previous workshop in 2012 entitled “Scientific Strategy for a Global

Approach to Promote Regional Ecosystem-based Approach to Fisheries (EAF) in the Mediterranean and Black Seas" that was held in Sète (France) in July 2012. This first workshop aimed at discussing what is needed to advance on a robust scientific strategy to promote EAF in the Mediterranean and Black Seas.

As a result of the Workshop a first draft of the Constitutional Framework of the "EMBASEAS NETWORK" (A scientific network in support of the application of EAF in the Mediterranean and Black Seas) was produced. In the last CREAM Coordination meeting, held in Barcelona on 8 April 2014, the text was discussed in depth with the members of the CREAM Consortium and also with relevant representatives of the CREAM External Advisory Committee (Black Sea Commission, FAO and GFCM).

As the result of this discussion, a new text of the EMBASEAS Constitutional Framework has been proposed for approval of the future members of EMBASEAS. This text is available at http://www.cream-fp7.eu/pdf/EMBASEAS Network Proposal of Constitutional framework.pdf

The network should be independent and individually based, but with clear links to regional bodies such as GFCM, FAO, BSC, the EU Joint Research Centre, and other regional and intergovernmental institutions, as well as with non-governmental organizations promoting EAF. Key players of the network should be interested scientists of different disciplines, participating as independent individuals, rather than as national or institutional representatives. The network should have strong links with local and regional organizations involved in EAF initiatives, and seek the involvement of other stakeholders such as professional and recreational fishers, other users of the marine environment, naturalists, local experts, and policy makers.

Such a network should have the capability to define a clear, strong, and shared vision for EAF in the region. This could be achieved by gaining a broader view on the EAF implementation strategy, in particular by keeping track of what needs to be pursued to ultimately ensure a good status of the Mediterranean and Black Sea ecosystems. The network should communicate experience obtained in implementing EAF, identify key objectives and topics, and establish a road map of coordinated actions to accomplish them. The scientific network should also aim to promote the efficient coordination of scientific activities, to date local or fragmented, using local initiatives but contributing to the regional vision. This would bridge different geographical scales and promote the exchange of experiences and the use of innovative tools such as models, indicators, scenarios, and other integrative tools. The methodology and manner of linking the initiatives from the local to the regional level can be a considerable challenge for the network.

In the short term, the network could start as a networking activity of scientists and stakeholders to promote the EAF approach by exchanging information, coordinating activities, and improving the capacity of developing science for EAF in the region. The network should promote concrete scientific actions considering available data, tools, and initiatives at different geographic scales to improve process-based ecological knowledge in the area. The group identified several novel topics and initiatives with added value to the network (e.g., the ecology and impact of Non-indigenous species NIS, cumulative impacts, the impacts of specific fishing gear, building scenarios, …). One of the first tasks of a coordinated scientific initiative would be to identify, document, and promote successful case studies in the region. This could help establish bridges between scientists, policy makers, and other users of the sea, in a transversal way dealing with the best territorial management unit. Other potential immediate activities include the documentation of initiatives, the sharing of already available information and scientific capabilities, the improvement of the training capabilities, and capacity building of the scientific community and stakeholders, and the establishment of mechanisms to disseminate knowledge to end users.

In the medium-long term, the network should aim at providing scientific advice in support of the implementation of an EAF (from the local to the regional level), and informing on the adaptive management in the whole Mediterranean and Black Sea, where at present only stock assessment advice is taken into account (if at all). Thus, the ultimate goal of the network should be to provide the scientific grounds upon which to link management advice to sound scientific information, thus creating an ecosystem knowledge-based management approach. By establishing successful liaisons with local and regional organizations and initiatives, needing scientific advice to promote EAF, the

scientific network could contribute to the management of territorial units and provide a stable platform to share success stories, resources, ideas, and expertise. The network could facilitate the discussion of common problems and possible solutions with local applicability in a coordinated manner and under a common regional vision and strategy. Scientists involved in early practices of EAF could find in the network a suitable platform for networking among themselves to learn tactics on how to implement EAF at the local level, while also building a strategy at regional level. The ultimate goal should be to link management advice to good scientific information and transform policy strategies and goals into operational objectives. Another important role of the network would be to anticipate the needs of stakeholders – both local communities and managers - and the global changes that may occur in the future in the Mediterranean and Black Seas.

The network should also be used as an opportunity to anticipate the future and invest in tools such as generic and validated models and indicators. In this manner scientists would be able to contribute to initiatives and calls for predicting the dynamics of the ocean, and building scenarios of socio-ecological systems. Indeed, it is already clear that in a few years, scientists will have to provide integrated and multidisciplinary scientific advice on possible future scenarios and the available alternatives to avoid adverse changes in ecosystems and ecosystem services, integrating data on ecology, climate, socioeconomics, and demographics. These tools will enable us to investigate the future of the region, and analyse how to reconcile long-term objectives with local constraints (exploring trade-offs with a suite of socioeconomic and ecological objectives) following the successful initiative of the Intergovernmental Panel on Climate Change (IPCC). EMBASEAS could be a focal point for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). There is thus a clear need to start building on the capability to integrate, modify, improve, innovate, fit and calibrate complex models and frameworks, which will require the promotion of data integration, harmonization, and accessibility. The scientific community should build a roadmap of coordinated actions to develop a common strategy and make future progress; and the EMBASEAS network may be a good opportunity to achieve this.

Potential impact and main dissemination activities and exploitation results

Strategic impact

As explained in the previous section, the CREAM Coordination Action aimed at establishing the foundations of a permanent network of scientific institutes and management organizations working coordinately and in an integrated manner towards the application of the Ecosystem Approach to Fisheries in the Mediterranean and Black seas. The CA has achieved to establish the foundations of such network by bringing together the main scientists and fisheries managers of the two regions in a single working environment, which will support the formulation of scientific and technical advice for the implementation of an EAF.

During the CA the main actors in fisheries assessment and management in the Mediterranean and Black sea have reviewed and discussed:
i) The current state of fisheries assessment and management in the two regions.
ii) The shortcomings of data and methods applied.
iii) How to establish effective ways to mitigate these shortcomings.
iv) How to improve the coordination of the fisheries research of European and ICPC countries (both those participating in CA and non participating ICPC countries).
v) How to establish the organizational procedures towards the creation of a permanent network of fisheries scientists and management bodies capable to effectively deal with the requirements of the application of an EAF in the two regions.

By integrating non-EC countries, the CA has ensured that the foundations of an EAF for the Mediterranean and Black seas reaches third countries. The CA has contributed to disseminate the Common Fishery Policy (as applied to the Mediterranean) and the EAF principles by allocating time and resources to two internal workshops, two training courses and one international conference.

DISSEMINATION ACTIVITIES

The CREAM Consortium has taken effective means to disseminate the project results at two levels:

i) among policy makers, fisheries managers and fisheries scientists which will directly use the project results, and ii) to a wider level among the civil society, including NGOs.

These two different target audiences have required different dissemination approaches. In the first case, dissemination has been ensured by specific coordination meetings with policy makers and fisheries managers. Dissemination of results have also includes a training component, consisting of two International Training Courses (ITC) on “Implementation of the Ecosystem Approach to Fisheries in the Mediterranean and Black Seas” with the objective to train fisheries assessment scientists and advisors in advanced approaches and tools derived from the project. Complementing this training component, an International Dissemination Component (IDC) has been organised, in the form of an open Conference on “Ecosystem Approach to Fisheries in the Mediterranean and Black Seas”. The Conference has been disseminated by publishing the results in a single-volume monograph of an international peer-reviewed journal (Scientia Marina: http://www.icm.csic.es/scimar/index.php/secId/7/IdNum/196). Dissemination of the project’s results to a wider audience has also been ensured by including internet resources in the website of the project (http://www.cream-fp7.eu).

CREAM dissemination activities had the additional objective of training and capacity building on EAF of a target audience of fisheries researchers in the Mediterranean and Black Seas without experience on EAF. The training courses and other dissemination activities have been addressed not only to researchers of the countries participating in the project but to all Mediterranean and Black Sea riparian countries. A second objective has been disseminating the Coordination Action findings to a wide target audience composed primarily of fisheries managers and policy makers belonging to European, Mediterranean and Black Sea national and regional organizations as 1st-level end-users. As a third objective, the results have been communicated to a wider audience of stakeholders, NGOs, and other scientists by means of participation in specialist conferences, workshops and symposia.

Training activities

Two training courses have been organised. “Ecosystem approach to fisheries in the Mediterranean and Black seas. Scientific bases”. Varna (Bulgaria), 3-7 February 2014; and “Ecosystem approach to fisheries in the Mediterranean and Black seas. Management and decision making”. Zaragoza (Spain), 10-14 March 2014. There were 31 participants from 16 countries in the first course, and 27 participants from 14 countries in the second course. The programme and the timetable of the courses are available at http://www.cream-fp7.eu/detailed-results.html

The first course (Scientic bases) was directed mainly to researchers involved in the ecosystem approach to fisheries, working in the Mediterranean or Black Seas. The objective of the course was to train scientists and advisors in advanced approaches and tools of EAF that are better adapted to the nature of the Mediterranean and the Black Sea. The course was intended not only to present the theoretical elements but also to guide participants on how to put theory into practice through case studies. By the end of the course the participants have been aware of the research needs in the context of EAF for a more informed decision making, have gained experience in the application of the main methods and mathematical models of EAF, were familiar with the use of a wide range of indicators and reference
points of ecological, economic and social nature in EAF, and had an up-to-date overview of technological innovations for sustainable management.

The second (Management and decision making) was directed mainly to decision makers, managers and technical advisors working in the Mediterranean or Black Seas. This course has provided an overview of EAF concepts, methods and tools, and has guided the participants through the main steps of the fisheries planning and management process required for the practical implementation of the EAF. In addition, by the end of the course the participants have been aware of the ecological context of the fisheries and related assessment methods, have been conscious of the social and economic implications of EAF and of the importance of the stakeholders’ involvement in the management process to ensure a successful EAF implementation, have been informed on the main methods and mathematical models applied in EAF, have become familiar with the use of a wide range of indicators and reference points of ecological, economic and social nature in EAF, and were in a position to establish institutional and personal relations that will favour a future exchange of

experiences and strengthen cooperation in the EAF application in the region.

International Dissemination Conference

The CREAM International Dissemination Conference took place in Barcelona, Spain, on 9-10 April 2014, at the Institut de Ciències del Mar de Barcelona, CSIC, Spain. The objective of the Conference was to present the latest research on EAF in the area and towards fostering integrated collaboration among stakeholders, scientists, fisheries managers to enhance the sustainability of fishery resources. All documentation was provided in English, French and Spanish, since some decision-makers and stakeholders had limited knowledge of English. English-French-Spanish simultaneous interpretation was also provided by IAMZ-CIHEAM. There were 82 participants from Algeria, Bulgaria, Canada, Croatia, Cyprus, Egypt, Spain, France, Georgia, Greece, Italy, Lebanon, Malta, Morocco, Romania, The Netherlands, Tunisia and Turkey. Twelve of them were high level decision-makers in fisheries management from governments, 7 stakeholders from fishermen associations, and 4 from International Organisations, the rest being researchers, most of them from CREAM partner countries, but also from other countries, such as Algeria and Canada. The details about the Conference are available at
http://www.cream-fp7.eu/pdf/Deliverable_5.6_CREAM_Proceedings_of_IDC_Dissemination.pdf

The programme of the Conference included presentations on many aspects of Ecosystem Approach to Fisheries in the Mediterranean and Black Seas, and a final Round Table on EAF implementation in the Mediterranean and Black Seas: Lights and shadows. Presentations were:
- Key note address: Fisheries catch reconstruction project for Mediterranean and Black Sea countries from 1950-2010. D. Pauly, UBC, Canada
- Impact of the turbot fishery on cetaceans in the Romanian Black Sea area. G.P. Radu, RMRI, Romania
- The sand eel fishery of Catalonia. An example of co-management. J. Lleonart, ICM-CSIC, Spain
- Trophic indicators to assess impact of fishing in a data-poor situation. The case of Algerian waters with a particular emphasis in Bay of Bou-Ismail (West Algeria). K. Babouri, Algeria
- Critical assessment about the current understandings in the framework of Ecosystem Approach of Fisheries in Mediterranean and Black Sea. P. Sartor, CIBM, Italy
- Disturbance on benthic ecosystems by trawling activity and consequences on commercial species: a North-Western Mediterranean case study. A. Muntadas, ICM-CSIC, Spain
- Summary and analysis of the available information for EAF in Turkey. A. Tokaç, Ege Univ., Turkey
- Investigating the factors affecting the fishing impact on Elasmobranchs in Southeastern Spain (Western Mediterranean Sea). M. Mendoza, IEO, Spain
- Romanian marine fishery versus Marine Protected Areas. T. Zaharia, RMRI, Romania
- Key note address: Incorporating EAF into a broader (and global) context: Building scenarios for marine resources in a Global Change context. Ph. Cury, IRD, France
- Exploitation status of marine ecosystems in the Mediterranean Sea: a comparative framework of indicators. M. Coll, IRD, France
- Potential ecosystem effects of the application of management targets derived from single species assessments: insights from a multispecies-multifleet model. S. Libralato, OGS, Italy
- Establishment of Ecosystem approaches to fisheries in Georgia. A. Komakhidze, WEFRI, Georgia.
- Fishing strategies and the Ecosystem Approach to Fisheries in the Eastern Mediterranean Sea. Ch. Maravelias, HCMR, Greece
- Fishers' perception of elasmobranch decline in the Mediterranean in the second half of the 20th century. F. Maynou. ICM-CSIC, Spain
- Effects of different fishery pressures on hyperbenthic and benthic communities in Northern Sicily (Western Mediterranean) and implications for the diet of demersal predators. E. Fanelli, ENEA, Italy.
- Simulations of bottom-up and top-down dynamics in a bathyal food-web (North-Western Mediterranean): predicting fisheries effects using an ecosystem approach. V. Mamouridis, ICM-CSIC, Spain
- Exploring links between Industrial Ecology and Fisheries: Material flow accounting and physical input-output. S. Sastre, ICM-CSIC, Spain

In addition to the documentation provided, a copy of the Special Issue of the Journal "Scientia Marina" with contributions to the Conference was handed to each of the participants. This

publication is also available at:
http://www.icm.csic.es/scimar/index.php/secId/7/IdNum/196

Other 12 dissemination activities have been organised by the consortium members, in Morocco (6), Russia (2), Ukraine (2), Egypt and Georgia.

Publications

CREAM has produced two collective and peer-reviewed publications: the above mentioned especial issue in the Scientia Marina Journal “The Ecosystem Approach to Fisheries in the Mediterranean and Black Seas” (Sci. Mar. 78S1: 2014), with 11 original research articles, and the article “The scientific strategy needed to promote a regional ecosystem-based approach to fisheries in the Mediterranean and Black Seas” in the journal Reviews in Fish Biology and Fisheries (Volume 23, Issue 4, December 2013, pp 415-434) signed by 16 members of the CREAM consortium. There have been other 9 peer-reviewed publications by the members of the consortium.

IMPORTANT WARNING:

We have encountered some difficulties when filling up the publications section, regarding the open access option. We have been able to select this option only in a few cases.

Please note that the publications 2 to 13, 17, 19, 21 and 22 are available in open access.

As a consequence the figures which appear in Section H of the report are wrong: They should be as follows:

H. Use and dissemination
14. How many Articles were published/accepted for publication in peer-reviewed journals?
22

To how many of these is open access provided?
The right figure is 16

How many of these are published in open access journals?
The right figure is 4

How many of these are published in open repositories?
0

To how many of these is open access not provided?
The right figure is 6

Web site

The CREAM Website http://www.cream-fp7.eu/ has been the most important dissemination tool, including all relevant information of the project and its activities and results. The web is aimed at external and internal users. Results and progress of the project are also published on the web as a tool to communicate with the stakeholders involved.

The Website sections are:
• Homepage-Summary
• Consortium (logos and links to each institution)
• External Advisory Committee (logos and links to each institution)
• Results. This section has been updated with all the results produced CREAM
• Work Packages-Events-Deliverables
• Project booklet
• Contact
• Intranet

Pictures

1st Coordination meeting. Varna, Bulgaria, April 2012

2nd Coordination meeting. Malta, April 2013

Workshop Sète, France, July 2013

Workshop Split, Croatia, October 2013

Training Course. Varna, Bulgaria, February 2014

Training Course. Zaragoza, Spain, February 2014

International Dissemination Conference. Barcelona, Spain, April 2014