COFI/2005/8

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October 2004

منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Organización de las Naciones Unidas para la Agricultura y la Alimentación

COMMITTEE ON FISHERIES

Twenty-sixth Session

Rome, Italy, 7-11 March 2005

MARINE PROTECTED AREAS (MPAs) AND FISHERIES

Summary

Protected areas (and reserves) in which extractive activities are strictly controlled (or banned) have been conventionally used for the protection of aquatic biodiversity, critical habitats, or endangered species. An increase of their use is foreseen as a consequence of their establishment and development being called for in the Convention for Biological Diversity and the World Summit on Sustainable Development (WSSD) plan of Implementation. Marine Protected Areas (MPAs) and reserves are also being advocated as a fisheries management instrument. MPAs have a number of potentially useful properties for fisheries but a number of limitations too have drawbacks if not properly designed. Experience on the impacts of MPAs in fisheries is still scarce but slowly building up. Their performance in relation to fisheries resources and livelihoods depends greatly on the type of resources requiring protection and the situation of the fisheries exploiting them. More experimentation is needed before definitive statements can be made about the potential role of MPAs in fisheries management under different circumstances. Experimental MPAs need to be established through a strongly participatory process involving the main stakeholders.

1. Despite significant progress in the institutional framework of fisheries, about 25 percent of world resources are overexploited. Keeping resources at a level close to highest biological productivity, as required by the UN Law of the Sea and the 2002 World Summit on Sustainable Development (WSSD), requires the introduction of a complex suite of interacting measures such as fishing rights, reduction of fishing capacity, improved participation and transparency, more effective enforcement and compliance, consumer involvement, etc. The adaptive, precautionary and ecosystem-conscious transition process that is required has significant economic, social and political costs. It is further complicated by the need to deal with the impacts of other human activities threatening biodiversity and ecosystem structure through pollution, chemical and radioactive contamination, habitat degradation, etc. The task ahead is challenging but there are no quick fixes or cheap panacea. The use of Marine Protected Areas (MPAs) must be considered in that context.

2. The World Conservation Union (IUCN) has defined MPAs as: "*Any area of intertidal or subtidal terrain together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment*" (Kelleher and Kenchington, 1991). In practice, the term MPAs has been used for marine reserves where extractive activities (and particularly fishing) are banned, as well as for managed areas in which some extractive activities are authorized but specifically regulated to preserve habitat and biodiversity. The respective economic, social, political and ethical implications of these two types of MPAs for fishery resources and coastal communities need to be carefully considered.

3. A number of international instruments of relevance to fisheries refer to MPAs as essential tools to conserve marine resources and manage fisheries. These include the 1995 Jakarta Mandate on Marine and Coastal Biological Diversity within the framework of the 1992 Convention on Biological Diversity and the Plan of Implementation and Development elaborated by the World Summit on Sustainable Development (WSSD) in September 2002. The 1995 FAO Code of Conduct for Responsible Fisheries does not refer explicitly to MPAs but provides for, *inter alia*, protection and rehabilitation of critical habitats from all degradation. The related technical guidelines for fisheries management and the ecosystem approach to fisheries recognize that MPAs could play a critical role in ensuring sustainable fishing. Many countries are responding to these calls and progressively integrating MPAs into their fisheries management systems. In addition, in recent years, MPAs have been strongly advocated by environmental groups and agencies as a key fishery management instrument and, too often, as the overriding solution to overfishing. This has the danger of creating unrealistic expectations and diverting attention and resources from other equally and often more important remedial activities.

4. Within FAO, the Advisory Committee on Fisheries Research (ACFR), at its Fourth Session, in 2002 (FAO 2003) noted that MPAs had not been an FAO priority. It recognized that, while they had been aimed primarily at biodiversity conservation, they could have significant positive and negative impacts on fishery resources and on the social and economic conditions of fishers. However, ACFR noted that, "*the current knowledge is inadequate to objectively judge the potential role of MPAs in furthering the objectives of fisheries management in addition to those related to strictly to biodiversity protection*" (Report of the fourth session of ACFR, Rome 10-13 December 2002, FAO Fisheries Report No. 699, Rome, FAO. 2003. 25 p., Appendix E). While an extensive scientific literature exists to document the ecological benefits of MPAs, the research had not yet matured to the point where MPAs could be recommended for wide application in an ecosystem approach to fisheries. Since then, some new information has been accumulated (e.g. Gell and Roberts, 2003). While a number of questions remain and hasty generalizations should be avoided, the role, potential effects and shortcomings of MPAs and reserves in relation to fisheries is becoming better understood, with a number of successful cases and failures from which lessons can be drawn.

5. The General Fisheries Commission for the Mediterranean (GFCM), through its COPEMED project, has examined the role of MPAs as fisheries management instruments (Esplá, Valle Pérez,and Bayle Sempere *et al*., 2004). This study concluded that, if judiciously and specifically designed for fisheries and integrated with conventional management measures to reduce fishing capacity, limit harvest, establish fishing rights, improve selectivity, etc., MPAs could, in principle, be useful for fisheries in the following ways:

- protecting from extinction vulnerable target species or accidentally caught endangered species that are resident in the MPAs for a sufficiently long time;
- protecting critical stages of the life cycle of key resources, potentially enhancing spawning biomass and reproduction;
- protecting critical habitats (*e.g.* coral reefs, algal or seagrass beds) from irreversible degradation due to fishing;

- providing a buffer against uncertainty, enhancing stocks' robustness to unfavourable climatic conditions through *in situ* genetic conservation, maintenance of 'reservoirs' of spawning biomass, improved survival of offspring, and maintenance of ecosystem functions;
- improving knowledge on the fisheries ecosystems by providing untouched reference systems;
- as a precautionary device during the early development phases of new fisheries;
- improving social and economic conditions of fisheries by maintaining biodiversity, improving biomass and yield, and offering opportunities for alternative employment, e.g. through increased interest for tourism;
- working better than or improve conventional alternatives, such as Total Allowable Catches (TACs) and quotas in cases where species aggregate for spawning as such concentrations would be the first to be normally targeted;
- effective MPAs might also be more effective than the so often violated controls of minimum size or prohibition of landings of berried females.

6. Conversely, if designed with incomplete scientific understanding and lack of attention to the needs of fisheries and to existing management measures, MPAs could be ineffective or even counter-productive for the sector because:

- their overall impact is conditioned by the configuration of the MPA, the resources and the fisheries, larval dispersion patterns, alternatives available to affected fishers; etc.
- their overall effects are frequently unknown and while positive effects on biomass and diversity in the MPA itself have often been shown, as well as a spill over effect close to the MPA boundary, there is still little information on the total effects on fisheries at various distances from the MPA;
- they can displace fishers from traditional fishing areas, forcing them to more remote fishing areas, increasing operational costs and possibly risks to crew life and may simply concentrate fishing effort in other areas;
- they may also disrupt traditional arrangements and exploitation patterns on migratory species, potentially affecting equity and increasing sources of conflict;
- they may disrupt coastal livelihoods, including equilibriums between land- and sea-based occupations, *e.g.* for women, potentially deprived of their traditional processing and trade activities; and
- they offer no real advantage over conventional methods in the case of destructive methods such as poison or dynamite, which have generally been banned long ago, but is difficult to eliminate in remote areas or areas of extreme poverty.

In fact, review of practice of States rearding the establishment of MPAs hints at a high percentage of unsuccessful implementation, particularly in developing countrires. For instance, a recent study indicated that up to 80 percent of MPAs in the Philippines had not been successful and that their 'implementation is quite challenging in the current socio-political and environmental context' (Pollnac *et al.*, 2001, cited in Christie *et al.* 2002).

7. The overall impact of MPAs, the degree to which they may contribute to the solution of the fisheries problems and the degree of acceptance by fishing communities depend critically on:

- the type of MPA *e.g.* a multi-use spatial management area allowing regulated fishing activities, or a no-take reserve;
- the organization of MPAs *e.g.* it is argued that the beneficial effects would be more important and better distributed spatially and among fishers if MPAs are established as networks of judiciously placed and connected areas;
- the extent of the protection overall and relative to the total distribution of the stock, *e.g.* it has been commonly argued that, to be fully effective, 10-35 percent of the areas of distribution of the stock concerned should be protected (e.g. Gell and Roberts, 2003);

- the distribution and migration patterns of the resources between the MPAs and their surroundings, as short residence periods in an MPA will reduce or negate any benefits;
- the industry's response in terms of alternative targets, compliance with the MPA, etc., which will affect enforcement costs and performance;
- the type of fisheries involved as MPAs might be most useful for resident, coastal multispecies resources exploited by small-scale coastal communities for which conventional assessment and management are impractical and unaffordable.

8. While in some areas local support of fishers to MPAs has been reported (particularly where these have been locally beneficial), there is still commonly a strong resistance of the fishing community to the concept of excluding fishing from traditional fishing grounds. This is to be expected, considering the economic, social and ethical implications. In many cases, the potential of MPAs as a complementary measure for fisheries management, particularly in a highly participatory Ecosystem Approach to Fisheries context, is too high, however, to be neglected and there is agreement in the scientific community that it is urgent to test MPAs scientifically across a large range of situations in order to clarify potentials, shortcomings and conditions of success for fisheries (Hilborn *et al*. 2003).

Action required from the Committee

9. The Committee is invited to reflect on the societal demand relating to the use of MPAs for both biodiversity conservation and fisheries management and to the WSSD target to establish a network of MPAs by 2012. It is invited to offer experience and comments, in particular on the pros and cons of MPAs as fisheries management tools. Finally, the Committee is invited to suggest action by FAO members and Secretariat regarding the issue. The Committee may wish, in particular, to indicate its view regarding the elaboration of technical guidelines on the testing and use of MPAs in fisheries management.

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