

The importance of regional networks of Marine Protected Areas (MPAs) and how to achieve them.

**An opinion piece by Graeme Kelleher AO
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Introduction

This paper summarises the strategic lessons learned by my colleagues and me over a forty year period in the establishment and management of marine protected areas in many different biogeographical areas of the world and in varying cultural and economic environments. The psychological and socio-economic bases that I believe underlie these lessons are examined briefly.

This paper does not deal with issues at the detailed or day-to-day level, because what works in one region or country at this level may not be successful in another area with different historical, social, economic and ecological attributes. However, at the strategic level, successful policies and methods tend to be common.

"How complex and unexpected are the checks and relations between organic beings, which have to struggle together in the same country" (Charles Darwin, 1882)

Charles Darwin was referring to living organisms. I am quoting him here because the complex, interrelated environmental problems which the world is seeing early in the 21st Century reveal that his observation is equally applicable to the checks and relations between human political and administrative organisations.

We are at last realising that everything is connected to everything else and that the natural

and political worlds operate as complex systems with characteristics which ensure that they will function chaotically over time. That is to say, precise predictions of events and states (and economies) a long time ahead will not be possible. The best reaction to such a situation is to proceed strategically - that is, to adopt objectives and policies that will put us in advantageous positions from which to take specific actions which will contribute to us attaining our overall goal. That overall goal is, of course, ecologically sustainable use of the biosphere by humans.

My aim in this paper is to suggest strategies which should contribute to this goal in relation to the establishment and successful management of networks of marine protected areas (MPAs). In doing so I shall draw on experiences from around the world that demonstrate which approaches usually work and which ones usually fail. The ubiquity of these lessons in social and natural sciences and management reflect the apparent commonality of human attributes in all societies.

Background

Particularly in developing tropical countries, many local communities depend on coastal marine areas for food. These areas are subject to many stresses, both from direct use and from the effects of land-based human activities. The progressive degradation of these resources has been documented in many publications. Setting up MPAs in these circumstances is difficult. Strong support and ownership from local users is essential. I shall concentrate on socio-economic procedures, not because ecological criteria are unimportant, but because socio-economic factors often determine the success or failure of attempts to develop and establish MPAs and yet these are often treated as subordinate in importance.

In considering this issue, it is necessary to recognise the universal definition of a protected area that was adopted at the IUCN World Conservation Congress in Barcelona in 2008: a protected area is "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values."

The primary goal of the marine program of IUCN, adopted in various IUCN General Assemblies is "To provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global, representative system of marine protected areas and through the management in accordance with the principles of the World Conservation Strategy of human activities that use or affect the marine environment". In this paper I discuss these lessons in relation to attainment of this goal, which has determined all the strategies that I and my colleagues have adopted within the work plan of the IUCN World Commission on Protected Areas (WCPA) over the past four decades.

The conclusions and lessons to which I refer have deliberately been drawn from different biogeographic and socio-political areas, so as to ensure that they apply generally, and not to a restricted set of circumstances. They all contain elements of experience which are likely to be met in establishing a network of MPAs in any biogeographic or socio-economic area, regardless of the Protected Area Management Category in which they best fit. I refer to a "network" because a single, relatively small MPA which is not part of a connected network of MPAs, is unlikely to succeed, due to the transmission of the effects of external human activities into the MPA. However, a very large zoned MPA which encompasses a complete ecosystem, such as the Great Barrier Reef Marine Park, is essentially a network of highly protected areas.

Lessons from experience

Several lessons shine out from our experience in establishing and managing MPAs over the past four decades. Those that follow appear to me to be universal in their applicability.

1. 1. BEFORE AN MPA IS ESTABLISHED, ITS GENERAL AND SPECIFIC OBJECTIVES SHOULD BE CLEARLY DEFINED.

The physical, chemical, biological, social and economic attributes that define those objectives should be identified; and a monitoring program should be designed that will measure those attributes as a foundation against which to measure later changes.

Management should be adaptive, meaning that it is periodically reviewed and revised as dictated by the results of monitoring and research. Modern management recognises that it is not possible to assess performance without identifying measurable objectives and overtly measuring the attainment of those objectives. Regular reviews and their incorporation in revised plans of management are essential.

1. 2. SOCIO-ECONOMIC ISSUES ARE CRITICAL

They often determine the success or failure of MPAs. In addition to biophysical factors, these considerations should be addressed from the outset in identifying suitable sites for selecting and managing MPAs. Nevertheless, it is essential that ecological considerations are central in the process of identifying potential sites for successful MPAs.

World-wide experience has shown that no MPA will be established successfully without general community support – especially support and some sort of ownership from local communities. This experience applies equally in developing and developed countries. No country can afford to establish and manage an MPA successfully using enforcement methods alone. The ease of avoiding restrictions on use in the sea are so numerous that voluntary compliance by the majority of users is essential, reinforced by enforcement that ensures that the minority non-compliers will not get all the benefits, or negate the good will and commitment of the majority compliers.

Not only is it essential to include local communities in the preliminary scoping phase of establishing a MPA, but also it is equally important to nurture and continue this relationship of information sharing during and after establishment and management of a MPA.

1. 3. TIME SPENT IN PREPARATION IS AN ESSENTIAL INVESTMENT

This investment will be repaid many times over. Proponents of MPAs have to show demonstrable benefits for stakeholders, and this takes time and diplomacy. To date, there still seems to be some scepticism in fisheries agencies about the benefits of MPAs. However, there is a wealth of information available on the successes of MPAs globally. Never assume that people are fully aware of these examples.

1. 4. LOCAL PEOPLE MUST BE DEEPLY INVOLVED FROM THE EARLIEST POSSIBLE STAGE IN ANY MPA THAT IS TO SUCCEED.

This involvement should extend to them receiving clearly identifiable benefits from the MPA. Lack of participation by local people is the most common cause of failure, for no government can manage an MPA effectively without community support. Effective participation calls for restraint on the part of MPA managers, who must ensure that the local communities “own” the MPA intellectually and emotionally. Continued community involvement in management (including monitoring and enforcement) increases this sense of ownership and greatly

decreases the overall cost of management.

An important attribute of human behaviour is to be suspicious of proposals by others, in the development of which they have not been involved from the start. This suspicion is often justified. All of us have had experiences where proposals have been deliberately held secret so as to minimise the ability of those who will be adversely affected by the proposals to oppose them. I believe that this human attribute may be so fundamental to survival that it is genetically programmed.

The work involved in converting a person full of suspicion to an ally is immense. Sometimes it is impossible. While the early involvement of potential opponents in the process of developing and establishing an MPA takes a lot of time and effort (and maturity), the global experience is that this investment is essential. It will produce dividends of much greater magnitude later on in the development phase. Conversely, haste in the development phase, often in order to remove opportunities for opposition, will usually result in future costs many times greater than the apparent savings .

1. 5. THE MOST IMPORTANT ATTRIBUTE OF AN MPA MANAGER IS INTEGRITY

Many managers have made the mistake of believing that they can fool some of the people some, or even all of the time. The consequence of this is that the manager appears to win a series of battles, but he or she loses the war because of the accumulation of enemies and loss of trust. This eventually leads to failure.

1. 6. DESIGN AND MANAGEMENT OF MPAs MUST BE BOTH TOP-DOWN AND BOTTOM-UP

A common feature of western thought, which many non-westerners find amusing, is the "either-or" mentality. This is demonstrated in the adversarial legal systems which prevail in many western countries and by the tendency to think in exclusive terms.

The debate about the relative merits of top-down and bottom-up approaches exemplifies this problem. Except in effective dictatorships, pure top-down methods will never work. Equally, attempts by local communities to establish protective measures without the support of appropriate levels of government will often end in their rules being broken by outsiders. Therefore, in developing MPAs, it is necessary to obtain the formal support of both local communities and governments.

1. 7. SUSTAINABLE FINANCING NEEDS TO BE BUILT IN FROM THE BEGINNING

In many countries, government budgets for conservation are declining, and under present economic circumstances, are likely to continue to decline in real terms. Protected area managers are having to be increasingly creative in finding ways of paying for protected areas, once the initial grants and aid support run out. Alternative income-generating activities should be planned from the beginning, not when the grants run out. One strategy is to create a Trust Fund to be financed by users, national and international organisations, governments and donors. Only interest from the Fund should be used in management, and not the capital, unless a major improvement in infrastructure is involved.

Ecotourism is often the best source of continuous funding, particularly when local communities run the tourism enterprises and therefore receive the economic benefits. The requirement for tourists to pay for their use of the MPA should be included in legislation. The revenue should be used only in management of the MPA.

The coordination of the programs of organisations involved in management is essential

because it reduces duplication, conflict and costs, and increases efficiency. Development, research, agricultural, fisheries, enforcement and environmental organisations should each contribute to an overall, integrated management program. A single coordination organisation with overall responsibility and power, such as the regional MPA network in West Africa RAMPAO (see <http://www.lerampao.org/view/eng/accueil.php>) is arguably the best solution. Involvement of locals in monitoring and enforcement reduces costs and leads to more efficient operation.

1. 8. ALMOST ALL MPAS CONTRIBUTE TO SUSTAINABLE FISHERIES

MPAs make contributions to sustainable fisheries because they invariably contribute to the maintenance or restitution of both biological diversity and productivity. One of the problems commonly encountered in setting up MPAs is conflict between those who wish them to be established purely for the sake of biological diversity, and those who emphasise their contribution to human welfare. This conflict is not only unnecessary, it is destructive of both objectives. There are always opponents to the development and establishment of MPAs, and it is essential that those in favour of them collaborate. Ecologically, MPAs inevitably contribute to the maintenance and restoration of biological diversity and also to biological productivity.

1. 9. THERE HAS BEEN A LONG HISTORY OF CONFLICT AND LACK OF COOPERATION BETWEEN ENVIRONMENTAL AND FISHERIES MANAGEMENT AGENCIES

This lack of joint action inhibits progress in establishing MPAs and managing them wherever it is manifest. Individual MPAs and systems plans should be designed to serve both sustainable use and environmental protection objectives, and relevant agencies should work together in planning and management. Anyone who is familiar with government in any democratic country (and perhaps in non-democratic ones) will have encountered the natural human tendency for officers of one agency to compete with officers of other agencies. This occurs particularly where, as in the case of fisheries and environment agencies, the objectives will overlap or appear to be in conflict. This is an example of the truth of Charles Darwin's conclusion that I mentioned earlier—"How complex and unexpected are the checks and relations of organic beings, which have to struggle together in the same country." This applies to human organisations, as well as to living organisms.

If this natural human tendency is to be overcome, it will require deliberate action by the agencies concerned to identify the problem and to set up systems to overcome it. Perhaps the most effective system is the establishment of joint working parties to deal with the development of strategies and action plans that address the primary objectives of both agencies. Clear roles and responsibilities can be set out in a Memorandum of Understanding, or agreement between agencies. Failing this, at least regular face-to-face meetings with officers from different departments should occur.

An alternative approach that has been shown many times to avoid this conflict is to have a primary agency (or Authority) that has the power and motivation to ensure cooperation in avoiding this usually unnecessary and destructive conflict.

1. 10. IT IS BETTER TO HAVE AN MPA THAT MEETS THE PRIMARY GOAL BUT WHICH IS NOT IDEAL IN AN ECOLOGICAL SENSE THAN TO STRIVE VAINLY TO CREATE THE "PERFECT MPA"

We all have seen dedicated scientists and others spending their lives attempting to convince governments to establish MPAs in areas which are ideal from the viewpoint of biological

diversity but which are not appropriate from a socio-political viewpoint.

However, it is usually possible to find potential sites for MPAs which are satisfactory from a biodiversity (ecological) viewpoint and which can also be seen to contribute to the welfare of local communities. The establishment of MPAs in these sites will immediately begin contributing to the maintenance of biodiversity. In contrast, environmental degradation will proceed as long as proponents of MPAs expend their energies in futile attempts to establish MPAs where socio-political forces will ensure their failure.

1. 11. IT IS USUALLY A MISTAKE TO POSTPONE ACTION WHEN BIOPHYSICAL INFORMATION IS INCOMPLETE

There will usually be SUFFICIENT EXISTING INFORMATION to indicate whether the MPA is justified ecologically and to set reasonable boundaries.

The involvement of local users in identifying ecological attributes can serve two functions – first, the efficient collection of information gathered over many years by people highly familiar with the target area; second, the generation of support from these local users for the proposed MPA. A person is much more likely to support a proposal if he or she has been involved in information collection and in decision-making in relation to that proposal.

1. 12. THERE IS A GLOBAL DEBATE ABOUT THE RELATIVE MERITS OF HIGHLY PROTECTED MPAS AND LARGE, MULTIPLE USE MPAs

Much of this dispute appears to arise from the misconception that it must be one or the other. In fact, nearly all large, multiple use MPAs encapsulate highly protected zones that have been formally established by legislation or other effective means. These zones can function in the same way as a network of individual highly protected MPAs. Conversely, a network of highly protected MPAs in a larger area subject to integrated management, can be as effective as a large, multiple use MPA.

This debate is another example of the either/or arguments in which we Westerners seem to excel. These debates are destructive. They fail to recognise that the ideal form of management is variously labelled integrated ecosystem management, bio-regional planning etc. This ideal constitutes an integrated system which includes a network of highly protected areas as well as a suite of controls in other areas that ensure ecologically sustainable development.

1. 13. RELATIVELY SMALL MPAs WILL RARELY SUCCEED UNLESS CONNECTED BIOLOGICALLY IN A NETWORK THAT CONSTITUTES AN INTEGRATED ECOSYSTEM MANAGEMENT REGIME

This is because of the highly connected nature of the sea, which efficiently transmits substances and forcing factors. Therefore, a relatively small MPA cannot easily be insulated from destructive influences arising from outside its boundaries. The Biosphere Reserve model recognizes this fact.

Many scientific and management studies have shown that the optimal proportion of a marine ecosystem that should be included in no-take or highly protected MPAs or zones is about 30%. This proportion maximises both biological productivity, including fish stocks, and biodiversity.

1. 14. LEARNING BY DOING IS OFTEN THE MOST EFFICIENT WAY FOR COMMUNITIES TO DEVELOP EXPERTISE

It is usually much cheaper than formal training, provides immediate benefits in terms of achieving progress in a project or program and does not force on communities methods used by outside "experts" which are less than efficient in the particular socio-economic and bio-physical contexts.

All of us have experienced situations where projects designed by outside experts- usually westerners- are so detailed and prescriptive that they make no allowance for the specific circumstances prevailing in a country or region foreign to the "expert", in which a project or program is to proceed. This causes resentment and inefficiency and often leads to failure.

Conclusion

The over-riding conclusion from case studies of various MPAs around the world is that success or failure is not usually determined by complex factors unique to that particular MPA. On the contrary, they result from failure to apply some fairly simple strategic principles. And it is usually the socio-economic rather than the biological factors that determine success or failure.

Why do managers fail to apply these simple, well-proven approaches? My conclusion is that it derives from the natural tendency of humans to prefer immediate gratification to long-term benefits. It takes a lot of self-control for a manager either to deliberately raise difficult issues with possible opponents in order to resolve them or to refrain from responding in-kind to insults.

Decades of experience has shown that there are strategic principles which are applicable virtually everywhere. I have tried to summarise them in this paper. However, at the detailed, technical level, there is no simple or "turn-key" formula. What works for one nation or group of nations at the detailed level can only rarely be transposed unchanged to another ecological or socio-economic environment. For example, a few large MPAs may be the right approach in one region or country, but a network of many smaller ones, supported by integrated management of the surrounding areas, might be better in another. The key lesson at the social level is; "*When in Rome, do as the Romans do*". ***Of course, the application of this proverb should never extend to immoral behaviour.***

Detailed advice on MPA planning and management is provided in IUCN's "Guidelines for Marine Protected Areas" available here:

http://www.iucn.org/about/work/programmes/gpap_home/gpap_capacity2/gpap_bpg/?uPubsID=2120

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