



# EUROPEAN SYMPOSIUM ON MPAs AS A TOOL FOR FISHERIES MANAGEMENT & ECOSYSTEM CONSERVATION

Emerging science and interdisciplinary  
approaches



Murcia, Spain  
25th-28th September 2007

**Memorandum**





## **Memorandum of the “European Symposium on MPAs as a Tool for Fisheries Management and Conservation” (25-28 September 2007, Murcia)**

The Symposium has been co-organised by the EC 6FP research projects EMPAFISH (SSP8-006539) and PROTECT (SSP8-CT-2004-513670). The meeting received financial and institutional support from the following organisms: Spanish Ministry for Agriculture, Fisheries and Food, European Commission, International Council for the Exploration of the Sea (ICES), University of Murcia, Technical University of Denmark, Fundación Séneca (Region of Murcia), Regional Ministry for Agriculture and Water (Murcia), Fundación Cajamurcia, and Office for Congresses at the Region of Murcia.

The committees acting as direct scientific and organising responsible of the Symposium have been the following:

### Symposium Organizing Committee:

- Erik Hoffmann, Danish Institute for Fisheries Research, Denmark
- Ángel Pérez-Ruzafa, University of Murcia, Spain
- Concepción Marcos, University of Murcia, Spain
- Fuensanta Salas, University of Murcia, Spain
- Jean Boncoeur, University of Western Brittany, France
- Jose Antonio García-Charton, University of Murcia, Spain
- Ole Vestergaard, Danish Institute for Fisheries Research, Denmark
- Thomas Kirk Sørensen, Danish Institute for Fisheries Research, Denmark

### Symposium Scientific Committee:

- Erik Hoffmann, Danish Institute for Fisheries Research, Denmark
- Ángel Pérez-Ruzafa, University of Murcia, Spain
- Anthony Grehan, Earth and Ocean Sciences, NUI, Galway, Ireland
- Ben Stobart, Instituto Español de Oceanografía, Baleares, Spain
- Claire Armstrong, University of Tromsø, Norway
- Dominique Pelletier, Institut Français de Recherche pour l'Exploration de la Mer IFREMER, Nantes, France
- Francesc Maynou, Consejo Superior de Investigaciones Científicas, Barcelona, Spain
- Fritz Köster, Danish Institute for Fisheries Research, Denmark
- Gerd Kraus, IFM-GEOMAR, Germany
- Jan Helge Fosså, Institute for Marine Research, Bergen, Norway
- Jean Boncoeur, University of Western Brittany, France
- Jesper L. Andersen, FOI, Denmark
- John Pinnegar, Centre for Environment, Fisheries & Aquaculture Science CEFAS, Lowestoft Laboratory, UK
- José J. Pascual, University of La Laguna, Spain
- Just Bayle Sempere, University of Alicante, Spain

- Lisandro Benedetti-Cecchi, University of Pisa, Italy
- Mark Mellet, Naval Service, Ireland
- Melanie Austen, Plymouth Marine Laboratory, UK
- Ole Vestergaard, Danish Institute for Fisheries Research, Denmark
- Paolo Domenici, Istituto dell'Ambiente Marino Costiero – Oristano, Italy
- Ricardo Serrao Santos, Instituto do Mar IMAR, Portugal
- Serge Planes, Centre National de la Recherche Scientifique CNRS, France

The main goal of the Symposium was to integrate ecological, economic and social aspects for the selection, design, and management of marine protected areas (MPAs), facilitating discussion and exchange amongst stakeholders, scientists, lawyers, and managers. For doing so, five general themes were proposed:

- Theme 1: Ecological effects of MPAs
- Theme 2: MPAs effects on fisheries and other uses
- Theme 3: Assessing MPAs performance: monitoring, models and indicators
- Theme 4: Tools for MPAs planning and design
- Theme 5: Science, Management and Stakeholders

A webpage was habilitated in September 2006 ([www.mpasymposium2007.eu](http://www.mpasymposium2007.eu)) to disseminate the symposium as widely as possible, manage inscriptions, facilitate the abstract submission, and provide all the information relative to this event. This website has received up to 19882 visits from 75 countries (at 23<sup>rd</sup> November 2007).

Due to the high number (214) of abstracts submitted as oral presentations, the Symposium programme was reconfigured in order to accommodate as much contributions as possible in the sessions; finally, three rooms were fitted out to functioning in parallel during the oral sessions. The Scientific Committee was in charge of evaluating and selecting the abstracts to be included in the oral sessions.

Finally, the communications presented to the Symposium have been the following:

- 5 invited keynote speakers:

When do protected areas help to achieve management objectives for the marine environment?

Dr. Simon Jennings, Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory, Lowestoft, United Kingdom

Arguments for conventional fisheries management and against no-take marine protected areas: only half of the story?

Peter J.S. Jones, Dept. of Geography, University College of London, London, United Kingdom

Lessons from the past for marine conservation and management in Europe

Callum M. Roberts, Environment Department, University of York, York, United Kingdom

Matching the Hammer to the Nail:

Research Questions Underpinning the Success of MPAs

Steve Murawski, National Marine Fisheries Service, Silver Spring, Maryland, USA

Human Dimensions of Marine Protected Areas

Anthony Charles, Saint Mary's University, Halifax, Nova Scotia, Canada

- 122 oral communications, spread over 27 sessions (see Programme in annex), coordinated by the following chair-persons:
  - Dr. John Pinnegar
  - Dr. Indrani Lutchman
  - Dr. Claire Armstrong
  - Dr. Per Nilsson
  - Dr. Fabio Badalamenti
  - Dr. Anthony Greham
  - Dr. Giuseppe Notarbartolo di Sciara
  - Dr. Paloma Martín
  - Cdr. Mark Mellet
  - Dr. Charles F. Boudouresque
  - Dr. Serge Planes
  - Dr. Renato Chemello
  - Dr. Jan Helge Fosså
  - Dr. Ronan Long
  - Dr. Dominique Pelletier
  - Dr. Mireille Harmelin-Vivien
  - Dr. Ulf Bergstrøm
  - Dr. José Antonio García-Charton
  - Dr. Ricardo Serrão Santos
  - Dr. Fritz Köster
  - Dr. Leonardo Tunesi
  - Dr. Giovanni de Falco
  - Dr. Tundi Agardy
  - Dr. Gerd Graus
  - Dr. Jean Boncoeur
  - Dr. Melanie Austen
  - Dr. Manuel Zetina-Rejón
  
- 133 posters, which were exposed throughout 3 days, with two sessions specifically devoted to discussion of these contributions
  
- 2 roundtables, under the headlines "MPAs for ecosystem conservation and fisheries management – a search for common grounds", and "What are the key costs and benefits policy makers and stakeholders might



consider in the MPA decision making process?”, coordinated by Dr. Tundy Agardy and Dr. Carl Gustaf Lundin, respectively. These two roundtables were preceded by a general presentation by M. Jacques Fuchs, Dr. Leticia Martínez-Aguilar and Dr. Miguel Nuevo-Alarcón. The roundtables were composed by researchers as well as representatives from sectors involved in the management of MPAs:

- Tundi Agardy, Senior Marine Specialist, USA
- Michael Andersen, Danish Fishermen’s Association, rep. Baltic RAC & North Sea RAC, Denmark
- Jeff Ardron, German Federal Agency for Nature Conservation, Germany
- Jacques Fuchs, EU Commission, DG Fisheries and Maritime Affairs
- Mireille Harmelin-Vivien, Université d’Aix Marseille, Centre d’Océanologie de Marseille, France
- Peter Jones, University College of London, Dept. of Geography, UK
- Indrani Lutchman, Institute for European Environmental Policy (IEEP), UK
- Leticia Martínez-Aguilar, EU Commission, DG Fisheries and Maritime Affairs
- Miguel Nuevo-Alarcón, EU Commission, DG Research
- Carl Gustav Lundin, Head, IUCN Global Marine Programme
- Fabio Badalamenti, Laboratorio di Ecologia Marina e Conservazione della Natura, Univ. Di Palermo, Italy
- Charles François Boudouresque, Université d’Aix-Marseille, Centre d’Océanologie de Marseille, France
- Anthony Charles, Saint Mary’s University, Halifax, Canada
- Martín Fernández Díez-Picazo, EU Commission, Maritime Policy Task Force
- Mark A. Mellet, Commander, National Maritime College of Ireland, Ireland
- Giuseppe Notarbartolo, Tethys Research Institute, Italy
- Christian Pusch, Federal Agency for Nature Conservation, Germany
- Silvia Revenga, Spanish Ministry of Agriculture, Fisheries and Food, Spain
- Callum Roberts, University of York, UK
- Jessica Sanders, FAO, Fisheries Dept.

A total of 397 delegates from 32 countries attended the MPA Symposium (see list of participants in annex).

The symposium was opened in a ceremony held Tuesday 25<sup>th</sup>, and chaired by Dr. Miguel Nuevo-Alarcón as EC representative. The presidential table was co-chaired by Dr. Silvia Revenga (General Secretariat for Maritime Fisheries at the Spanish Ministry of Agriculture, Fisheries and Food), Dr. Adolfo Falagán (General Director for Ranching and Fisheries at the Regional Ministry for Agriculture and Water, Regional Autonomous Government of Murcia), Dr. José Antonio Cobacho (Rector of the University of Murcia), and Dr. Ángel Pérez-Ruzafa and Dr. Erik Hoffmann, representing the European research projects EMPAFISH and PROTECT, respectively.



Opening ceremony table. From left to right: Dr. Ángel Pérez-Ruzafa (EMPAFISH coordinator); Dr. Adolfo Falagán (General Director for Ranching and Fisheries at the Regional Ministry for Agriculture and Water, Regional Autonomous Government of Murcia), Dr. José Antonio Cobacho (Rector of the University of Murcia), Dr. Miguel Nuevo-Alarcón (EC representative); Dr. Silvia Revenga (General Secretariat for Maritime Fisheries at the Spanish Ministry of Agriculture, Fisheries and Food); and Dr. Erik Hoffmann (PROTECT coordinator).

During the symposium a series of social events were celebrated, namely welcome reception at the Cloister of the Faculty of Law (University of Murcia), Symposium official dinner, and two parallel excursions at Saturday 29<sup>th</sup>, one for diving at the Cabo de Palos – Islas Hormigas marine reserve, and the other for visiting the town of Cartagena, both finishing by a visit to the Cabo de Palos lighthouse, from which a short talk was organised in order to describe the characteristics of the marine protected area

## **Synthesis of scientific contents presented at the Symposium**

The central topic of the “European Symposium on MPAs as a Tool for Fisheries Management and Ecosystem Conservation” has been the search for common grounds for the management of fisheries and the conservation of biodiversity. The numerous and qualified participation at the symposium highlighted the current situation of research on the “MPA tool”, in the framework of marine conservation.

### **Invited keynotes**

The oral sessions and debates were organised around 5 keynotes, for which prestigious personalities from different fields of the “MPA science” were invited to expound their views.

Simon Jennings (CEFAS, Lowestoft, UK) defended that science could play a stronger role in supporting the selection of objectives of MPAs, by assessing whether these objectives are measurable, achievable or compatible, and by predicting the effects of the combinations of management tools, including MPAs, that might be used to meet them; in addition, he highlighted that MPAs that meet local management objectives might not contribute to meeting objectives at larger scales, and these incompatibilities need to be understood and managed.

Peter J. S. Jones (University College of London, UK) argued the need to ‘sell’ no-take MPAs (NTMPAs) against conventional fisheries management approaches (CFMAs) from a holistic, trans-disciplinary rather than reductive, intra-disciplinary perspective. This holistic approach attempts to accommodate both uncertainty and wider societal values and preferences, both values being intrinsic to the functioning of MPAs. The speaker emphasized the inappropriateness to extend the reductive approach inherent in CFMAs analyses to encompass the broader ethical and scientific concerns embraced by NTMPAs, given that marine biodiversity conservation objectives and fisheries management objectives do not always stride in the same direction.

The dissertation of Callum M. Roberts (University of York, UK) was about the need to take a historical perspective of marine conservation, by establishing reference points of harvested populations at much longer temporal scales. In doing so, it appears evident that reversing damage to European seas will require a much higher level of ambition with extensive networks of MPAs, and, although many benefits will become apparent soon after protection, full ecosystem recovery will require decades to centuries.

Steve Murawski (National Marine Fisheries Service, Maryland, USA) emphasized that several key scientific questions regarding the use of MPAs are largely unresolved either as general principles or in specific cases, including (1) source-sink recruitment dynamics, (2) potential for subpopulation selection impacts, (3) benthic-pelagic interactions, (4) edge effects and spillover, (5) effort re-allocation and concentration outside MPAs, and (6) human behavioural adaptations to the imposition of MPAs.



Finally, Anthony Charles (Saint Mary's University, Halifax, Canada) closed the series of invited keynote speakers by stressing the importance of human dimensions –social, economic and institutional considerations that can dramatically affect the outcome of an MPA implementation process. He highlighted the role of participatory processes and community involvement as key elements of the success of MPAs.

## **Communications**

The symposium benefited of a very high degree of participation: a total of 255 communications were presented, from which 122 as oral presentations. The symposium covered a very wide geographical range, from European coasts (Mediterranean and central-eastern islands –Canary is., Madeira and Azores; north-eastern Atlantic –including UK, Ireland, Scandinavian coasts, Iceland, North Sea and Baltic Sea), to African coasts (Western Africa, South Africa), Red Sea, Indo-Pacific (Reunion is., Great Barrier Reef, Tasmania, Western Australia, New Zealand, New Caledonia, French Polynesia, Cook is.), North America (Canada, California, Baja California, Mexican Caribbean, Florida, Gulf of Mexico), Central America (Cuba, El Salvador), and Asia (Eastern China).

The 122 oral presentations were gathered in 5 thematic areas:

### Theme 1: “Ecological effects of MPAs”

The communications included under this heading dealt with research performed using very diverse methods (underwater visual census and other techniques requiring the use of SCUBA, tagging, acoustic telemetry, ROVs, video techniques, and data issued from fisheries –either commercial or experimental surveys). The studies undertaken ranged from meta-analysis of bibliographic as well as raw data, to field works (both observational and experimental), going through ecological investigations using relatively novel techniques (e.g. stable isotopes).

Further from the well known positive effects of MPAs on protected populations (of exploited species, but also of other groups as marine birds) and habitats (namely those formed by fragile benthic species), during the meeting participants focused on the interest of designing MPA networks from a multi-scale perspective, due to the large variability in home range, site fidelity, migratory habits and habitat use of species concerned. In this sense, large MPAs are those offering greater warranties of success, although in particular cases it would be more interesting to propose networks of smaller (< 2000 ha) MPAs, provided that the spatial distribution of habitats is well known. Another recurrent idea is that the recovery of harvested populations is more a question of decades than years. Special emphasis has been placed on the complex effects of protection, such as spillover, indirect trophic consequences, or the implications of MPAs for the fecundity and reproductive success of populations. Several interventions showed up the difficulties to detect ecological effects of protection when some fishing pressure exists in the protected area (e.g. buffer zones), since the spatial distribution of fishing effort within MPA limits introduces biases in the observations. This is one of the reasons to advocate multidisciplinary approaches when surveying the effectiveness of MPAs

## Theme 2: "MPA effects on fisheries and other uses"

The communications presented in this section were mostly based on field surveys by questionnaires and interviews to stakeholders (namely fishermen and the tourism sector), or from landings and other commercial fishing data. Also, bio-economic modelling has been used. The influence of data quality for measuring MPA performance and suitability was raised.

Several strong ideas emerged from the interventions. Firstly, researchers have stressed the interest of MPAs for the development of fisheries; but, on the other hand, the need to complement MPAs with other fishing regulation tools has been recurrently argued. Secondly, it appears very important to achieve a true integration of conservation of fishing resources and protection of biodiversity. Some papers addressed the interest of environmental measures (such as Natura 2000 network) to reach fisheries goals. Also, fishery-habitat value of particular ecosystems (e.g. *Posidonia oceanica* beds, cold water corals) has been emphasized. The importance of emergent sectors related to MPAs, such as recreational uses, was also repeatedly invoked. In particular, recreational fishing was cited as a major and still neglected sector in terms of economic importance, but also as a significant source of impact on marine resources. Finally, some papers highlighted the need to adapt the MPA concept to developing countries.

## Theme 3: "Assessing MPA performance: monitoring, models and indicators"

The methods developed by the studies integrated in this section included direct count techniques (visual census, video, etc.), analysis of meta-data (meta-analysis, data mining), modelling tools of very different nature (e.g. bio-economic, population dynamics, hydrographical, tropho-dynamics, eco-genetic), more conceptual methodologies (e.g. GOIS –Goals, Objectives, Indices and Status, EF – Evaluation Frame), and methodologies based on interviews and expert panels (DSS –Decision Support Systems, Delphic methods).

The existence of gaps in knowledge to fully understand the functioning of MPAs has been highlighted. Some authors stressed the importance of evaluating the performance of MPAs relative to the prevailing environmental regime, especially in cases where harvested populations live at the border of their geographical distribution. These environmental factors include the characteristics of habitat (at the appropriate spatial scale) and its ecological role in key processes for the success of MPAs in terms of design and monitoring, such as feeding, reproduction, recruitment, and spillover of exploited species. Also, the need to consider multiple biological attributes of species (in particular larval dispersion and connectivity patterns) has been underlined for the correct design of MPAs. Importantly, authors advocated for having an evolutionary perspective (i.e. considering the genetic response of species to fishing pressure) when implementing management strategies. The importance of simulating and forecasting future scenarios has been emphasized by several papers. A suite of papers treated about the importance of incorporating stakeholders willing in MPA design and networking, moreover if we consider the likely discrepancies between managers, stakeholders and scientists regarding management goals, design, and monitoring indicators to be adopted.

#### Theme 4: "Tools for MPAs planning and design"

A number of papers presented under this title were global or regional revisions of the present situation of MPAs (based either on original data or on literature reviews). On the other hand, diverse techniques have been proposed for MPA planning and design, such as those establishing the optimal surface of MPAs by estimating the home range and connectivity patterns of key species (using different methods, such as acoustic tracking, tagging, otolith shape and microchemistry). Some papers reported the results of habitat mapping studies (using ROV or video and taking advantage of GIS systems). Some papers dealt with DSS, and presented the outputs of using modelling tools (e.g. MARXAN).

The need to address strategic MPA planning, i.e. selecting sites to be protected in order to have a representative network of MPAs has probably been the most recurring idea during the sessions. Furthermore, the importance to develop management plans in conjunction with local stakeholders (including conservationists) was also emphasized. In this sense, two approaches have been used (and, in some case, confronted): low-tech, expert opinion- & local knowledge-based (Delphic) vs. high-tech (e.g. habitat mapping using GIS, MARXAN, modelling, geostatistics), DSS-assisted methodologies, the latter being much more demanding of high-quality empirical data.

In this section, it was highlighted the need of systematic surveys of marine biodiversity, mostly in under-represented regions and ecosystems (e.g. deepwater canyons and seamounts, nursery habitats, *Lophelia* areas). Also, some papers dealt with marine species not harvested, but affected by spatial protection measures (e.g. cetaceans, sea turtles, marine birds). Other problems approached have been the incorporation of the risk of catastrophic events (such as those linked to climate change) into MPA planning and networking, and the need of incorporating natural variability and spatial aspects of assemblage structure into decision-making process of MPA design.

#### Theme 5: "Science, management and stakeholders"

The works presented were mainly based on interviews, questionnaires and public participation systems. In addition, more automated management procedures have been explained, together with conceptual models such as DPSIR.

The key issue has probably been "public participation". Not only delegates emphasized the importance of establishing fluid ways of communication and information to stakeholders, but moreover they highlighted the need for implementing adaptive management schemes, by the bottom-up involvement of stakeholders in all phases of MPA planning, instauration, and monitoring. During the meeting, some actors explicitly asserting their claim to participate in the MPA process were NGOs, fishermen, tourism representatives, and (paradoxically) scientists. Scientists claimed for being increasingly involved in the decisions about site selection and MPA-zoning and networking, but also in the design of performance indicators and monitoring / assessment plans. Also, the institutional and management aspects were putted forward into the MPA-

implementation practice, besides bio-physical and socio-economic sciences. As examples of this, some participants defended the use of pragmatic criteria –such as enforcement considerations, when designing MPAs, while others highlighted the importance of assessing the actual effectiveness of MPA management (further from ecological or uses-related aspects).

Further aspects of MPA approached during the oral communications were MPAs as management tool to address conflicts among users, and the interest of transboundary MPAs.

Special emphasis was done on the future perspectives of the MPA tool, in combination with the fisheries-oriented EA (ecosystem approach) and the environment policy. Some authors defended the need of protecting a very significant part of the marine areas (up to at least 40% globally) within MPA networks, bearing the 2012 target in mind. MPAs have been proposed as a paradigm towards the development of a true Oceans Policy, based on the interdisciplinary spatial planning, as well as the ecosystem-based management of both the littoral areas and the high seas.

## **Roundtables**

As mentioned above, the last day of the Symposium was devoted to hold two roundtables intending to dynamize a discussion at plenary session about the main questions tackled during the communications in parallel sessions. In the following paragraphs, a summary of the main ideas emerging from such discussions is presented.

### **Session A: MPAs for ecosystem conservation and fisheries management: a search for common ground**

The first strong idea in this session was that MPAs constitute a priority for the European administrations. EC representatives emphasized that Common Fisheries Policy (hereafter CFP) is increasingly incorporating environmental concerns. Moreover, the need for a narrower collaboration and coordination between Environment and Fisheries managers (at regional, national and European levels) was underlined. It is to be stressed, however, that most examples of such an integrative perspective refer only to Nordic seas, and not so much in the Mediterranean or Central-Eastern Atlantic archipelagos. On the other hand, the existence of unresolved questions and gaps in knowledge, at both the scientific and management spheres, constitutes a true obstacle to the advance of this integration between environmental and fisheries issues.

The interest that MPAs arose to EC was patently obvious by the prominence of this thematic in successive European R&D Framework Programmes (FM). Amongst those already developed within 4 and 5FPs it is worth mentioning the EC projects ECOMARE, BIOMEX, BEMMFISH, COST-IMPACT, RESPONSE, ETHOFISH, OGAMP, EDFAM, VALFEZ, etc. Within the 6FP, the research projects EMPAFISH and PROTECT (co-organizers of this symposium) are giving promising results, which are surely providing useful conclusions to future European policies. Within the ongoing 7FP the EC is intending to fill the gaps of knowledge about the functioning of MPAs, as those interestingly conveyed during this meeting. Multidisciplinary approaches have emerged as the best way to tackle the MPA problem.

Some voices warned against an excessive emphasis on purely scientific issues (reductionist, long-term, with an important part of uncertainty), in opposition to more pragmatic approaches, possibly further adapted to local realities (i.e. to the need to conserve not only resources, but also the living conditions and the culture of coastal communities). To this end, an approach to the "MPA problem" from the social sciences came out as an essential concern.

Although diverse strategies are possible for engaging a dialog between the two approaches emphasized in this symposium ("conservation of fishing resources" vs. "ecosystem protection"), a critical agreement emerged about the need to reach such a close consensus at larger geographical scales beyond the MPA limits, to expand to a wider area as well as to the high sea. Furthermore, the necessity to be much more ambitious when stating the goals and objectives of fisheries conservation was raised, because of the highly degraded state of harvested marine populations and ecosystems.

Several comments in the room considered that international commitments regarding marine conservation (Johannesburg, objectives by 2012, etc.) will be hardly attained by the EU, given the current levels of achievement by member states. Most participants were critics but optimistic regarding our capability to fill the cumulated delay, bearing in mind, however, that rush is not a good allied for the development of a coherent conservation policy.

The importance of multidisciplinary perspective to MPA research and development was recurrently stressed by participants, together with the difficulties preventing to accomplish this approach. Practical questions (time, money) were put forward, but a key issue raised was the large gap existing between the unrealistic time frames asked by donors and managers in the planning process (linked to the short-term of science-funding schemes), and the scientists' inclination to think in the long-term. Rapprochement of both sides requires managers planning more in the long-term (i.e. territory and strategic integral management), and scientists thinking more in the short-term (i.e. giving answers to managers even if they have no absolute sureness on their conclusions). Some delegates mentioned aspects linked to the human dimension of research, with deep historical and even psychological aspects carrying weight on the manner research is performed, and therefore on the acceptance to bring gaps between disciplines. EU research funding-system is probably more advanced than other regions to allow multidisciplinary schemes. But yet a multiplicity of organisms and institutions exist that, having the same objectives and even methodologies, demonstrate a surprising lack of interaction and exchange.

The EU has to face the difficulty to correctly harmonise the conservation objectives of member states, as well as the different sector policies at both national and EU levels. The capacity of CFP alone to solve the problem of fisheries conservation was called into question. Not at all times (or not everywhere) fisheries and environmental objectives can be compatible, as it is not always possible to reconcile spatial measures of protection (MPAs) with more traditional fisheries management measures (such as seasonal closures, quotas or limiting fishing effort); thereby it is inevitable that one aspect overcome the other in each case. One example of that is Natura 2000 network, which has nothing to do with harvested populations, but rather with habitats and endangered species (i.e. a marine area integrating this network might give up productive facets to reach



biodiversity protection goals). Thus, this network would be to a certain extent complementary to other management measures more specific to fisheries. On the other hand, in certain large-scale closure areas (e.g. Faeroe Islands, George Bank) environmental objectives are played down in favour of fisheries purposes, even though they can harbour habitats of special interest, such as deep white corals.

In view of this panorama, perhaps it is necessary to assign persons (or field of expertise) to serve as links amongst disciplines (scientific, technical, social) and productive / administrative sectors, given the reductionist way to face the problems by the different parts.

***Session B: What are the key costs and benefits policy makers and stakeholders want to understand and evaluate before they can make decisions about implementing MPAs?***

This roundtable begun with some key questions related to the management of MPAs: How to resolve complex conflicting issues amongst the diverse stakeholder sectors converging in MPAs? What are the costs of incorporating opinions and needs of stakeholders in the different stages of MPA implementation? How effectively do we balance the views of local and remote stakeholders? How much consideration is there of non-use values (e.g. existence, bequest) compared with use-values (e.g. production and consumption values including fisheries, diving, angling, ecotourism)? How do we effectively manage uncertainty and connect higher-level goals, such as ecologically sustainable development, to day-to-day management decisions? From the point of view of stakeholders, is it fair to establish MPAs on the basis of probability and uncertainty?

Some key ideas discussed turned around the agreement mechanisms between fisheries and environmental administrations to implement MPAs, this concurrence being a prerequisite to adequately handle new MPA projects. This was so much the case that the EC indicated the interest to establish pre-agreements between administrations at all management scales (from local to European).

The application of science (their objectives, methods, results and achievements) to MPAs has to go through two premises. Firstly, scientist must be aware of the present limitations of science, in terms of gaps in knowledge (to be necessarily filled), thus establishing priority operational objectives for the next years, to be turned into management measures readily applicable. Secondly, incorporating stakeholder groups into the MPA process pose the need of pragmatic considerations (e.g. opportunity reasons, or the importance of adequately taking enforcement into consideration) to be made compatible with present and future scientific knowledge. But such pragmatism should not be taken to the extreme case of ignoring the results of scientific research. Science, as the crucial support to management, should be considered as the guarantee of MPA success. In this sense, MPAs constitute true scientific experiments at the ecosystem scale, and hence the privileged scenario for the advancement of knowledge to drive the solution to the present fisheries and environmental crisis.



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Programme



**Murcia, 25-28 September 2007**

The *European Symposium on Marine Protected Areas as a Tool for Fisheries Management and Ecosystem Conservation. Emerging science and interdisciplinary approaches* has been organized by the projects, supported by the Commission of the European Communities within the Sixth Framework Programme, EMPAFISH (SSP8-006539) and PROTECT (SSP8-CT-2004-513670). The views expressed in this event do not necessarily reflect those of EC or anticipates the Commission's future policy in the area.

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and



Technical University of Denmark  
 Danish Institute for Fisheries Research



# **EUROPEAN SYMPOSIUM ON MPAs AS A TOOL FOR FISHERIES MANAGEMENT & ECOSYSTEM CONSERVATION**

## **Emerging science and interdisciplinary approaches**

Murcia, 25-28 September 2007

The Symposium has sought to integrate ecological, economic and social aspects of MPAs development, and to facilitate interactive scientific, management and policy discussion, covering the following themes:

- Theme 1: Ecological effects of MPAs
  - MPAs effects on marine species and habitats
  - Biological and ecological processes and interactions
  - Spatial distribution of life-stages and implications for MPAs
- Theme 2: MPAs effects on fisheries and other uses
  - Economic and bioeconomic effects of MPAs
  - Impact of MPAs on uses, including fishing effort relocation
  - Tourism, recreation and MPAs
- Theme 3: Assessing MPAs performance: monitoring, models and indicators
  - Defining management objectives and criteria
  - Construction of indicators
  - MPAs monitoring strategies
  - Integration of multiple criteria
  - Modelling MPAs effects
- Theme 4: Tools for MPAs planning and design
  - Marine spatial planning and zoning approaches
  - Mapping of habitats, species and fisheries
  - Coherent MPAs network
  - MPAs and migratory species
- Theme 5: Science, Management and Stakeholders
  - Cross-sectorial and transnational MPAs planning
  - Law, enforcement and compliance
  - Participatory mechanisms in MPAs planning
  - Future priorities in MPAs development

Scientific contributions have been received from all over the world and delegates come from more than fifty different countries. We are sure that this will be an unequalled occasion for the interchange of knowledge and the interaction between all the professionals, scientist, stakeholders and managers that are working in Marine Protected Areas.

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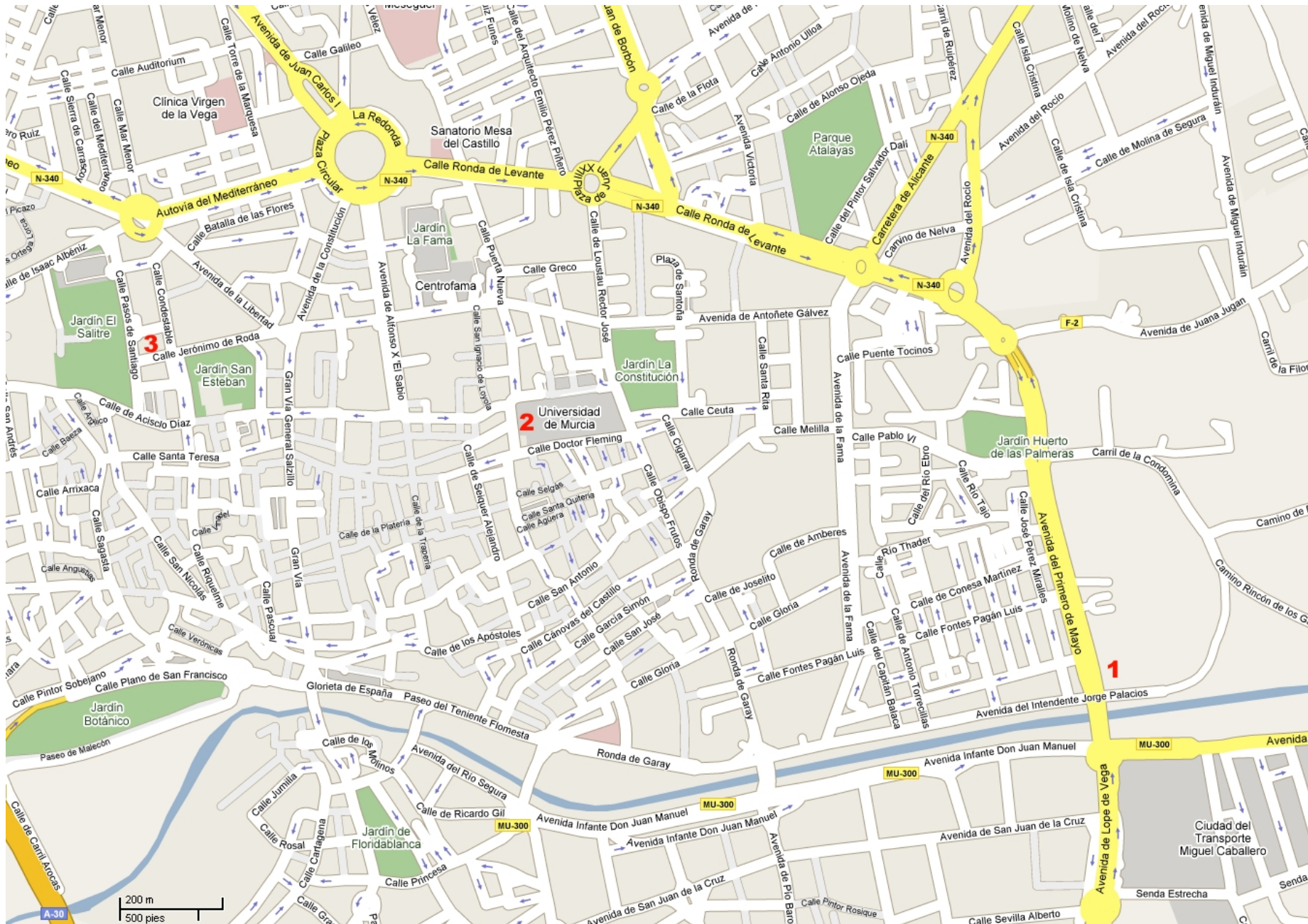


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- Fritz Köster, Danish Institute for Fisheries Research, Denmark
- Gerd Kraus, IFM-GEOMAR, Germany
- Jan Helge Fosså, Institute for Marine Research, Bergen, Norway
- Jean Boncoeur, University of Western Brittany, France
- Jesper L. Andersen, FOI, Denmark
- John Pinnegar, Centre for Environment, Fisheries & Aquaculture Science CEFAS, Lowestoft Laboratory, UK
- José J. Pascual, University of La Laguna, Spain
- Just Bayle Sempere, University of Alicante, Spain
- Lisandro Benedetti-Cecchi, University of Pisa, Italy
- Mark Mellet, Naval Service, Ireland
- Melanie Austen, Plymouth Marine Laboratory, UK
- Ole Vestergaard, Danish Institute for Fisheries Research, Denmark
- Paolo Domenici, Instituto dell'Ambiente Marino Costiero – Oristano, Italy
- Ricardo Serrao Santos, Instituto do Mar IMAR, Portugal
- Serge Planes, Centre National de la Recherche Scientifique CNRS, France

Keynote speakers:

- Anthony Charles, Saint Mary's University, Halifax, Nova Scotia, Canada
- Simon Jennings, Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory, Lowestoft, United Kingdom
- Peter J.S. Jones, Dept. of Geography, University College of London, London, United Kingdom
- Steve Murawski, National Marine Fisheries Service, Silver Spring, Maryland, USA
- Callum M. Roberts, Environment Department, University of York, York, United Kingdom



1 Auditorium and Congress Center; 2 Welcome reception (University of Murcia); 3 Symposium dinner (Hotel NH Amistad)



18:00				
18:15				
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19:45	SYMPOSIUM DINNER**			
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The Venue for the Symposium (poster sessions, oral presentations and round-tables) is the Auditorium “Victor Villegas” (Rooms 1, 2 and 3) (Number 1 in the map)

Room 4 will show a variety of films regarding MPAs during Tuesday, Wednesday and Thursday

\*The welcome reception will be held at the University of Murcia, in the Cloister of the Faculty of Law (“Claustro de la Facultad de Derecho”) (Number 2 in the map)

\*\*Symposium dinner will be celebrated at Hotel “NH Amistad” in the town center (Number 3 in the map)





# PROGRAMME

Tuesday, 25<sup>th</sup>

8:00-9:30 REGISTRATION

9:30-10:15 OFFICIAL WELCOME

10:15-11:00 KEYNOTE / ROOM 1

## When do protected areas help to achieve management objectives for the marine environment?

Dr. Simon Jennings

11:00-11:30 COFFEE BREAK

11:30-13:30 ORAL PRESENTATIONS / ROOM 1

Theme 3 “Assessing MPAs performance: monitoring, models and indicators”

Chairman: Dr. John Pinnegar

- 11:30 - **Assessing the appropriateness of measures used to manage cold-water coral protected areas.** Anthony J. Grehan, J. Pinnegar, J-H. Fossa, P. Nilsson, C. Armstrong, M. Mellett & D. Pelletier
- 11:50 - **Defining indicators to assess the effects of protection in MPAs.** Just T. Bayle-Sempere, Celia Ojeda-Martínez, Fuensanta Salas, Pablo Sánchez-Jerez, Ángel Pérez-Ruzafa, José A. García-Charton, Francisca Giménez-Casaldueiro, Concepción Marcos, Carlos Valle-Pérez, Aitor Forcada-Almarcha, Carmen Barberá-Cebriá, Serge Planes, Ricardo Serrão Santos, Renato Chemello, Jesús M. Falcón & Pablo Martín-Sosa
- 12:10 - **Spatial and temporal distribution of spawning Baltic cod: Implication for fisheries closures.** Gerd Kraus, Jonna Tomkiewicz, Friedrich Köster & Hjalte Parner
- 12:30 - **Spatially resolved fish population analysis for designing of MPAs.** Asbjørn Christensen, Henrik Jensen & Henrik Mosegaard
- 12:50 - **An Individual Based Model of North Sea Plaice and Marine Protected Areas.** Charlotte Deerenberg, Niels Daan, Willem Dekker, Frank Storbeck & Bert Brinkman
- 13:10 - **Can marine protected areas alter the evolutionary impacts of fishing in a migratory species?** Erin S. Dunlop, Marissa L. Baskett, Mikko Heino & Ulf Dieckmann

11:30-13:30 ORAL PRESENTATIONS / ROOM 2

Theme 1 “Ecological effects of MPAs”

Chairman: Dr. Indrani Lutchman

- 11:30 - **Fish movements, essential-habitat mapping and the design of MPA networks for multispecies fisheries management.** Pedro Afonso, Gui Menezes, Jorge Fontes, Kim Holland, Mário R. Pinho & Ricardo S. Santos
- 11:50 - **Regional ecological effects of European marine protected areas: a meta-analytical approach.** Joachim Claudet, Pedro Afonso-Santos, Fabio Badalamenti, Just Bayle-Sempere, Lisandro Benedetti-Cecchi, Iacopo Bertocci, Joseph A. Borg, Alberto Brito, Fabio Bulleri, Jean-Michel Culioli, Giovanni De Falco, Andrea De Lucia,

Mark Dimech, Paolo Domenici, Jesús M. Falcón, Aitor Forcada-Almarcha, José A. García-Charton, Raquel Goñi, Ivan Guala, Concepción Marcos, Marco Milazzo, Celia Ojeda, Craig W. Osenberg, Ángel Pérez-Ruzafa, Julio Sánchez-Meca, Pablo Sánchez-Jerez, Patrick J. Schembri, Paul J. Somerfield, Ben Stobart, Carlos Valle, Frédéric Vandeperre & Serge Planes

- 12:10 - **Evidence of top-down role of predators in structuring sublittoral reef communities in a marine protected area and nearby areas of the Canary Islands.** Sabrina Clemente, José Carlos Hernández, Adriana Rodríguez, Dominique Girard & Alberto Brito
- 12:30 - **Traditional fisheries of the Azorean limpet *Patella aspera*: Spatial and Temporal Analysis and MPA effects on Natural Populations.** Rodrigo Filipe Delgado, Rogério Ferraz, Gui Menezes & Ricardo Serrão Santos
- 12:50 - **The biodiversity and fishery benefits of spatial management in a *Nephrops norvegicus* fishery in western Scotland, UK: an opportunistic study of an incidental no-take zone.** David Donnan, Jim Atkinson, Philip Smith & Tom Stevenson
- 13:10 - **Fishery closures – a means for awaking the spirit of the declining fisheries in Lake Vättern?** Alfred Sandström, Thomas Axenrot, Eva Bergstrand, Anton Hallden, Mikael Johansson, Johnny Norrgård, Per Nyberg, Stefan Sjögren & Märten Åström

#### 11:30-13:30 ORAL PRESENTATIONS / ROOM 3

Theme 2 “MPAs effects on fisheries and other uses”

Chairman: Dr. Claire Armstrong

- 11:30 - **Assessing the Impact of MPAs on Recreational Uses of a Marine Ecosystem: the Case of the “Côte Bleue” Marine Park (France).** Frédérique Alban, Laurence Le Diréach, Antony Doré, Hélène Oblin, Jeremy Person, Nicolas Roncin & Jean Boncoeur
- 11:50 - **Do local fishermen benefit from the presence of Marine Protected Areas? A multicase evaluation.** G. Cadiou, P. Lenfant, P. Bonhomme, D. Álvarez-Berastegui, A. Forcada, C. Valle, G. Criquet, S. Polti, O. Reñones, J.L. Sánchez-Lizaso, J.A. García-Charton, A. Pérez-Ruzafa, P. Martín & R. Goñi
- 12:10 - **Natura 2000 sites and Fisheries in German Offshore Waters.** Søren Anker Pedersen, Heino Fock, Anne Sell, Uwe Böttcher, Gerjan Piet, Craig Mills, Stuart Rogers, Mattias Sköld, Magdalena Podolska, Henrik Skov, Christian Pusch, Jochen Krause & Jake Rice
- 12:30 - **The production function approach – estimating linkages between *Lophelia* and redfish on the Norwegian coast.** Naomi Foley, Viktoria Kahui & Claire W. Armstrong
- 12:50 - **Using MPA’s to conserve groundfish biodiversity: the consequences of using flawed data.** Helen M. Fraser, Simon P.R. Greenstreet & Gerjan J. Piet
- 13:10 - **Using MPAs to address global scale ecological objectives in the North Sea: modelling the effects of fishing effort displacement.** Simon P.R. Greenstreet, Helen M. Fraser & Gerjan J. Piet

#### 13:30-14:30 LUNCH

#### 14:30-16:30 ORAL PRESENTATIONS / ROOM 1

Theme 4 “Tools for MPAs planning and design”

Chairman: Dr. Per Nilsson

- 14:30 - **Current challenges towards a network of representative marine protected areas in the Mediterranean: a need to prioritize the protection of underrepresented habitats.** Ameer Abdulla, Tundi Agardy, David Hyrenbach & Giuseppe Notarbartolo-di-Sciara

- 14:50 - **Site Selection Methodologies for Mediterranean MPAs.** Tundi Agardy
- 15:10 - **Assessing Ecological Coherence of MPA Networks: three approaches being developed within OSPAR.** Jeff Ardron & Henning von Nordheim
- 15:30 - **Implications of spatial and environmental processes for the design and management of marine protected areas.** Lisandro Benedetti-Cecchi, Stefano Vaselli, Elena Maggi, Fabio Bulleri, Iacopo Bertocci, Laura Tamburello & David Balata
- 15:50 - **The stakeholders vs. the algorithm in marine protected area design: a comparison of stakeholder proposals and reserve selection software results.** Carissa Klein, Charles Steinback & Hugh Possingham
- 16:10 - **Developing a decision support tool for European MPAs as tools for fisheries management and conservation.** Stephen Mangi, Melanie Austen & Nicola Beaumont

#### 14:30-16:30 ORAL PRESENTATIONS / ROOM 2

Theme 1 “Ecological effects of MPAs”  
Chairman: Dr. Fabio Badalamenti

- 14:30 - **Batch fecundity of *Lutjanus carponotatus* (Lutjanidae) and implications of no-take marine reserves on the Great Barrier Reef, Australia.** Richard Evans, Jake Kritzer & Garry Russ
- 14:50 - **Effects of protection on fisheries: an experimental approach.** A. Forcada, P. Bonhomme, G. Criquet, C. Valle, G. Cadiou, P. Lenfant & J.L. Sánchez-Lizaso
- 15:10 - **An Exception that Proves the Rule: Steeper Size Spectra in a Sicilian Trawl Exclusion.** Christopher J. Sweeting, Fabio Badalamenti, Giovanni D'Anna, Carlo Pipitone & Nicholas V.C. Polunin
- 15:30 - **Long-term inter-annual variability of a Mediterranean rocky reef fish assemblage in relation with protection and habitat: influence of analytical, taxonomical and spatial scale of study.** José A. García-Charton & Ángel Pérez-Ruzafa
- 15:50 - **Biological effects of no-take marine reserves in temperate and tropical systems: synthesizing and communicating the science of marine reserves.** Kirsten Grorud-Colvert, Sarah Lester, Jane Lubchenco, Benjamin Halpern, Satie Aïramé, Steven Gaines, Benjamin Ruttenberg, Robert Warner & Brooke Simler Smith

#### 14:30-16:30 ORAL PRESENTATIONS / ROOM 3

Theme 5 “Science, Management and Stakeholders”  
Chairman: Dr. Anthony Grehan

- 14:30 - **The politicization of scientific information in MPA processes: Lessons learned from a controversial public policy process in California.** Adina Abeles
- 14:50 - **MPA and Fisheries Management: An integrated approach from the perspective of the FAO.** Alexis Bensch, Kevern Cochrane, Dominique Gréboval & Jessica Sanders
- 15:10 - **Mechanisms for system feedback in a participatory adaptive management system: Does feedback inform management objectives?** Natalie Bown, Selina Stead, Tim Gray, Ella Ritchie & Tim Coles
- 15:30 - **Can MPAs and Ecosystem-Based Management Be Effective Without Each Other?: Results from the MPA News Reader Poll.** John B. Davis
- 15:50 - **Managing England’s MPAs more effectively.** Jen Ashworth, Simon Brockington, Kate Bull & Mark Duffy
- 16:10 - **Involving scientists and managers for designing operational tools and indicators for assessing the performance of coastal Marine Protected Areas.** D. Pelletier, J. Ferraris, F. Alban, B. Beliaeff, J. Boncoeur, J. Claudet, J.M. Culioli, G. David, B. Ferrari, R. Galzin, I. Jollit, P. Lenfant, P. Le Nilot, M.

**16:30-17:00 COFFE BREAK**

**17:00-18:00 ORAL PRESENTATIONS / ROOM 1**

Theme 4 “Tools for MPAs planning and design”

Chairman: Dr. Giuseppe Notarbartolo di Sciara

17:00 - **Designing Australia’s deepwater MPA network – lessons from the first regional implementation.** Nicholas Bax, Alan Williams, Rudy Kloser, Franzis Althaus, Bruce Barker & Gordon Keith

17:20 - **Addressing the practicalities and problems of incorporating planning tools into sound marine decision-making.** Jeff Ardron & Michele Patterson

17:40 - **Which marine areas are worth protecting? Using GIS modelling to identify essential fish habitats.** Ulf Bergström, Alfred Sandström & Göran Sundblad

**17:00-18:00 ORAL PRESENTATIONS / ROOM 2**

Theme 2 “MPAs effects on fisheries and other uses”

Chairman: Dr. Paloma Martín

17:00 - **Investigating the impact of MPA on the Bay of Biscay Anchovy fishery.** Sigrid Lehuta, Stéphanie Mahévas, Pierre Petitgas & Martin Huret

17:20 - **Impacts of the implementation of the Arrábida MPA (Portugal) in local fisheries and fishermen community.** Marisa I. Batista, Filipa Baeta & Henrique N. Cabral

17:40 - **Elaborating reliable quantitative diagnostics of the impact of Marine Protected Areas on fisheries using ISIS-Fish.** Stéphanie Mahévas & Dominique Pelletier

**17:00-18:00 ORAL PRESENTATIONS / ROOM 3**

Theme 5 “Science, Management and Stakeholders”

Chairman: Dr. Mark Mellet

17:00 - **Managing protected areas from your desk: Marine Protected Areas in offshore Nova Scotia, Canada.** Derek G. Fenton, P. Macnab, G. Herbert, J. Black, D. Broughton & B. Branton

17:20 - **Can the concept of MPAs be used as management tools in possible conflicts between the fishing and the petroleum industries?** Lars Føyn, Inger Oline Røsvik & Gunnar Hognestad

17:40 - **Transboundary Marine Protected Areas: from theory to practice.** Catarina Grilo, Raquel Ribeiro & José Guerreiro

Wednesday, 26<sup>th</sup>

9:00-9:45 KEYNOTE PRESENTATION / ROOM 1

**Arguments for conventional fisheries management and against no-take marine protected areas: only half of the story?**

Dr. Peter J.S. Jones

9:45-11:05 ORAL PRESENTATIONS / ROOM 1

Theme 4 “Tools for MPAs planning and design”

Chairman: Dr. Charles F. Boudouresque

9:45 - **Defining MPAs for cetaceans impacted by fisheries and other threats.** Ana Cañadas & Philip Hammond

10:05 - **An Ecosystem Evaluation Framework for Seamount Ecology, Fisheries and Conservation.** Tony J. Pitcher, Telmo Morato, Paul J.B. Hart, Malcolm R. Clark, Nigel Haggan & Ricardo S. Santos

10:25 - **Movement of Temperate Reef Fishes: From Individual Behavior to MPA Design.** Jan Freiwald

10:45 - **Planning for persistence in marine reserves: a question of catastrophic importance.** Edward T. Game, Eve McDonald-Madden, Matthew E. Watts, Scott Wooldridge & Hugh P. Possingham

9:45-11:05 ORAL PRESENTATIONS / ROOM 2

Theme 1 “Ecological effects of MPAs”

Chairman: Dr. Serge Planes

9:45 - **Gradients of fish biomass across marine reserve boundaries: a case study of 6 Mediterranean MPAs.** Mireille Harmelin-Vivien, Laurence Le Diréach, Just Bayle-Sempere, Eric Charbonnel, José A. García-Charton, Denis Ody, Ángel Pérez-Ruzafa, Olga Reñones, Pablo Sánchez-Jerez & Carlos Valle

10:05 - **Long-term survey of the dusky grouper (*Epinephelus marginatus*) population in Port-Cros national Park (France, Mediterranean).** Jean-Georges Harmelin, Philippe Robert, Michel Cantou & Mireille Harmelin-Vivien

10:25 - **Spillover and Larval Export: Fantasy or an Effective Tool for Fisheries Management?** Dennis Heinemann

10:45 - **Fisheries effects of Atlanto-Mediterranean marine protected areas.** Ruth M. Higgins, Frédéric Vandeperre, Ángel Pérez-Ruzafa, Julio Sánchez-Meca, Iacopo Bertocci, Romain Crec'hriou, Geraldine Criquet, Giovanni D'Anna, Mark Dimech, Carmelo Dorta, Óscar Esparza, Jesús M. Falcón, Aitor Forcada, Raquel Goñi, Ivan Guala, Laurence LeDiréach, Philippe Lenfant, Ignacio Lozano, Concepción Marcos, Paloma Martín, Pablo Martín-Sosa, Francesc Maynou, Celia Ojeda-Martínez, Carlo Pipitone, José Luis Sánchez-Lisazo, Patrick J. Schembri, Vanessa Stelzenmüller, Ben Stobart, Carlos Valle & Ricardo Serrão Santos

9:45-11:05 ORAL PRESENTATIONS / ROOM 3

Theme 3 “Assessing MPAs performance: monitoring, models and indicators”

Chairman: Dr. Renato Chemello

9:45 - **A simulation model to investigate alternative experimental closure designs and its application to the South African demersal fishery.** Charles T.T. Edwards, Rebecca Rademeyer & Éva Plagányi

- 10:05 - **Spatial simulations of fishery management scenarios of East China Sea.** Hong Jiang, He-Qin Cheng, Hai-Gen Xu, Jun Wu, Hui Ding, Will Le Quesne & Francisco Arreguín-Sánchez
- 10:25 - **Considering multiple species attributes to improve the understanding of ecological and fisheries-related effects of MPA on fish assemblages.** B. Preuss, D. Pelletier, J. Ferraris, L. Wantiez, Y. Letourneur, S. Sarraména, M. Kulbicki & R. Galzin
- 10:45 - **Identification of Baltic cod nursery grounds as potential Marine Protected Areas using hydrodynamic modelling.** Hans-Harald Hinrichsen & Gerd Kraus

11:00-11:30 COFFEE BREAK

11:30-13:30 ORAL PRESENTATIONS / ROOM 1

Theme 4 “Tools for MPAs planning and design”

Chairman: Dr. Jan Helge Fosså

- 11:30 - **Use of ROV data for modelling the spatial distribution of benthic habitats in a Swedish fjord.** Genoveva Gonzalez Mirelis, Mats Lindegarth, Tomas Lundälv & Lisbeth Jonsson
- 11:50 - **Marine Protected Areas on Rockall; finding suitable areas to conserve *Lophelia* habitat in the absence of a comprehensive biological survey.** Jason Hall-Spencer, Mark Tasker, Sabine Christiansen, Stuart Rogers & Kjartan Hoydal
- 12:10 - **A geostatistical approach for the identification of MPAs for fishery management in the central Mediterranean Sea.** G. Jona Lasinio, F. Colloca, L. Maiorano, V. Bartolino, A. Abella, A. Mannini, P. Sartor, B. Reale, G. Relini & G. Ardizzone
- 12:30 - **Evidence of fish movements between a marine reserve and two unprotected reefs in a fragmented habitat in New Caledonia, as determined by acoustic telemetry.** Olivier Chateau & Laurent Wantiez
- 12:50 - **A Global Best Practice Delivery Model for Achieving Comprehensive Marine Protected Areas Networks: A case study on Canada’s Pacific Coast.** Sabine Jessen & Michele Patterson
- 13:10 - **Defining Coastal Representative Areas – a Pre-condition for MPA selection.** Shannon O’Connor, Michelle Greenlaw & John Roff

11:30-13:30 ORAL PRESENTATIONS / ROOM 2

Theme 5 “Science, Management and Stakeholders”

Chairman: Dr. Ronan Long

- 11:30- **Marine reserves: The critical element of an ecosystem approach to marine management and conservation.** Paul Johnston, Reyes Tirado & David Santillo
- 11:50 - **Socio-cultural hurdles and opportunities related to no-take marine protected areas.** Peter J.S. Jones
- 12:10 - **Lessons Learned: Stakeholder Involvement in the Development of Marine Protected Areas in California.** Susan Ashcraft, Jason Vasques, Melissa Miller-Henson & John Ugoretz
- 12:30 - **The need for integration of EU legislation towards EU meeting the target of a network of MPAs by 2012.** Indrani Lutchman
- 12:50 - **Using Marine Protected Areas within an Ecosystem Based Governance regime as a paradigm for the development of an Oceans Policy.** Mark Mellett

**11:30-13:30 ORAL PRESENTATIONS / ROOM 3**

Theme 3 “Assessing MPAs performance: monitoring, models and indicators”

Chairman: Dr. Dominique Pelletier

- 11:30 - **A bioeconomic model of habitat-fisheries linkages.** Viktoria Kahui & Claire Armstrong
- 11:50 - **A model-based evaluation of the performance of Marine Protected Areas as a fishery management measure for a stock facing strong environmental variability - the example of Eastern Baltic cod (*Gadus morhua callarias*).** Gerd Kraus, Dominique Pelletier, Julien Dubreuil, Christian Moellmann, Hans-Harald Hinrichsen & Youen Vermad
- 12:10 - **The use of marine protected areas as part of ecosystem based management in Namibia.** Sheila J.J. Heymans
- 12:30 - **Managing mobile species with MPAs; the interaction between mobility and fishing mortality.** Will Le Quesne & Ed Codling
- 12:50 - **Are bad MPAs any good, or just a new way of making old mistakes?** Will Le Quesne
- 13:10 - **Understanding the trophic effects of fishing: what can stable isotope and fatty acid analysis tell us?** Michaela A. Guest, Peter D. Nichols & Stewart D. Frusher

**13:30-14:30 LUNCH**

**14:30-15:30 POSTER SESSIONS**

**15:30-16:15 KEYNOTE PRESENTATION / ROOM 1**

**Lessons from the past for marine conservation and management in Europe**

Dr. Callum M. Roberts

**16:15-16:45 COFFEE BREAK**

**16:45-18:05 ORAL PRESENTATIONS / ROOM 1**

Theme 1 “Ecological effects of MPAs”

Chairman: Dr. Mireille Harmelin-Vivien

- 16:45 - **Assessment of biomass export from marine protected areas and its impacts on fisheries in the western Mediterranean Sea.** Serge Planes, Laurence Le Direach, Mireille Harmelin-Vivien, Ángel Pérez-Ruzafa, Ana Sabatés, José Luis Sánchez-Lizaso, Raquel Goñi, Bret Danilowicz, Denis Ody & Julien Mader
- 17:05 - **Ecological and fisheries effects of the Lundy No-Take Zone (Bristol Channel, UK).** Miles Hoskin, Chris Davis, Ross Coleman & Keith Hiscock
- 17:25 - **A comparative analysis of the demersal fish community in three protected areas and adjacent fishing grounds off the north and northeast coast of Iceland.** Andrzej Jaworski, Jon Solmundsson & Stefan A. Ragnarsson
- 17:45 - **Fishery prospection surveys to estimate abundance and size structure trends of the fishery resources of the southwestern coast of La Palma (Canary Islands, Atlantic Ocean) after the implementation of a marine reserve.** Pablo Martín-Sosa, Sergio Cansado, M.A.R. Fernández & Jesús M. Falcón



**16:45-18:05 ORAL PRESENTATIONS / ROOM 2**

Theme 4 “Tools for MPAs planning and design”

Chairman: Dr. Ulf Bergstrøm

16:45 - **Identification and characterisation of winter spawning grounds in the Eastern English Channel and southern North Sea.** S. Vaz, S. Lelièvre, C. Martin & Y. Verin

17:05 - **Environmental parameters and data from fisheries observers programs help defining important bird areas (IBAs) in the Azores archipelago.** Patrícia Amorim, Miguel Machete, Miguel Figueiredo, Ana Martins & Ricardo Serrão Santos

17:25 - **Marine Important Bird Areas (IBAs): towards the effective protection of seabirds at sea.** José Manuel Arcos, Iván Ramírez, Patricia Amorim, Juan Bécares, Pedro Geraldes, Ana Meirinho, Vitor Paiva, Beneharo Rodríguez, Asunción Ruiz, Carlota Viada & David Hyrenbach

**16:45-18:05 ORAL PRESENTATIONS / ROOM 3**

Theme 2 “MPAs effects on fisheries and other uses”

Chairman: Dr. Dennis Heinemann

16:45 - **The management of artisanal and recreational fishing within the Port-Cros National Park: a success story.** Gwenaél Cadiou, Charles F. Boudouresque, Patrick Bonhomme & Laurence Le Diréach

17:05 - **The Case for Marine Protected Areas in the Adriatic Region.** Anamarija Frankić & Richard Kenchington

17:25 - **Spanish marine reserves aiming fisheries: a model for the future.** Silvia Revenga

17:45 - **Marine Protected Areas (MPAs) as tools for fisheries management: myth or reality? The case of West Africa.** Philippe Tous, Lionel Kinadjian & Luis Tito de Morais

Thursday, 27th

9:00-9:45 KEYNOTE PRESENTATION / ROOM 1

**Matching the Hammer to the Nail: Research Questions Underpinning the Success of MPAs**

Dr. Steve Murawski

9:45-11:05 ORAL PRESENTATIONS / ROOM 1

Theme 2 “MPAs effects on fisheries and other uses”

Chairman: Dr. Ricardo Serrão Santos

9:45 - **Seasonally rotating marine protected areas: Protection of marine species and habitats afforded by artisanal fisheries adapting to species biological and ecological patterns (Cala Rajada, NE Mallorca, Balearic Islands).** Sandra Mallol & Raquel Goñi

10:05 - **The potential opportunities and constraints of MPAs for angling.** O.A.L. Paramor, R.E. Blyth-Skyrme & C.L.J. Frid

10:25 - **Marine reserves, recreative fishing and tourism: a case study from the Canary Islands (Spain).** José J. Pascual-Fernández, Raquel de la Cruz Modino, Pablo Martín-Sosa, Sergio Cansado & Agustín Santana-Talavera

10:45 - **Fishing effort and catches in the partially protected areas of the Marine Protected Area of Scandola and adjacent areas (Corsica, Mediterranean).** Laurence Le Diréach, Gwenaél Cadiou & Charles F. Boudouresque

9:45-11:05 ORAL PRESENTATIONS / ROOM 2

Theme 1 “Ecological effects of MPAs”

Chairman: Dr. Fritz Köster

9:45 - **Conceptual model related with effects, necessities and actions of Marine Protected Areas: a DPSIR approach (applied to Tabarca MPA).** Celia Ojeda-Martínez, Francisca Giménez-Casalduero, Just Bayle-Sempere, Carmen Barberá-Cebrián, Pablo Sánchez-Jerez, Carlos Valle-Pérez, Jose Luis Sánchez-Lizaso & Aitor Forcada-Almarcha

10:05 - **Role of marine protected areas for conserving benthic communities and habitat features: Two case studies from Icelandic waters.** Stefán Á. Ragnarsson, Jón Sólmundsson & Andrzej Jaworski

10:25 - **Is the recent Cap Roux marine protected area (France, NW Mediterranean) an efficient tool to sustain professional fisheries?** Catherine Seytre & Patrice Francour

10:45 - **Effects of the North Sea sandeel closure on breeding seabirds.** Francis Daunt, Morten Frederiksen, Simon Greenstreet, Matt Parsons, Henrik Jensen, Keith C. Hamer & Sarah Wanless

9:45-11:05 ORAL PRESENTATIONS / ROOM 3

Theme 4 “Tools for MPAs planning and design”

Chairman: Dr. Leonardo Tunesi

9:45 - **Geospatial Decision Support Tools for Planning of Marine Protected Areas in California.** Will McClintock, Matthew Merrifield & Paulo Serpa

10:05 - **Developing best practice for using Marxan to locate MPAs in European waters.** Robert Smith, Paul Eastwood & Stuart Rogers

- 10:25 - **Indicating the vulnerability of fish nursery habitats to recreational fishing in an archipelago region, N Baltic Sea.** Martin Snickars, Timo Pitkänen, Göran Sundblad, Ulf Bergström & Jan Ekeboom
- 10:45 - **Site designation of marine protected areas in the Eastern Baltic Sea – „Pape” example.** Solvita Strake, Vadim Jermakov, Baerbel Müller-Karulis, Atis Minde & Mikus Ranka

11:00-11:30 COFFEE BREAK

11:30-13:30 ORAL PRESENTATIONS / ROOM 1

Theme 4 “Tools for MPAs planning and design”  
Chairman: Dr. Giovanni de Falco

- 11:30 - **Mapping benthic habitat sensitivity to fishing as a tool for MPA management.** Odette Paramor, Karen Hall, Leonie Robinson, Clare Eno, Kirsty Dornie, Rowland Sharp, Gabrielle Wyn, Karen Robinson, Stephen Lockwood & Chris Frid
- 11:50 - **MPA – a new regulatory tool in fisheries management?** Egil Lekven & Thorbjørn Thorvik
- 12:10 - **Spatial data management in multi-objective MPA zoning.** Leonardo Tunesi, Sabrina Agnesi, Taira Di Nora & Giulia Mo
- 12:30 - **The sensitivity of benthic habitats to human activities; using spatial data in MPA planning and design.** Leonie Robinson, Stuart Rogers, Paul Eastwood, Craig Mills & Paul Gilliland
- 12:50 - **Biodiversity conservation and sustainable natural resource management in the marine and coastal zones: tools for planning and design.** Matthew Watts, Ian Ball, Romola Stewart, Carissa Klein, Charles Steinback, & Hugh Possingham
- 13:10 - **Comparative spatial scaling in cod and haddock populations; implications to MPAs.** P.J. Wright, D. Tobin, F.C. Neat, F.M. Gibb & I.M. Gibb

11:30-13:30 ORAL PRESENTATIONS / ROOM 2

Theme 5 “Science, Management and Stakeholders”  
Chairman: Dr. Tundi Agardy

- 11:30 - **Control considerations while defining a Marine Protected Area.** S. Monteiro & X.Vazquez
- 11:50 - **A DPSIR framework for evaluating indicators in Canary Islands marine reserves (subtropical MPAs): a governability perspective.** José J. Pascual-Fernández, Jesús M. Falcón, Pablo Martín-Sosa, Alberto Brito, Carmelo Dorta, Sergio Cansado, Raquel de la Cruz Modino, Emese Szeliánszky, Karyn N. Rodrigues-Henriques & Agustín Santana-Talavera
- 12:10 - **Making Ecosystem-Based Management a Reality: The Role of Marine Spatial Planning and Ocean Zoning for Effective Marine Protected Area Management.** Fanny Douvère & Charles N. Ehler
- 12:30 - **Fishers’ attitudes and perceptions towards closed areas as a management tool: do perceptions change for areas created with different purposes?** Cristina Pita, Graham Pierce & Ioannis Theodossiou
- 12.50 - **Where to for MPAs in the UK? Assessing the management of MPAs in the UK in a global context.** Tim Stevens, Peter J.S. Jones, Kerry Howell, Laurence Mee & Jen Ashworth

### 11:30-13:30 ORAL PRESENTATIONS / ROOM 3

Theme 3 “Assessing MPAs performance: monitoring, models and indicators”

Chairman: Dr. Gerd Kraus

- 11:30 - **Marine reserves to counter the evolutionary effect of size-selective fishing.** Tanja Miethe
- 11:50 - **Simulating a MPA as a strategy for ecosystem-based fishery management of the red grouper in the Campeche Bank, Mexico.** Manuel J. Zetina Rejón, Francisco Arreguín-Sánchez, V. Cruz-Escalona, M. Albañez-Lucero, Jorge A. López-Rocha & César López-Ferreira
- 12:10 - **A bioeconomic approach to assess the design and impacts of small size marine protected areas using the ISIS-Fish model: the case of *Solea vulgaris* and *Lithognathus mormyrus* artisanal fisheries in Garraf (Spain, NW Mediterranean).** Nicolas Pascal, Francesc Maynou, Dominique Pelletier & Jocelyne Ferraris
- 12:30 - **Video-based observation techniques for monitoring fish and habitat in Marine Protected Areas.** D. Pelletier, P. Chabanet, K. Leleu, T. Langlois, G. Hervé & N. Guillemot
- 12:50 - **An individual-based, multispecies model as a tool for exploring spatial management options.** Ewen D. Bell, Julia L. Blanchard, Steve Mackinson & John K. Pinnegar
- 13:10 - **An Evaluation of Existing and Proposed MPAs in the North Sea using Ecospace.** John K. Pinnegar, Georgi M. Daskalov & Steve Mackinson

### 13:30-14:30 LUNCH

### 14:30-15:30 POSTER SESSIONS

### 15:30-16:15 KEYNOTE PRESENTATION / ROOM 1

#### Human Dimensions of Marine Protected Areas

Dr. Anthony Charles

### 16:15-16:45 COFFEE BREAK

### 16:45-18:05 ORAL PRESENTATIONS / ROOM 1

Theme 2 “MPAs effects on fisheries and other uses”

Chairman: Dr. Jean Boncoeur

- 16:45 - **Extractive and Non-Extractive Uses of MPAs in Southern Europe: a Comparative Analysis of Socioeconomic Field Surveys.** Nicolas Roncin, Frédérique Alban, Jeremy Person, Jean Boncoeur, Concepción Marcos, Laurence Le Direach, Romain Chrec'hriou, Francesc Maynou, Ben Stobart, Ivan Guala, Jean-Michel Culioli, Beatriz Luna, Carlos Valle, Raquel de la Cruz Modino, Emese Szeliánszky, Ruth Higgins, Philip Smith, Mark Dimech & Stefano Vaselli
- 17:05 - **Moving Beyond Marine Protected Areas and Input Controls to Protect Fishing Stocks on the High Seas.** Benjamin K. Sovacool & Kelly E. Siman
- 17:25 - **Spatial assessment of fishing effort around European marine reserves: Implications for a successful fisheries management.** Vanessa Stelzenmüller, Francesc Maynou, Gwenaél Cadiou, Matthew Camilleri, Romain Crech'riou, Géraldine Criquet, Marc Dimech, Laurence Le Direach, Óscar Esparza, Philippe Lenfant, Ángel Pérez-Ruzafa & Ricardo Santos

16:45-18:05 ORAL PRESENTATIONS / ROOM 2

Theme 5 “Science, Management and Stakeholders”

Chairman: Dr. Melanie Austen

16:45 - **A Question of Compliance? Adopting a Socio-Ecological Approach to Evaluate the Success of the San Salvador MPA, the Philippines.**

Peter D. Chaniotis, Selina M. Stead & Patrick Christie

17:05 - **Role of participation in managing the interactions between environment and fisheries – a review.** Riku Varjopuro

17:25 - **An Evolving Protocol to Identify Key Stakeholder Influenced Indicators of Coastal Change: The Case of Marine Protected Areas.** Prassede

Vella, Robert E. Bowen & Anamarija Frankic

16:45-18:05 ORAL PRESENTATIONS / ROOM 3

Theme 3 “Assessing MPAs performance: monitoring, models and indicators”

Chairman: Dr. Manuel Zetina-Rejón

16.45 - **Delphos reserves: a method and software to design and evaluate community networks of marine protected areas.** Andrea Sáenz-

Arroyo, Luis Bourillón & Jorge Torre

17:05 - **Evaluation frame for MPA and closed seasons applied to Baltic cod.**

Rasmus Nielsen, Bo Sølvgaard Andersen & Per Sparre

17:25 - **The next step for MPAs: Assessing the future of co-management on San Salvador Island, Philippines.** Hannah M. Bodley, Jeremy Hills & Alan T.

White

Friday, 28th

Two round-table discussions will be held in plenary to discuss new research findings and provide perspectives on future practices and policies for MPAs, bringing together researchers, managers and representatives from a range of marine sectors, interest groups and organisations.

9:00-10:30 SCIENCE-POLICY ROUND-TABLE – SESSION A / ROOM 1

MPAs for ecosystem conservation and fisheries management – a search for common ground

10:30-11:00 COFFEE BREAK

11:00-12:30 SCIENCE-POLICY ROUND-TABLE – SESSION B / ROOM 1

What are the key costs and benefits policy makers and stakeholders might consider in the MPA decision making process?

12:30-13:00 CLOSURE

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Commercial fisheries in and around six Western Mediterranean marine protected areas D. Álvarez-Berastegui, O. Reñones, A. Forcada, G. Cadiou, G. Criquet, S. Polti, P. Lenfant, C. Valle, J.L. Sánchez-Lizaso, P. Martín, P. Bonhomme, M. Valls, Guillaume Bernard, J.A. García-Charton, A. Pérez-Ruzafa & R. Goñi .....	P42
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Callum	Roberts	University of York	United Kingdom
Leonie	Robinson	University of Liverpool	United Kingdom
Stuart	Rogers	CEFAS	United Kingdom
Robert	Smith	Durrell Institute of Conservation and Ecology	United Kingdom
Tim	Stevens	University of Plymouth	United Kingdom
Katharine	Tanner	RSPB BirdLife International	United Kingdom
Chris	West	University of York	United Kingdom
Carole	White	UNEP-WCMC	United Kingdom
Peter	Wright	FRS Marine Laboratory	United Kingdom
Adina	Abeles	COMPASS and Hopkins Marine Station - Stanford University	USA
Tundi	Agardy	Sound Seas	USA
Susan	Ashcraft	California Department of Fish and Game	USA
Cassandra	Barnes	National Oceanic and Atmospheric Administration	USA
John	Davies	MPA News	USA
Verna	DeLauer	University of New Hampshire	USA
Anamarija	Frankic	UMASS Boston	USA
Jan	Freiwald	University of California Santa Cruz	USA
Kirsten	Gorud-Colvert	Oregon State University	USA
Dennis	Heinemann	The Ocean Conservancy	USA
Jose Carlos	Hernandez	Villanova University	USA

Name	Surname	Institution	Country
David	Hyrenbach	Duke University	USA
Christopher	LaFranchi	National Marine Sanctuary Program	USA
William	McClintock	University of California Santa Barbara	USA
Steve	Murawski	NOAA Fisheries	USA
Jean-Luc	Solandt	Marine Conservation Society	USA
Benjamin	Sovacool	Virginia Tech	USA
Charles	Steinback	Ecotrust	USA
Michael	Valentine	Resources Law Group	USA
Jason	Vasques	California Department of Fish and Game	USA
Prassede	Vella	University of Massachusetts Boston	USA

### Summary of participants by country

Country	Number of participants
Spain	111
United Kingdom	54
Italy	41
France	26
Denmark	21
USA	21
Portugal	20
Sweden	14
Norway	13
Belgium	12
Australia	9
Canada	8
Netherlands	6
Finland	5
Germany	4
Ireland	4
Malta	4
Mexico	4
New Caledonia	4
China	2
Estonia	2
Iceland	2
Croatia	1
Cuba	1
Greece	1
Latvia	1
New Zealand	1
Romania	1
Samoa	1
Senegal	1
South Africa	1
Switzerland	1
<b>TOTAL</b>	<b>397</b>



Cloister at the Faculty of Law of the University of Murcia, during the official reception.





Symposium moments during the parallel sessions.



Symposium moments during the parallel sessions.



Coffee-break.





Symposium participants during the breaks inside and outside of the Auditorium.





Symposium moments in the Room 1.



Drs. Steve Murawski (NMFS, Maryland, EE.UU.) (above) y Callum M. Roberts (Universidad de York, Reino Unido) (below), during their dissertations.





Round Table-Session B “What are the key costs and benefits policy makers and stakeholders want to understand and evaluate before they can make decisions about implementing MPAs?”.





Symposium participants