Fishing Governance in MPAs: Potentialities for Blue Economy

Designing new models of governance of MPAs with artisanal fisheries

WITH THE FINACIAL SUPPORT OF:
FISHING GOVERNANCE IN MPAs: POTENTIALITIES FOR BLUE ECONOMY (FISHMPABLUE)

DESIGNING NEW MODELS OF GOVERNANCE OF MPAs WITH ARTISANAL FISHERIES
Main Author(s):

Alain Jeudy de Grissac, IUCN Center for Mediterranean Cooperation
Maria del Mar Otero, IUCN Center for Mediterranean Cooperation
Antonio Di Franco, ECOMERS laboratory, Nice-Sophia Antipolis University
Patrice Francour, ECOMERS laboratory, Nice-Sophia Antipolis University
Paolo Guidetti, ECOMERS laboratory, Nice-Sophia Antipolis University
Luca Santarosa, Fedeparchi
Susana Sainz Trapaga, WWF Mediterranean Programme


This work was part of the “Fishing governance in MPAs: potentialities for Blue Economy (FishMPABlue) project”. 1M-MED14-06. Financial assistance: European Territorial Cooperation Programme “MED” 2007-2013 and MAVA

Citation: Jeudy de Grissac, et al. 2015. Designing new models of governance of MPAs with artisanal fisheries. FISHING GOVERNANCE IN MPAS: POTENTIALITIES FOR BLUE ECONOMY (FISHMPABLUE). 25pp.
Glossary of terms

**Actors (often called stakeholders):** Rightholders and people from wider society, non-governmental organisations, user groups, regulatory agencies, corporate interests, etc. potentially interacting with each other in governance processes.

**Artisanal fisheries (also known as small scale fisheries):** Following FAO definition, typically traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amount of capital, relatively small fishing vessels, making short fishing trips, close to shore, mainly for local consumption. In practice, definition varies between countries, e.g. from hand-collection on the beach or a one-person canoe in poor developing countries, to more than 20 m. trawlers, seiners, or long-liners over 20m in developed countries. Artisanal fisheries can be subsistence or commercial fisheries, providing for local consumption or export. In general, though by no means always, artisanal fishers are using relatively low level technology.

**Collaborative management (Co-management):** There is no single globally accepted definition of co-management. Here, it is refer to a suite of arrangements with different degrees of power sharing allowing joint decision-making by the state and user groups about a set of resources or an area (Gutiérrez, 2014).

**Collaborative governance** is one form of shared governance in which decision-making authority and responsibility rest with one agency but the agency is required, by law or policy, to inform or consult other right-holders and stakeholders, at the time of planning or implementing initiatives (Borrini-Feyerabend et al., 2013).

**Co-managed Protected Area:** Government-designated protected area where decision making power, responsibility and account ability are shared between governmental agencies and other stakeholders, which includes indigenous peoples and local and mobile communities that depend on that area culturally and/or for their livelihoods.

**Decentralisation:** the transfer of power and authority from the central government to lower-level governments, quasi-independent government organisations or the private sector. According to Rondinelli (2000) and Oxhorn (2004), there are different types and levels of decentralisation that allocate varying degrees and forms of autonomy to subnational governments, quasi-independent government organisations or the private sector:

- De-concentration - the transfer of power for implementing decisions, but not for making decisions;
- Delegation - transfer of some decision-making authority with a degree of control from the central government over key aspects of policy; and
- Devolution - the transfer of maximum feasible but not necessarily total decision-making powers.

**Effectiveness:** the degree to which the management objectives of a MPA are being fulfilled, particularly with regard to biodiversity and sustainable resource use.

**Fisheries Restricted Area (FRA)** as endorsed by the GFCM on the basis of a SAC formulation which stipulates that a FRA is a geographically defined area in which all or certain fishing activities are temporarily or permanently banned or restricted in order to improve the exploitation and conservation of harvested living aquatic resources or the protection of marine ecosystems

**Fisheries management:** The integrated process of information gathering, analysis, planning, consultation, decision-making, allocation of resources and formulation and implementation, with enforcement as necessary, of regulations or rules which govern fisheries activities in order to ensure the continued productivity of the resources and the accomplishment of other fisheries objectives (FAO,1997).

**Incentive:** a particular institution that is instrumentally designed to encourage actors to choose to behave in a manner that provides for certain strategic policy outcomes, particularly biodiversity conservation objectives, to be fulfilled.
**Institution:** very broad term covering a wide range of agreements, interactions, etc., which remains relatively stable over a certain period of time, including:
- Mutually agreed modes of cooperative behaviour (norms);
- Interactions through markets: local – distant;
- Government policies and programmes; and
- Legal instruments and related obligations.

**Marine governance:** Marine governance is the sharing of policy making competencies in a system of negotiation between nested governmental institutions at several levels (international, (supra)national, regional and local) on the one hand and governmental actors, market parties and civil society organizations on the other in order to govern activities at sea and their consequences (Van Tatenhove, 2011).

**Marine Protected Area (MPA) or Protected Area (PA):** a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (Dudley, 2008; Day et al., 2012).

**Marine spatial planning:** is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that usually have been specified through a political process. Characteristics of marine spatial planning include ecosystem-based, area-based, integrated, adaptive, strategic and participatory. Marine spatial planning is not an end in itself, but a practical way to create and establish a more rational use of marine space and the interactions between its uses, to balance demands for development with the need to protect the environment, and to achieve social and economic objectives in an open and planned way (Ehler and Douvère, 2009).

**Recreational or sport fishery:** all non-commercial fishing that is carried out mainly for pleasure or sport, where the catch - the selling of which is illegal - is used for one’s own consumption (or for one’s family and friends) (Font et al., 2012). The FAO definition clarify that recreational fishing is fishing of aquatic animals (mainly fish) that do not constitute the individual’s primary resource to meet basic nutritional needs and are not generally sold or otherwise traded on export, domestic or black markets. (http://www.fao.org/docrep/016/i2708e/i2708e00.pdf)

**Subsistence fishery:** Subsistence fishing refers to fishing, other than sport fishing, that is carried out primarily to feed the family and relatives of the person doing the fishing. Generally it also implies the use of low tech “artisanal” fishing techniques and is carried out by people who are very poor. Quite often this fishing is part of a life that also relies on small-scale agriculture and other sources of income, and may include some sale of fish.

**Territorial use rights in fisheries (TURF):** A spatial user right that may be assigned to individuals and/or groups to fish in certain locations, often historically based on long-standing tradition.
MPA and artisanal fisheries, the process of good governance

Marine protected areas (MPAs) constitute an important instrument in the coastal-marine governance of the world. In the Mediterranean, the majority of them are situated within the territorial sea or the Exclusive Economic Zone (EEZ), and consequently, within areas subject to the national jurisdiction.

Ensuring their effective management requires good governance and an ecosystem framework approach integrating the fisheries sector. From a governance point of view, different approaches to MPAs can be recognized from the country case-studies in the Mediterranean (see Project Report 3.1), particularly the allocation of authority and responsibilities between different institutions and actors. The different approaches in governance are heavily influenced by the objectives of the MPAs and particular socio-political (national and/or the European Commission), culture, and socio-economic context and legal frameworks of the sites and the country. In most countries, the conservation strategy in coastal or marine protected areas is mostly defined in a top-down perspective. The decision making and the management strategy is centralized by the government with partial or limited participation of local communities that are surrounding the area.

Even so, there are examples in the Mediterranean where the processes involved in both the creation and governance of MPAs has been developed by local communities’ initiatives and move towards different types of shared governance and co-management arrangements later on (although not always successfully).

Fisheries governance is also highly centralized. The declaration of fisheries reserves, fisheries protected areas or marine reserves of fishing interest have been some of the spatial explicit management tools taken by different states and in some cases, local fishers communities, to preserve and enhance harvested resources, and further to protect vulnerable marine habitats from the effects of fishing. Moreover, in this type of approach, it is well established that measures that reduce fishing capacity and effort or give preferential access to gears with lower ecosystem impacts are likely to produce biodiversity benefits (Rice et al., 2012). Although driven by different objectives, the commonalities of both “conservation” and “fisheries” sector approaches can provide an opportunity for MPAs and Fisheries Management bodies to identify potential areas of collaboration to enhance their management efforts and perhaps establish partnerships agreements. Within an integrated spatial planning, these coordinated efforts should help towards ecosystem based management.

In improving the effectiveness of MPAs, solutions are likely to be found in all type of governance systems and in the way that each MPA interact with their ecological, social and political environment. However, key attributes have been identified as crucial to maximize chances of success (see project results 4.1; Tempesta and Otero, 2013; Borrini-Feyerablen et al. 2013).

Mediterranean MPAs are intended to conserve marine environments (preserving endangered species, biodiversity and habitats), and often also provide for sustainable use of resources (Gabrié et al., 2012). As defined by IUCN-WCPA guidelines (2008), MPAs can offer a spectrum of management strategies ranging from full protection, or no-entry areas, to multiple-use areas which prohibit or limited activities (Day et al., 2012. While multiple-use MPA zoning, include no-take areas and provides a way to accommodate multiple users, balancing the trade-offs between sustainable use and conservation objectives for effective management; no-take MPAs are spatial closures that prohibit all forms of resource extraction, including fishing. Likewise, there is also MPAs with mixed harvest or restricted harvest prohibition areas.

In the Mediterranean, MPAs usually include one or more no-take marine reserves surrounded by ‘buffer zones’, where fishing is restricted compared with adjacent fished areas. In fact, there are
many MPAs that allow certain degree of fishing, diving, boating and other recreational and commercial uses according to a diverse management zonation system. Industrial and recreational fisheries are usually banned and only artisanal fisheries are permitted because these are frequently considered as a potentially sustainable activity and therefore compatible with the conservation objectives of MPAs. Nevertheless there are exceptions where recreational fishing is allowed while not permitting artisanal or industrial fishing activities (Gabrié et al., 2012). These types of artisanal fisheries have also great social and economic significance and their overall importance can be seen through few compiling reviews and new studies (see e.g. Weigel et al., 2014; Bernett and Dearden, 2014; Di Franco et al., 2014; Cazalet, 2013). Even though artisanal fisheries comprises potentially the most environmentally sustainable fishing techniques that should be compatible with the conservation objectives of the MPAs, a caution approach also needs to be taken as research findings also highlight the impact that they might have on the sensitive stages in the life cycle of certain coastal fish species (Lloret et al., 2012).

Successful MPA management therefore depends largely on effectively managing human activities within the MPA. Nonetheless they cannot be managed in isolation and the connections and interactions with the surrounding environment, communities and different institutions and stakeholders can significantly affect their effectiveness. They should be thought of as one important management strategy within a larger area-wide coastal and fisheries management framework, showing the importance of marine spatial planning at a wider scale.

Fisheries, for example, could benefit from having a source of fish spilling over from protected areas as long as such areas are truly enforced and include actual commercial fish spawning grounds (McClanahan and Mangi, 2000). The results from this spill-over have been demonstrated in MPAs and fisheries reserves around the Mediterranean and elsewhere (i.e. Di Franco et al., 2014; Sala et al., 2013; Goñi et al., 2010). As a result, it increases fishers’ income and the long-term profitability of fisheries.

A MPA however might not enhance fisheries catches around it because its size is too small, it is not adequate design to improve commercial fisheries catch or it is wrongly located. Poor enforcement, limited stakeholder consultation and empowerment together with a lack of local benefits often foster conflicts between artisanal fishers and MPA management bodies.

Some traditional fisheries practices such as limited entry to different fishing areas, self-imposed closed seasons, closed areas, and gear restrictions organized by French “prud’homie” or Spanish “cofradias” are clear examples of management measures given by local initiatives to self-regulate their resources. Management and conservation regulations for MPAs that are compatible with such customs are more liable to achieve public acceptance than those that are perceived as unfamiliar (see project country reports).

Good governance is a prerequisite for effective management, and community support is essential to achieve this objective. In the small scale fishermen and Mediterranean marine protected areas meeting organized in Carovigno in 2012, many examples driven by both fishers and managers demonstrated how MPAs can be effective tools for the sustainable management of fishing (Piante, 2012). Incentives and collaborations are needed to overcome the challenges and good practices experimented in MPAs should serve as a model for all artisanal fisheries. Furthermore, the collaboration between MPAs and artisanal fishermen, through innovative activities, can save public financial resources and contribute to the economic sustainability of artisanal fisheries.

The present document is intended to provide a new integrated framework approach as a toolkit to drive effective governance of MPAs with artisanal fisheries. It draws from these experiences and the discussions provided at different forums on the relationships between artisanal fisheries and MPAs (GFCM Small scale fisheries symposium 2013, Carovigno meeting on MPAs, Piante 2012) and at the
FishMPABlue project meetings with the participation of the partners and the advisory group\(^1\). Moreover, it is based on the country case study findings (Croatia, France, Greece, Italy and Spain), of the present project (Project reports 3.1. an 4.1.) and the general practices at the global and Mediterranean levels for the governance of MPAs involving artisanal fisheries with a specific focus on different Mediterranean countries.

It also takes into consideration:

- The ‘ecosystem approach’ (EcA) process developed by the Barcelona Convention (UNEP/MAP)
- Fisheries and MPAs projects and initiatives experiences developed jointly or individually by different organisations such as GFCM, IUCN, MedPAN, WWF, RAC/SPA and many Mediterranean MPA and Fisheries Management Bodies.
- The recent evolution of the Common Fisheries Policy of the European Commission to include and empower stakeholders for increased responsibility and co-management (Regulation EU No 1380/2013)
- IUCN management categories of marine protected areas (Day et al., 2012)
- The principles for good governance in the context of protected areas (Dudley, 2008) – legitimacy, transparency, accountability, inclusiveness, fairness, direction, performance, human rights, subsidiarity, and “don't harm” principle so Protected Areas (PA) don't create or aggravate poverty and vulnerability.

The future field implementation of the framework with case studies will help testing its applicability and fine tuning from lessons learned on its implementation.

The recommendations made herein also have implications for MPA creation and management in Mediterranean developing and developed countries.

---

\(^1\) Advisory Group members are the following bodies: MedPAN secretary, GFCM, MedWet, RAC/SPA, ISPRA, Marine Stewardship Council, MedArtNet Association.
Implementing a Framework/toolkit

Planning process prior to MPA declaration

The design of a MPA encompasses many considerations, including social, economic, legal and ecological, which collectively contribute to management decisions and implementation. Guidance from IUCN-WCPA (2008, and Day et al., 2012) and Kelleher (1999) as well as works such as those by RAC/SPA (López Ornat, 2006) provides a detailed account on the preliminary steps, guiding principles and planning for the identification of potential MPAs. Planning process for a new MPA must focus on identification, analysis, harmonization, and communication of clear and well-defined objectives among all stakeholders.

In general, there are multiple actors that will be positively or negatively be affected by the establishment of a new MPA in a given area and the potential conflicts and solutions are closely related to their perception of how any future MPA would looks like in terms of restrictions and opportunities. Thus, it is important to analyze the compatibility between the objectives of a future MPA and the interests of the different stakeholders, especially those that can conflict with resource use and conservation objectives. In this regard, and particularly in the context of fisheries management, artisanal fishermen will be among the principal stakeholders to consult (besides other resource users of the area, see project results 2.3). Fishermen have traditional knowledge about resource dynamics and ecosystems that will be important to determine levels of sustainable use. Integrating their views (and validate their information) with the scientific information into the decision making process for the design of a MPA and the regulatory measures to put forward, including design a monitoring and data collection programme, can make that future management measures are more applicable and effective as well as motivating more fishermen on their compliance.

Proper MPAs may need to maximize protection for ecologically critical areas and substantial buffer zones where to allocate different users that might also benefit from the spill-over effects of certain commercial species within the non-take zones. As habitat requirements might change during species life cycles, the zonation of MPAs needs to include actual fish spawning or shelter grounds and to be able to adapt to future changes of these important areas.

Considering initiatives from local communities with or without association of scientists and NGOs or initiatives led by government bodies, stakeholders’ views have always to be taken into consideration by means of consultations (enquiries, workshops, meetings, etc.) from the beginning of the planning process, in order to design proper, manageable and legally controllable boundaries, to define proper management measures, and to raise awareness and education.

Conflicts can be minimized by ensuring a balanced representation from stakeholder groups and by increasing communication. The lack of proper consultation can create a very hostile climate with fishers communities and other stakeholders (see i.e. project country reports 4.1). It is also crucial that appropriate consultations (or at least permanent exchange of information) with the Fisheries government management body at local and/or national level is established from the very beginning of the process and initial agreements or alliances for the management and outreach to other fisher’s stakeholders such as those from industrial fisheries are sought.

Agreements on the framework for management targets (limits, etc.), the types of information that all stakeholders will have available about potential impacts of MPAs on biodiversity and fisheries and the process for handling uncertainty in both analyses and the future planning, have also been suggested to be present in the objective-setting part of the planning process (Rice et al., 2012).
In the reality, between the creation of a MPA and the time gap until there are certain benefits for fisheries including recovery, alternative arrangements and partnerships will be needed to reduce the original fishing effort in the area or the immediate loss of fisheries revenue. This includes consideration in the planning stages for alternative sources of revenue or displaced livelihoods and its consequences.

Prior to MPA declaration and for already established MPAs, management has to meet both fisheries and biodiversity objectives

Integrated assessment of the baseline situation

Following FAO guidelines to work with the artisanal fisheries, another important aspect in these initial stages, is to develop an integrated assessment and advisory framework (IAA) for small scale fisheries management that takes into account an ecosystem approach (García et al., 2008). The IAA framework developed on this context by FAO is intended to allow a better understanding on artisanal fisheries ecological, economic, social, and technological dimensions and contribute to decision making.

Given the heterogeneous nature of small-scale fisheries that exploit multiple species, the scoping phase of this assessment (see Garcia, 2008 for further details), as a first step, aims to gather all relevant information on the fishery (landings, employment, gears, markets, conflicts, including recent and future trends), the key local authorities, the threats (internal or external drivers) and the impacts of the fisheries into the habitats and species. Based on this preliminary assessment, the opportunities and constraints for artisanal fisheries will be analyzed considering the development of a MPA and mitigation measures will be identified. The evaluation framework should be developed
within and beyond the MPA boundaries using also scenario planning to simulate future conditions with or without the MPA.

The assessment *a posteriori* should be carried out to identify the existing visions among stakeholders, look for common points and ascertain the likely magnitude of the possible imposed measures that helps to then determine priorities and options in order to mitigate the overall impacts on the artisanal fisheries sector.

The following phase aims to produce an advice regarding the small fisheries sustainability with the results obtained. It requires wider stakeholder participation to account with the interactions between fisheries (social and natural dimensions) and the MPA marine environment and its objectives. In an ultimate phase, depending on the governance structure of the MPA, the assessment and its outcome are evaluated by the decision making body (*i.e.* a PA agency, a PA Advisory Group with other stakeholders, etc.) and a **fisheries management planning** is foreseen, entering into the planning and management cycle for Marine Protected Area (see Box 1, Fig. 1).

**Box 1: The management process: addressing a PA management plan including artisanal fisheries**

IUCN World Commission on Protected Areas (WCPA) has designed a framework to provide guidance in developing assessment systems and to encourage basic standards for assessing and reporting management effectiveness in protected areas (Hockings et al., 2000). The framework is based on six distinct stages or elements, in which management starts with gaining an understanding of the context of existing values and threats in the MPA in order to establish a vision, progresses through planning and allocation of resources (inputs) and, as a result of management actions (processes), produces products and services (outputs) that result in impacts or outcomes (Hockings et al., 2006). Figure 1 presents this common framework within which the evaluation and monitoring of protected area management can be established. To be useful, results and methods need to be communicated in a transparent and accessible way.

![Figure 1: The management process](image)

To have a management plan process successful, it is strongly recommended that a wide range of stakeholders and technical experts (from natural and social sciences) participate in the planning of the MPA. This will further help incorporating perceptions, traditional knowledge related to fisheries trends and impacts and opinions in all stages of the process for implementing the plan. Besides fisheries communities, there will be other participants from affected industries and their respective
sectoral management agencies that should be consulted to develop decisions and continuously learning and adapting the plan.

The allocation of roles and responsibilities in a clear way, negotiation with the stakeholders and use of different incentives as later explained, is difficult but essential in the implementation phase.

Finally, the results from the surveillance and monitoring of fishing activities as well as the status of the ecosystem will also be necessary to evaluate progress, re-set targets and measures as well as examine compliance.

Independent of the MPA governance style, mechanisms for coordinating inter-ministerial/cross-sectoral institutions must exist to promote strong coordination and collaboration among biodiversity and fisheries decision-making levels (and other major industry sectors as well), involving partners, stakeholders and sectors in order to create effective institutional arrangements for planning. To achieve this, legal frameworks could be needed to allow for multi-departments management actions, defining their different mandates, including interagency responsibilities, as well as the roles for communities and stakeholders, and must function at local, national, and international scales.

In Spain for example, an Inter-ministerial Committee on Marine Strategies has being created to coordinate the development, implementation and monitoring of marine planning and the coordination between state and regional administrations. Among its functions is the coordination and cooperation in matters relating to the protection of marine biodiversity, both in terms of species and habitats as well as MPAs. The specific objective within this Committee and its Monitoring Groups to coordinate and monitor fisheries management plans and tools (particularly reserves) and MPAs design and management will be highly beneficial to ensure more efficient management and long term sustainability of initiatives.

Legal frameworks should also recognize community rights in managing resources on which the communities depend. Provision should be made thereafter for regular review of legal and institutional arrangements and management measures for the MPAs.

**MPAs managed primarily by government (state management)**

Governance practices in the Mediterranean region for associating Marine Protected Areas and artisanal fisheries activities are mainly through a state-owned and state-controlled approach type. In most coastal countries, a wide variety of government institutions exist with a vast range of marine-related responsibilities and piecemeal interests. These entities may range from public institutions with responsibilities over living marine resources (for example, fisheries, environment or wildlife) or recreational activities (tourism, sports), to others with mining or energy mandates, or responsibilities related to navigation (ports authorities, shipping), defence and enforcement at sea (coast guard, navy, customs), social affairs (education, culture, disaster preparedness, emergency management) or pollution control (public health, environment agency). Some may also have responsibilities under international or regional conventions.

Almost every government entity in a coastal country, especially at the national level, is likely to have a legal authority and mandate over specific elements of coastal or marine affairs. Many countries of the ones analysed over this project (see project report 3.1) appear to have an un-necessary complex marine/maritime legislation and administrative framework. In most cases, there are diverse institutions with marine interests and activities that have little tradition of coordination or little perceived need to collaborate, particularly where mandates are single-purpose and have developed over time with little direct interaction. Moreover, some mandates are outdated, or overlap, compete or leave gaps and uncertainty as to which administration, agency or institution should take the lead.
In some cases, there is not a single authority responsible for the management of the marine environment inside a MPA.

For multiple departments and levels of government to collaborate in managing MPAs both fisheries and biodiversity conservation objectives will require both a commitment to collaborate and a mandate (e.g. in legislation) to comply. In these situations, the planning process will take considerable time either to reach an accord among sectoral agencies, or to create and agree on the powers given to an agency to undertake the planning. Potential solutions include the setting up of supervisory, advisory or oversight bodies, coordinating commissions, cooperation protocols, joint policy statements, prearranged agreements between various government departments and other stakeholders, or specific MPA authorities (García et al., 2008).

For many countries, there is still need to revise existing legal and institutional frameworks or develop new ones. Cross-sector arrangements between the fisheries and environmental protection departments as well as others and well-defined and clear mandates for each will ensure that multi-use MPAs are implemented more efficiently. Ideally, an agency could have the overall mandate for all the MPAs (including those mostly driven by fisheries management objectives) thus avoiding the overlap among institutions and different departments.

Procedures and mechanisms for conflict resolution should also be established. Towards this aim, spatial management frameworks provide a mechanism for strategic marine management that allows the management of, on one side, the current and potential conflicting uses, and on the other, the cumulative effects of human activities and marine protection. Dispute settlement procedures have also been proposed as part of formal agreements governing MPA administration.

With regard to the local communities, the management of any proposal such as exclusions (i.e. because of harmful impacts to marine resources and ecosystems) that might directly impact some individuals will require a process of consultation and deliberation with actors at different levels, knowledge integration and joint learning in combination with other resolution approaches that could provide for better conditions to reach a compromise and contribute to better informed decision making.

**MPAs managed by the central government with decentralisation to others (regional government, local authorities, and NGOs)**

In decentralized systems, the role of the central administration passes from direction and control to support and facilitation. Regarding the MPAs and its governance in the Mediterranean context, it has evolved into the existence of a wide variety of sub-regional or local government administrations or agencies with a vast range of marine-related responsibilities, each with its own objectives and therefore expectations that usually ends on duplicating or overlapping responsibilities with the central management body. Within this context, MPAs are managed following the existing regulations and partnerships and negotiations between the central and local administrations or entities.

Local governments may also have mechanisms and additional traditional or legal rights and responsibilities for near-shore use and management of both living and non-living marine resources. In few cases, the approach taken by some Mediterranean countries, such as Italy, has been sharing decision making and responsibilities between the central government and NGOs.

For this governance approach, the most critical need is to enhance capacity building and institutional mechanisms for coordination and collaboration in order to reach more effectiveness in the execution of MPA’s objectives at local level. Decentralization of MPAs is increased in effectiveness
through mechanisms of full participation and partnership and improvement of legal, regulatory and financial frameworks to ensure clear division of responsibilities, accountability and transparency.

Cooperative coordination arrangements between MPA and fisheries administrations bodies in the way of formal agreements are essential, for conflict resolution and to reach objectives such as community and stakeholder communication and engagement.

Other incentives needed to improve MPA governance in this type of decentralized governance may possibly be to develop strategic partnerships with key community groups. This might include the strengthening of existing organizations and traditional decision making procedures (such as prud`homic fisheries organizations decision making process in France), the adequate selection of its representatives and the establishment of appropriate mechanisms for the internal flow of information between the representatives and other stakeholders. Strong cooperative partnerships and formal agreements also are needed between the different administrations at local and central levels (as complementary legislation, zoning plans and joint permits), besides others partnerships with stakeholders such as marinas, coastal industries, research institutions and universities.

**MPAs collectively managed with local community participation**

Shared governance and management of a MPA comprising different local communities and administrative regions is a complex issue that needs improvement of the flow and exchange of knowledge and collaboration among stakeholders of different administrative operation levels, between groups and within-groups. In this context, the role of bridging actors (e.g., such as Fisheries Local Action Groups - FLAGs, the prud’homme in France and the cofradias in other places in Spain) in linking disconnected groups of artisanal fisheries will be important. They can promote better organization of small-scale fisheries in MPAs, fostering trust and facilitating collective actions with the administration. The participation of fishermen in the management process can be in advisory roles or through delegation and sharing of power (shared governance).

Fishermen involvement in MPAs should be considered as early as possible and through whole process of identification, design, preparation phase, and implementation of management measures. The implementation of this type of co-management requires adequate institutional structures and processes for stakeholder interaction including the modification of existing regulations if the existing ones do not allow the initiation of this type of process by stakeholders and their participation.

Local community initiated MPA projects should be considered particularly valuable, especially when they built on existing legal or traditional sea tenure rights. Generally, recognizing and strengthen these initiatives for a MPA, facilitates and drives communities to take a leadership role in the planning and management (e.g. Sanders *et al.*, 2013; Arceo *et al.*, 2013; Perez 2013).

Adopting a co-management system for fisheries in a MPA needs to shift from the traditional model of fisheries management based only on scientific inputs. Monitoring and research of commercial species and their habitats, can be carried out in collaboration between fishers, MPA management staff and scientists to gain a more complete understanding of the resource species and its exploitation as well as to bring solutions for the restoration of the fisheries in and outside the area.

A co-management system should develop mechanisms combining the practical knowledge from the fishing community with the knowledge from scientific research and MPA monitoring data, after validation and acceptance by all. Different approaches could then be developed to reflect fishers' knowledge that is supported by scientists.
Considering the development of this different approach, it would be further advisable that the incorporation of artisanal fishermen knowledge and vision in MPAs is taken on some type of formal or informal agreement on management strategies and measures that might also require compromise between the different governance levels (national, regional, local) according to the national specificities and the options offered by the existing legal framework.

Cooperation can also be facilitated by various types of exchange programs including government, industry and community leaders, the Mediterranean Network of MPA Managers (MedPAN), the Mediterranean Platform of Artisanal Fishers (MedArtNet), GFCM, UNEP-MAP-RAC/SPA, MedWet activities as well as other initiatives of different organizations such as IUCN or WWF and universities or institutes.

**MPAs privately managed**

Fishing is a competitive business and in the Mediterranean the different segments of the fishery industry have undergone conflicts over fishing spots for decades. In some areas, small-scale fishers have disputed space with industrial fisheries, in particular trawlers; while in others commercial fishers have violated minimum distances from the coast, invading spots traditionally used by small-scale fishers and reducing their traditional spaces for their activities. Recreational fishing is also on the rise and starts to create stronger competition for the already limited resources adding additional pressure on the fishing of specific species (e.g., the endangered dusky grouper *Epinephelus marginatus*). Examples of these are well reported in Mediterranean MPAs documents (Font et al., 2012).
In this approach, the existing formal (public) MPA system (for environment or for fishery conservation) could be complemented by the development of informal (voluntary and private) MPA and artisanal fisheries system network, and in the future both could merge in one single system based on adaptation of the legislation and cooperation between public and private sectors.

Seafood marketing companies working with artisanal fisheries communities could initiate partnerships to mutually benefit from the establishment of MPAs with no-take zones. Besides, other resources users such as recreational fishing enterprises, diving or boat tourist tours may be willing to participate in the development of a MPA through voluntary/private partnerships. The role of NGOs and scientists in this type of partnership will be viewed also as more legitimate to the rest of the community and increase their capacity to manage sites.

The establishment of territorial rights such as TURF with licenses could also be an initial solution to restrict the fishing efforts of local fishers and could counteract the entrance of new fishers in the MPA if fishing became more profitable. Incentives in the way of promoting the use of more environmentally friendly fishing techniques (Piante, 2012) may even be possible to be implemented in these sites.

Dive operators could also be an important stakeholder group that could drive private initiatives in small MPAs because their economic interest in promoting rich biodiversity. Some examples of good driven management by dive operators are known such as those developed in coral reefs (Groot and Bush, 2010; Colwell et al., 1997). Considering the importance of recreational diving tourism in many Mediterranean MPAs and its recent year’s steady increase, the potential for this type of approach could be considerable. Nonetheless, it would be necessary identifying what forms of control are necessary for this type of MPA to gain legitimacy and function successfully, such as the involvement of different stakeholders, or what form these sites may take under different institutional and geographical settings. Dive operators must balance conservation, economic gains and market competition for clients which might also affect the ultimate decisions regarding their activities. The effects of too many recreational divers could have negative effects, as it has been already observed in some Mediterranean MPAs (e.g., Medes MPA).

The capacity of these initiatives to create durable, institutionalized arrangements without government support is also probably limited and stakeholder investment is a good option to ensure continuity. Some external government oversight on private sector activities should be sought to provide the necessary control, resilience and promote the development and management of these sites. Moreover, it would be necessary to enforce restrictions on resource use (i.e., perhaps through delegation of powers through marine tenure or the right to control resource use) and address resolution conflicts with other stakeholders. It has been reported (e.g. Lopes et al., 2015) that fishers involved with coastal tourism had better incomes than those who engaged only in fisheries and consultations and partnerships approaches towards mutual benefits could be arranged on this matter.

Despite the challenges, specific studies for addressing carrying capacity would be necessary to determine how much fish from the main target species can actually be removed or how many divers should be allowed at what time at the sites.

Other private initiatives aimed to ensure the protection of outstanding natural areas by acquiring marine areas by private-state agreement are still unknown in the Mediterranean. Nevertheless, private driven initiatives although difficult in European countries (due to the existing regulations by both the countries and the European Commission) have seen some comparable approaches recently reported at some regions around coastal areas, wetlands and shallow water sites (see project report 3.1.). Similar examples could be further explored and developed in these and other countries as intermediate step in the path to full community responsibility. Agreement on management
strategies and measures with different stakeholders including fishermen should be considered to preserve the long term aims of this type of MPAs.
Conclusions

Small-scale artisanal fisheries comprise the greatest percentage of fishing communities of coastal multiple-use MPAs around the world (UNEP-WCMC, 2008) as it is the case for the Mediterranean. Therefore, the factors influencing fishers’ preferences are of major importance to management decisions and to implement ecosystem-based management. Fisher’s traditional practices and knowledge are important for the designation of a MPA and the preparation of any management measures. The compatibility of MPAs for fisheries management with MPAs for conservation of biological diversity are numerous and it has been proven that initiatives to proclaim sites to enhance fisheries with measures that reduce fishing capacity and effort or give preferential access to gears with lower ecosystem impacts are likely to produce biodiversity benefits (FAO, 2003, Day et al., 2012).

These mutual benefits highlight that a shared governance structure will enhance conservation efforts. Stronger arrangements are therefore needed between fisheries and environmental governance organizations within the countries as well as at the international level. This would assist to drive better and more efficient policies that will improve regional and local fisheries management and integrated coastal zone management in the Mediterranean.

Moreover, the economic benefits of MPAs may be enhanced by additional management measures around the borders and co-designing them with other spatial measures.

Sharing the results of successful initiatives and lessons learnt for various types of MPA planning as well as management, will enhance understanding and increase the capacity of both fisheries and MPA management bodies on the benefits of coordinating management and enforcement measures across agencies.

As shown by the review exercise, Mediterranean MPAs occur in a range of governance types, nonetheless, a number of issues are commonly found and have a strong influence on MPA effectiveness, regardless of the context and governance approach applied.

Incentives

Table 1: Incentives needed to improve governance of Mediterranean MPAs associated to small scale fisheries (SSF).

<table>
<thead>
<tr>
<th>Incentive type</th>
<th>To address conflicts and resolution</th>
<th>To improve MPA governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Allocation or re-enforcement of fisheries rights</td>
<td>Complementary funding for MPA management and artisanal fisheries sustainable development</td>
</tr>
<tr>
<td>Sustainable financial resources for enforcement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certification or labelization of marine products from MPAs and market campaigns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promoting profitable and sustainable fisheries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpretative</td>
<td>Public communication, education and awareness raising</td>
<td>Increase understanding of policy makers on small scale fisheries and their issues</td>
</tr>
<tr>
<td>Strengthening fishermen organizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>Promoting recognition of the benefits of MPAs for fisheries (i.e. spill-over effects, exchange of fishermen experience) to build community support</td>
<td>Acknowledge of local community governance initiatives</td>
</tr>
<tr>
<td>Promoting recognition of the benefits of fisheries reserves to biodiversity conservation in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanisms to ensure sharing knowledge with all stakeholders from</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
order to develop management plans with this dual objective (IUCN Category VI of MPA) setting up to managing and maintaining MPAs

Promotion the integration of scientific and traditional knowledge and make it easy available

Recognition of MPA zoning, -objectives, and regulations (i.e., use of GIS location devices)

<table>
<thead>
<tr>
<th>Legal</th>
<th>License limits and quotes for fishing (all types)</th>
<th>Clarity of governance structures: roles and responsibilities of different authorities and organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Establishment of territorial rights to restrict the fishing efforts of local fishers and counteract the entrance of new fishers</td>
<td>Coordination structure between central and regional government systems</td>
</tr>
<tr>
<td></td>
<td>Allow regulations to promote other income activities like pesca-tourism from artisanal fishing vessels</td>
<td>International-regional-national coherence in legislation for conservation and fisheries</td>
</tr>
<tr>
<td></td>
<td>Strict enforcement of the management plan (technical measures, market traceability, etc.)</td>
<td>Adapt legal framework to enable fishermen engagement in management processes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participative</th>
<th>Institutionalization of stakeholders, particularly SSF fishermen. Transparent participation</th>
<th>Partnership programs/agreements between fisheries and MPA management bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clear rules on the means and degree of participation from different groups, in particular professional fishermen (advisory or decision making) with a balanced and recognized representation of fishing sectors.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Involve of SSF in monitoring and management practices to increase enforcement and compliance in a more legitimate way</td>
<td></td>
</tr>
</tbody>
</table>

There is quite an extensive literature that provides examples of the current incentives uses in MPAs in order to improve their effectiveness and governability (e.g., Speed and Lavine, 2014; Di Franco et al., 2014; Rees et al 2013; Country project report 4.1; Pomeroy 2003), some of them have been used in the Mediterranean when working with small scale fisheries.

Above, we provide a priority list of those ones considered important in the context of artisanal fisheries activities and those that could, from past experiences, be realistically introduced in Mediterranean MPAs. The considerations of one or another will need to take into account the situation of each MPA in its socio-economic and ecological context, the governance aspects and the baseline integrated assessment.

Economic incentives can be used to generate greater local benefits and reduce pressure on resources. They are very important if MPA effectiveness is to be achieved. Incentives currently in use in some sites, or potentially to be used in a wider scale, are: the promotion of sustainable fisheries by providing a refuge for marine organisms in no-take zones in order to safeguard and enhance harvests in adjacent fishing grounds through spill-over/export; developing of certification and marketing strategies for fisheries resources from MPAs as “sustainable level” (i.e. MSC environmental standard for sustainable fishing) and development of replicable, feasible livelihood projects to diversify the economy.

With these last objectives, the Fisheries Local Action Groups (FLAGs), recently initiated through the Axis 4 of the European Fisheries Fund, to support sustainable development with local actors from various sectors (public, private, and civil society) can work with MPAs and surrounding coastal
communities to jointly design and implement integrated local development strategies (https://webgate.ec.europa.eu/tpfis/cms/farnet/).

Some of these FLAGs have been formed around existing MPAs (i.e., the FLAG of Costa dei Trabocchi that works along the Gargano National Park and the Marine protected area of Tremiti Island in Foggia, Italy) and help artisanal fishermen to diversify into complementary activities, such as pesca-tourism, improve their marketing activities and engage in direct sales.

Interpretive incentives might include public communication, extensive education and outreach, and promoting recognition of MPA benefits, zones, objectives, and regulations, particularly among fisheries communities.

Scientific and traditional knowledge are very important for management. Traditional knowledge, particularly in areas with limited scientific information and inputs can be of considerable value. They can offer information on fish migrations, location of spawning grounds or season for different species or sites important for fisheries.

Legal incentives need to be strengthened to promote innovative enforcement and compliance mechanisms. A fisheries license system with regulations could be promoted with institutional alliances and agreements. Likewise the establishment of territorial rights to restrict the fishing efforts of local fishers and counteract the entrance of new fishers as profits increases. Modified regulations could easier the capacity for fishers to receive income from other activities in their boats such as facilitate tourists trips and pesca-tourism.

With respect to participatory incentives, partnership programs and agreements between fisheries and PAs/MPAs and wetlands management bodies to encourage their cooperation among sectoral administrations should be sought with the common goal of working towards ecosystem based management given its integrated management nature (UNEP/MAP Programme EcAp process under development; FAO, 2003) as well as to deliver the objective of the Good Environmental Status of the Marine Strategy Framework Directive within the EU Countries. Clear rules on the means and degree of participation from different groups, in particular professional fishermen (as advisory or decision making) would enable a clear understanding and management of inputs and decisions.

To strengthen enforcement and zoning operations, inter-institutional enforcement agreements should be negotiated with other government agencies such as coastal guards, municipalities and/or local communities. Other innovative methods of community based enforcement could be introduced. These could be citizen observers, community support teams to work with rangers inside the MPA, or community surveillance networks on land.

For some countries, there is still need to revise existing legal and institutional frameworks to make well defined mandates that ensure that multiple use MPAs are implemented more effectively. It is also important to develop the legal frameworks and encourage government bodies to allow fishers and other stakeholders to take part on the consultation of management plans and empower them on decision making. Successful initiatives could drive by different types of governance and coastal communities (with private and volunteer partnerships too) to replicate good experiences elsewhere. In this regard, the private sector could also be important partners in the design and implementation of MPAs through government-private partnerships as long as this provides opportunities to integrate other stakeholders such as artisanal fishermen with different incentives.

The role of artisanal fishermen stakeholders and use of bridge associations like FLAGs, cofradias and prud’homie will contribute to increase responsibility and co-management in MPAs. For these, different types of incentives (see Table 1) could be tested and used. As demonstrated by many experiences and confirmed by international formal and volunteer guidelines on fisheries and nature conservation programmes, effective communication with stakeholders can enable consensus to
manage MPAs. Nevertheless, the benefits of MPAs can be from large to negligible depending on many factors including how MPAs are managed and the fisheries measures are in place. Strengthening fishermen organizations, increase capacity, communication and knowledge and use new incentives to benefit the community will ease conflicts around MPA impositions and assist management decision in face of uncertainty.

Among the relevant incentives to be used include licensing fishing activities inside MPAs, the certification or the labelization of fisheries products coming from the MPAs, the maintenance of the users rights concerning fisheries, the continuous support to declining artisanal and sustainable fisheries techniques, the institutionalisation of the fishermen participation in MPAs management boards and monitoring as well as enforcement programmes together with the identification of funding mechanisms when artisanal fishermen are providing services to MPAs management.

Monitoring and evaluation procedures for the effectiveness of the MPA governance and management to achieve the objectives of MPAs should be done at the countries and in the region, allowing also oversee how different MPAs achieve the sustainability of fishermen and other coastal communities and find out how to resolve upcoming challenges.
References


Dudley, N., Guidelines for Applying Protected Area Management Categories, IUCN, Gland (Switzerland), 2008.


Rees R.S., L. D. Rodwell, S. Searle, and A. Bell 2013. Identifying the issues and options for managing the social impacts of Marine Protected Areas on a small fishing community. Fisheries Research, Volume 146, 51-58.


