

Marine Protected Areas, Local Communities and Tourism: The Challenges

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Introduction

Marine and coastal resources have been used by diverse human groups and cultures since the very beginning of human kind. But it was until the XVII century after the Cook and Magellan circumnavigations that the use and exploitation of marine resources reached a global scale. One of the first casualties in the efficiency race, were several northern sea marine mammal species, and many sea birds.

Together with the economic development of the industrialized world, began the leisure culture on one hand, and the slow and uneven institutional and economic development of the so-called third world. One consequence was and is, a coastal development based on massive hotel constructions, cultural and economic displace and disenfranchisement of local communities and the non-sustainable use of marine and coastal resources (Wells and White, 1995).

Marine and coastal resources are subjected to high levels of exploitation that have caused the over fishing of many species, damage to habitats and as a consequence many species are threatened or in danger of extinction. These anthropogenic threats to species and genetic biodiversity, forecasts a bleak future. It is now apparent that creative management strategies and frameworks must be considered in order to reduce the use and damage; and to protect and restore marine ecological systems and processes.

Marine Protected Areas (MPAs) are efficient Integrated Coastal and Marine Management tools to conserve and use critical habitats in the diverse regions that constitute the marine and coastal environments; furthermore, today, its role in fisheries management and sustainability, in solving stakeholder conflicts, its contribution to local and regional economies, the development of sustainable forms of recreation, and the empowerment communities is greatly recognized (van' Hof, 1992; Kelleher and Kenchington, 1992).

As natural resource management becomes more integral or holistic; MPAs have transformed its role as site-based management to regional and interconnected clusters and networks of protected areas that have promoted community, private enterprise, governments and international organizations participation; generating a better legal framework; and most important governance (Agardy, 1993; Ballantine, 1995). It is possible to achieve many of these goals using MPAs with different management categories; from multiple use areas to reserves closed to any fishing, visiting and in some cases scientific activity. With good management and financial resources some MPAs have achieved some success, not only in preserving its biodiversity and protecting habitats; but at the same time bringing social and economic benefits. In some instances fishers that in the past were opponents to MPAs; nowadays defend them. The successes have been sketchy and there is no universal recipe (Bailey, 1998; Cole and Stankey, 1998; McCool and Cole, 1998; Buckley, 1999).

Several strategies have being used in recent times to achieve the goals above mentioned and due to the dynamic and diverse nature of different MPAs there are few standardized methodologies and protocols; and the nature of indicators for different variables are still being discussed (Salafsky and Margoluis, 1998; Eagles et. al., 2002).

Is it possible to manage the marine and coastal resources in a sustainable way and at the same time bring benefits both to local communities and nature-based tourism private operators?

Is it possible to know if the selected strategies are being effective?

The aim of this paper is to present some analysis of these ideas and present some of the work that is taking place in Quintana Roo, Mexico, where these premises, are currently being tested.

Communities, Marine Protected Areas and tourism.

Nowadays with the expansion of tourism, the demand to visit MPAs has increased, with the subsequent pressure to open-up the MPAs to the market forces. Already, MPAs have to comply with their missions towards conserving biodiversity and improving the quality of life of the local communities.

One strategy that it is currently being tested to address these challenges in several MPAs throughout the state of Quintana Roo, relies in the premise that it is possible to control the level of exploitative resource use (fishing effort, the reduction in the volume of captures) through the diversification of fisher income throughout offering alternative services such as bird and whale shark watching, snorkeling or fly fishing (Bailey, 1998; Craik, 1994).

Traditional tourism in areas such as Cancun and Cozumel has disregarded local stakeholders, being displaced by tourism development. Rural areas where populations depend on local coastal resources for their livelihood are the most affected and there could be a range of sociocultural and economic impacts from tourism development. In MPAs north of Cancun where tourism is beginning to be developed, local communities having known the experiences from Cancun, want to be equal partners in the new emerging economy as tourist operators.

One creative way of using MPAs as management tools to generate governance is through partnerships of private ecotourism operators and communities with the support of the government to create a legal framework (Dixon, e. al., 1993). The definition of ecotourism used here is “the purposeful travel to natural areas to understand the culture and natural history of the environment, taking care not to alter the integrity of the ecosystem, producing economic opportunities that make the conservation of natural resources beneficial to local people” (Ecotourism Society, 1998).

As an ideal concept in a development strategy, ecotourism essentially derives its attraction from a combination of the gains to be made from marketing a product that exists in its natural state in specific geographic locations and the potential to make such trade ecologically, economically and socially sustainable (Boo, 1990). It could revitalize and stimulate a growth spurt within rural communities, but not necessarily replacing, the traditional tourist sector that has take firm hold in the region. One plausible strategy is to “sacrifice” certain areas for traditional tourism while maintaining the alternative model in others. That is the original intention of southern Quintana Roo Costa Maya (Figure 1.). Here the argument is made that in addition to generating income, residents are encouraged to preserve their culture in a rapidly changing global environment that erodes local traditions.

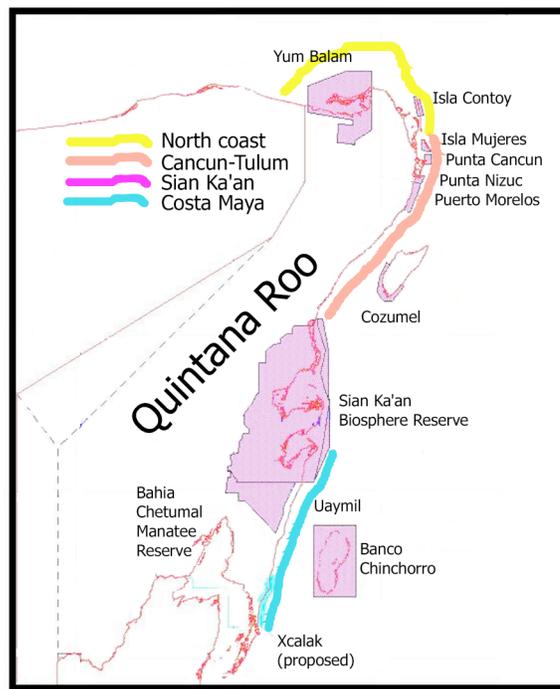


Figure 1. Marine Protected Areas in Quintana Roo

This optimism for the potential of the Caribbean region to succeed with an ecotourism agenda is founded on a number of contingencies; socio-historical, political and geographical. Admittedly, these may not be replicable elsewhere, but nonetheless they point to the peculiar circumstances that can allow for flexibility and opportunity for Quintana Roo to capture some of the benefits of the booming global tourist trade in spite of structural constraints that it faces.

The first encouraging experience in Quintana Roo has been taking place at the Marine Protected Area of Yumbalam (Figure 1.), where local private operators and fisher coops developed a business partnership for whale shark watching and together with the Mexican Federal government devised the necessary regulations called NOM (Norma Oficial Mexicana). This activity takes place from June to October when migrating whale sharks arrive to feed in water near the coast. Each tour cost around \$120.00 USD generating a considerable income. The rest of the year the main source of income comes from fishing. If this type of activities is encouraged the fishing effort and capture volumes of target species will be reduced significantly as well as the sources of income diversify. Of course, some critical and disturbing questions about the nature and impact of commodification of native cultures have also been raised, but these discussions are outside of the scope of this paper. (Boo, 1990;).

Since many of similar experiences are recent, there are no data that demonstrate that these strategies are achieving their goals. How can the new strategy be made more viable and sustainable and what are the mechanics, policy and institutional arrangements that will lead to these targets? Biophysical, fisheries (capture per unit of effort, volumes, etc) and other socioeconomic (quality of life index), and governance data are needed at the beginning and after the life of the project to assess the effectiveness of such strategies (Salafsky and Margoulis, 1998; Pomeroy e. al., 2004).

How do we know if the strategy is being successful?

At the initiation of any program or activity, project impacts are rare or minimal. Initial symptoms of negative impacts may be difficult to perceive, especially when there is little or no data on baseline conditions to compare to. In developing countries, comprehensive baseline surveys are rarely conducted at the outset because time, budgets and technical resources are limited and the needs are not perceived. Often, it is only when severe impacts are manifested that questions are asked and management actions are deemed necessary.

Once negative impacts are readily apparent, options for managing them easily are reduced. It becomes politically difficult to reduce numbers of visitors and/or limit their activities. In some cases, management cannot compensate for the losses realized. Had impacts been measured progressively from the start and actions taken early on to reduce them, less or no harm might have occurred. The establishment of a monitoring program at the outset of project development or MPA establishment, and the gathering of baseline information allows for early warning of impending changes, enabling timely management programs to be put into place (Buckley, 1999).

Economic and technical resources for protected areas in Latin America and the Caribbean are limited. Management budgets are small, staff time is limited, and data collection is irregular. In addition, while park staff available to carry out routine monitoring activities may possess keen observational skills, advanced technical analysis of data may not be an option. Therefore, monitoring methodologies must be simple, easy to apply by few staff with limited training, and must provide results which indicate specific management actions.

In developing countries there is often a lack of baseline data and/or information on the impacts of tourism (Courrau, 1995). However, even in situations where baseline data is difficult to obtain and/or natural and human systems are not fully understood, it is possible to monitor changes based on data that has been collected in an objective, consistent manner. Adaptive management, defined as a process developed to manage natural resources by deliberate experimentation and systematic monitoring of the results (Margoluis and Salafsky, 1998), can be applied.

Traditionally, protected areas management in the U.S. has been an inwardly looking discipline. Parks administrators have jurisdiction and responsibility for only what lies within or enters the park's boundaries. Physical and biological resources and visitor well-being have been the priority, while people and resources outside have been of little concern. Now, in contrast, park staff in Latin America and worldwide are realizing that the future of their parks depend on the people who live around them, at the same time, local communities are demanding an increasingly larger role in the establishment, planning and management of protected areas. As they seek to incorporate cultural, spiritual and economic values and practices into protected areas conservation and management, they become active players (Bailey, 1998). Park visitation programs and ecotourism, in particular, involve the community and affect it. Therefore, impacts monitoring must go beyond what happens in the protected area itself, and must examine characteristics of community life. Methods for assessing impacts on local cultures and socio-economic systems are necessary.

Identification of Impacts and Indicators

The indicators selected for measuring ecotourism impacts will depend on the specific characteristics of each site. It would be impossible to select appropriate indicators without first examining the natural and physical resources, the community, the infrastructure and the type of visitation in the area. However, it is clear that any monitoring program must assess the critical impacts within each area and affecting all types of stakeholders. It is possible to broadly define four groups: 1) Environmental impacts – on protected area and surrounding lands; physical and biological, 2) Experiential or psychological impacts - on visitors. 3) Economic impacts – on communities and protected area, 4) Socio-cultural impacts – on communities, 5) Managerial or infrastructural impacts – in protected areas and surrounding lands (Pomeroy e. al., 2004), Economic impacts are often treated separately from protected areas management and monitoring analyses. However, in the case of income-generating enterprises, economic gain and distribution are important. Financial success for protected areas management, as well as community development, are desired and progress towards these objectives should be constantly measured. It is important to remember when selecting specific impacts and indicators to measure that these be directly related to identified threats due to ecotourism. While there is a range of impacts for which monitoring would provide useful information, limited time and budgets make it difficult to be as comprehensive as would be ideal. It is better to begin with a few, carefully selected impacts

and to implement monitoring of them than to develop long and detailed plans which might become so overwhelming that they are not applied (Agardy, 1993; Buckley, 1993).

The complex causes of impacts must be recognized and analyzed. Although, it is clear that tourism can have clear-cut negative impacts on the environment and on communities, it is important to realize that changes that occur in areas where there are conservation and development programs may be a result of numerous factors outside of tourism.

Indicators and methods for measuring them must be selected carefully. Care must be taken when selecting indicators to ensure that impacts being measured are directly and uniquely related to target activities such as ecotourism. Good indicators should be measurable, precise, consistent, cost-effective and sensitive (Salafsky and Margoluis 1998)

Indicators to assess the quality of the experience of visitors at diving sites and of the quality of the sites (reef health) in question were developed, and then used to estimate visitor numbers (Carrying Capacity) that were applied in the Planning methodology of VERP (Cole and Stankey, 1998; NPS, 1995).

The basic premise of these methodologies is that managing people and not resources should be emphasized. Problems are identified, indicators are selected, limits or thresholds are defined and finally if the indicator reaches the limit management actions are taken. For Cozumel and Chinchorro using indicators such as coral cover and diving group size as part of the indicators, upper diver numbers have been proposed (Cifuentes, 1992; Marion and Rogers, 1994; Davis and Tisdell, 1995, 1996; Lindberg et. al., 1997; Garcia-Saez, 2004, 2005) to decrease the impact on diving sites. For a detailed description of the methodologies see Garcia-Saez, 2004 and 2005.

Visitor Management Frameworks

MPAs also need to develop visitor strategic plans that correctly address the intensity of use to be allowed in order to be competitive.

The first methods developed to address tourism impacts emerged from the concept of carrying capacity, which originated in the field of range management. Several definitions of carrying capacity have been offered, depending on how and where the concept is applied (Boo, 1990). Broadly defined, however, it is a measure of the amount and type of use which an area and its surrounding community can sustain before impacts become unacceptable. Methods for estimating it are provided by Cifuentes, 1992 and Garcia-Saez, 2005. The use of strict numerical limits on visitation is seen as a simple and straightforward solution for mitigating tourism impacts. However, researchers and managers familiar with visitor impact dynamics (Stankey and McCool, 1972; Lindberg et al., 1997; Garcia-Saez, 2004; 2005) recognized that there is no clear and precise relationship between numbers of tourists and impacts, and that there are many factors which affect where and how much impact will occur. In addition, a variety of mitigation strategies and tactics can be applied, effectively allowing increases in numbers while reducing negative impacts. Therefore, simple quantitative restrictions applied under carrying capacity analyses are no longer considered appropriate or accurate. New, more sensitive and specific methods have been developed (NPS, 1995; Lindberg, McCool and Stankey, 1997).

The earliest of these utilizes the Limits of Acceptable Change (LAC) concept (Cole and Stankey, 1998), which recognizes that change will occur as a result of tourism and that the key goal of visitor management is to limit impacts to predetermined amounts. It and other similar methods set standards or ranges of acceptable change and describe a methodology for determining these standards, measuring impacts and identifying management strategies for controlling negative impacts. They include:

- Recreation Opportunity Spectrum (ROS) (Clark and Stankey, 1979);
- Limits of Acceptable Change (LAC) (Stankey and McCool, 1972; Stankey et. al, 1985, McCool and Stankey, 1992);
- Visitor Impact Management (VIM) (Graefe et al, 1990; Loomis and Graefe, 1992;
- Visitor Experience and Resource Protection (VERP) (Hof et al, 1993; NPS, 1995);

- Tourism Optimisation Management Model (TOMM) (Manidis, 1997),

These methodologies have been well reviewed by a variety of researchers (Boo, 1995; Harroun and Boo, 1996; Borrie et al., 1998; Marrion and Farrell, 1998) with the key differences identified. No visitor management framework can be recommended for all sites. Each program must develop its own methodology, maybe a composite of VERP, LAC, TOMM and others, to suit its specific needs. Little attention has been placed on assessing the impacts of tourism on communities. The concepts behind the Limits of Acceptable Change (LAC) and Visitor Experience and Resource Protection (VERP) methodologies make it a more powerful and accurate framework for assessing and managing impacts than strict carrying capacity determinations (McCool, S.F., 1989; Lindberg et al., 1998). These frameworks are participatory in nature; address the variability of impacts depending on use characteristics and acknowledges the diversity of resources and conditions. They focus on management strategies, and allows for subjectivity in making management decisions. The flexibility its ability to incorporate value judgments from a wide variety of stakeholders renders it an appropriate and effective method of measuring impacts and developing management strategies to overcome or prevent degradation of a variety of natural, social and cultural systems. Most importantly, it incorporates protected area objectives into the monitoring scheme.

While the methodologies in the United States have predominantly been for monitoring physical and biological characteristics of protected areas and assessing visitor experience, these methods are equally suitable for measuring other dimensions of carrying capacity such as environmental, cultural and socioeconomic.

There is clear recognition that in the worldwide context, tourism impacts on cultures and societies, in addition to those on the natural environment and visitors, must be considered. In some cases, negative impacts of tourism on local cultures are more pernicious than impacts on the physical or biological environment (Bailey, 1998).

Margoluis and Salafsky (1998) have developed a methodology for monitoring of conservation and development projects which is very useful and relevant to ecotourism programming. Their book, *Measures of Success*, is a guide for designing, managing and Margoluis and Salafsky provide very detailed information on types of monitoring designs, unlike VERP or LAC and other methodologies, they do not recommend establishing standards of acceptable change or limits for impacts. Instead, they suggest that the monitoring results be used for testing assumptions, adapting the project to overcome problems, and documenting and sharing lessons learned. There are no specific directions for selecting alternative management strategies. However, the authors recommend a process of iteration, or revisiting of the various steps in the project cycle. This involves rethinking and refining the assumptions made for implementing management activities, and adjusting activities or developing new ones for fulfilling project objectives.

In order to identify limits or thresholds of acceptable change, an MPA committee should initiate the identification of limits or ranges of acceptable change for each of the indicators to be measured. An understanding of biology, ecology, sociology and economics, as well as ecotourism practice, are important for determining such standards, However, it is also important to involve the community and other stakeholders in order to ensure that all are comfortable with decisions made about monitoring and application of results.

When considering visitor reactions, it is important to realize that visitors generally recognize physical and experiential (or psychological) impacts more accurately than biologic ones. They are more apt to recognize impacts such as coral damage, litter or crowding than reduced nesting or altered behaviors of animals.

The Tourism Optimisation Management Model (TOMM)

In Australia, dissatisfaction with existing tourism planning perspectives led to the creation of an integrated approach called the Tourism Optimisation Management Model (TOMM) (McArthur, 1997). TOMM evolved from the Limits of Acceptable Change model (an environmental

perspective) when parties to the tourism planning for Kangaroo Island, South Australia, felt that their different perspectives, while valid, were not being accommodated. LAC, developed by resource managers to minimize visitor impacts, could not accommodate the perspective of those who sought an overall quality of life in the community.

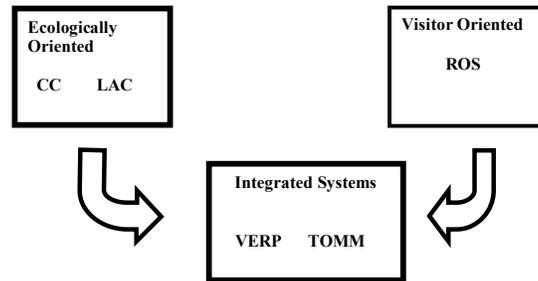


Figure 2. Visitor planning methodologies

TOMM is a management tool to help maintain a sustainable tourism industry that delivers optimal returns to its stakeholders, not only prevent tourism damage, nor to blindly seek its benefits. It addresses the broad set of tourism impacts based on community values, tourism assets, and realistic market opportunities in ways that are consistent with the principles of integrated planning. TOMM begins with realistic tourism scenarios, based on a shared understanding of the components and interrelationships of the local tourism system. Using this as a base, the community develops a vision, or set of benefits that it seeks from tourism and visitor use, and the dis-benefits they are willing to accept in that pursuit. A set of indicators is monitored to measure progress toward the shared outcomes. Indicators that deviate from progress toward the desired conditions trigger a management response. When unforeseen issues or events arise, the model revisits its monitoring system and management actions.

When local communities are present TOMM is the best option, but due to its costs it is not a feasible method for Mexico. The VERP is an integral (figure 2.) methodology that is being applied in Cozumel, Contoy and Chinchorro with some success, the results will be ready at the end of the year.

Effective Management

Managing MPAs is a continuous, iterative, adaptive, and participatory process comprised of a set of related tasks or elements that must be carried out to achieve a desired set of objectives (Pomeroy et al. 2004). Hockings et al. (2000) compiled the first guidelines on how management effectiveness can be evaluated: "Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas". Pomeroy et al., (2004) published a guidebook of natural and social indicators for evaluating MPA management effectiveness. The study aims at assisting MPA managers in the field in evaluating the success of management measures towards achieving the conservation aims. The proposed biophysical, socioeconomic and governance performance indicators were tested and improved in dedicated MPA case studies around the world. The performance of an established management system is measured by indicators that facilitate the qualification and quantification of management success over time. Indicators should be selected in a way that they cover the whole performance range including ecological, socio-economic and governance aspects.

The evaluation of management effectiveness should follow a defined procedure and be undertaken on a regular basis, latest at the end of the lifetime of a management plan.

Due to the linkages within the ocean and with the atmosphere and the terrestrial environment, there are several external forces which affect the marine environment such as global warming or pollution. If an MPA site is subject to degradation from external sources uncontrollable by the MPA authorities, an MPA cannot be effective in reaching its objectives, independent of its management strategies. Non-site based impacts should be reduced in a regional framework, taking also account of the conservation aims of the protected areas therein. In addition to

monitoring biodiversity health, it is also important to assess the achievement of other focal management objectives/management objectives that relate to things such as social and economic benefits, cultural resources, tourism and recreation provision and all the other objectives for management that may be set out in the management plan for the site.

All these ideas are reflected in the WCPA-NOAA-WWF document "How is your MPA doing" (Pomeroy et. al., 2004). The methodology has been applied to Chinchorro and Sian Ka'an MPAs with great success, there is no space here to present the results, but it has been of great help in assessing and calibrating goals, targets and objectives. The methodology is now being applied at Yumabam and Contoy.

Conclusions and recommendations

Successful MPAs are critically dependent on the type of management controls adopted and the involvement of stakeholders in defining resource use and benefits distribution. Ecotourism is expected to stimulate economic improvement at the local level. In discussions of the creation or maintenance of protected areas it is generally accepted that the individuals or communities of people whose livelihoods are linked to these areas will be adversely affected; should be incorporated into the ecotourism projects at levels of either management or benefactors, or both, through employment related activities or as recipients of certain use rights over the natural resources. Channels for marketing and promotion; infrastructural support in the form of credit facilities; and other incentives such as tax holidays commonly used to lure large-scale foreign investment but which have traditionally not been available to local communities.

The involvement of local communities in resource management and access to income generated is emerging as pivotal in achieving the primary goals of ecological sustainability of the resources involved and some form of democratic distribution of benefits at the local level. Failing that kind of involvement it is likely that interests external to the communities, national or global, may step in and bypass the needs of the local economy.

With greater participation and control by local stakeholders in maintaining and delivering the ecotourism product (currently essentially open access public areas or protected areas under government management), the expectation is that local communities will be able to capture a greater share of a high premium product. To that effect, the excursions into nature by tourists would be in the form of "add-ons" - individuals who have already decided to visit a country for various reasons and are now motivated to visit natural sites or to partake in indigenous culture. Such small scale attempts at ecotourism have the advantage of not incurring any additional overhead in terms of marketing, thereby creating new potential for income and at the same time have the potential to redefine how people in small communities can be integrated into a larger pre-existing tourist economy.

This paper suggests that developing states in search of avenues for economic survival in this current global economy may have to look to the particular sets of conditions that allow their economies some potential to define paths to success. Ecotourism presents a challenge and opportunity to redefine the logic of traditional tourism, and in so doing capture the gains that have so far eluded it. This new conceptualization of tourism which incorporates sustainability and community participation as central elements is conducive to an alternative theoretical framework of development in which the focus is on development from below rather than a top down perspective. The need for an integrated planning perspective, and co-operative management to secure tourism benefits in ways that support the quality of life in host communities; and the integrity of their natural and cultural resources. At the same time it is proposed that in order to deal with the tourism growth; where appropriate, planning processes to evaluate the level of tourism use should become part of the Management Plans such as the Visitor Experience and Resource Protection (VERP) framework from the US National Park Service, which is proposed as the standard MPA framework when tourism occur.

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