



SEA VIEWS

MIMA'S ONLINE COMMENTARY ON MARITIME ISSUES

No. 11/2013

2 September 2013

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Addressing tourism concerns and improving marine parks management through the Limits of Acceptable Change Framework

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The author presented a paper on 'Application of the Limits of Acceptable Change (LAC) Framework for Tourism Management in the Tioman Island Marine Park' to the Marine Park Advisory Council Meeting 1/2013 held at the Berjaya Tioman Resort on 25th August 2013. This article summarises the presentation, highlights the concept and importance of the LAC as a tool for tourism management in Malaysian marine parks.

Introduction

Initially established for resource conservation, environment protection and management, habitat restoration and rehabilitation, promotion of awareness and education, and to conserve and conduct research on their rich biodiversity, marine parks are increasingly being called upon to maintain a balance between conservation and tourism activities due to the rising demand for recreational and tourism activities at the parks. One such example is the Tioman Island Marine Park which attracts more than 200,000 visitors annually and has undergone tremendous development to cater to their needs.

The increase in tourist numbers coupled with the development of infrastructure and amenities could deflect from the overall objective for gazetting the island as a marine park under the Marine Park Policy, especially since tourism activities on the island and surrounding protected waters have already resulted in some social, physical and bio-chemical degradation. While tourism promotion in marine parks is in general not an objective under the policy for marine parks, recreational uses compatible with the marine environment and the promotion of understanding and appreciation of the marine parks are however encouraged.

Effective management is therefore important to cope with the problems that arise from intensive tourism use. MIMA has earlier conducted a study on the application of the Limits of Acceptable (LAC) framework as a tool to manage Malaysia's marine parks as tourist attraction sites and for recreational use based on the pilot study carried out on Tioman Island. The venue for the presentation of the findings was appropriate as the meeting was convened on the study island itself. MIMA feels the LAC could be a valuable planning and management tool to systematically address the environmental concerns confronting the Tioman Island Marine Park and marine parks in general.

The pilot study focused attention on the management of desired environmental and social conditions through the use of indicators and agreed standards. The findings were based on: (i) a Social Survey on the impacts of physical, managerial and social settings on visitors' experiences of the area and specific activities using questionnaires, and (ii) a Resource Survey on the effect of visitor activities on the physical-biological environment using ReefCheck survey method data. The planning process and development of questionnaire were conducted via several MIMA workshops involving representatives from government agencies, academia, private sectors and NGOs. This study, to a certain extent, also benchmarked its approach to the management strategies used for the Great Barrier Reef Marine Park.

The LAC framework and its application

The LAC concept was first introduced by Professor George Stankey and researchers from the U.S. Forest Service in the mid 1980's and has been in use since then. The system was developed in response to growing recognition of the failure of attempts to define and implement recreational carrying capacities for national park and wilderness protected areas. Although originally emphasising the management of recreational use in designated wilderness, the LAC concept and principles forming the foundation for the system can be extended to other resource issues as well. For example, the LAC framework has been adapted to manage nature-dependent tourism developments, structure planning for sensitive and ecologically significant riparian areas, and address management of visitors in national park systems in several countries.

In addressing visitor management issues, the LAC has built upon principles from research on visitor impacts and growing public interest in protected area decision-making. This process has been developed to determine how much human-induced change is acceptable and is viewed as a way for managers to confront and resolve complex issues of managing visitors to not only provide for the experiences they seek but also to deal with problems of their social and biophysical impacts. Knowledge gained from experiences elsewhere could indicate how it might

be used in other social and biophysical contexts, in particular for tourism management in environmental sensitive areas.

The main challenge of the LAC framework is to clearly understand the underlying principles and concepts and then design the processes needed to implement an LAC-based planning system to address specific threats. For instance, the LAC addresses sustainability concerns by ensuring that planners direct their attention to the output of the planning process, thus defining what is to be sustained and how this will be accomplished. Coupled with appropriate public involvement, the LAC approach provides a systematic process through which planners, developers, and the public can explore ways of accomplishing economic development as well as important social and community goals.

The basic premise of the LAC framework is that change is an inevitable consequence of recreation use. The issue is how much change is acceptable, what resource and social conditions are appropriate, how to attain these conditions, and the need for technical information and scientific investigation of impacts as an aid for deciding indicators and standards. Eleven principles govern the framework, namely:

- (i) Appropriate management of protected areas depends on explicit objectives to identify the appropriateness of management actions, and indicate acceptable resource and social conditions and outcome.
- (ii) Impact, use levels and expectations of appropriate conditions vary from area to area. Recognition of this diversity will allow managers to decide what are considered desirable conditions.
- (iii) Management needs to decide the most appropriate actions that can be used to influence the amount, type and location of human-induced changes as well as determine the acceptable level of change.
- (iv) Impact on resource and social conditions are inevitable consequences of human use, hence the need to focus on the question of 'how much change is acceptable' before evaluating appropriate techniques or actions to manage impacts.
- (v) The use-impact relationship is not linear, maybe temporarily or spatially discontinuous. Impacts resulting from visitor use or management actions may occur off-site or there may be a time lag before impacts become visible.
- (vi) The use-impact relationship is not a linear relationship. There are many confounding factors that are often outside the control of management.
- (vii) The lack of precise linear relationship between use and biophysical implies that management problems are not density dependent.
- (viii) Limiting use is one of the many management options.
- (ix) Monitoring is essential as it allows maintaining a formal record of conditions over time, and assessing the effectiveness of management actions.
- (x) The separation of technical decisions from value judgments in the decision-making process i.e., it is important to separate 'what is' questions from 'what should be' questions in the decision making process.
- (xi) Inputs from concerned public group are important for successful decisions and implementation of management strategies.

Highlights on findings from the pilot study

The Social Survey sought to gain some understanding of the physical and social conditions which visitors consider necessary for a satisfactory holiday in Tioman. It also aimed to determine the relationship between tourism and resources in protected areas for developing indicators and standards for managing visitors and monitoring resource conditions of the area. Questionnaires were printed in 5 languages and face-to-face interviews were based on a mixture of responses applying a five-point Likert scale and a selection of multiple choices. Among the main findings of the study were (in no particular order of importance):

- (i) The majority of visitors were first-timers.
- (ii) The natural environment was the main pull of the island.
- (iii) Current developments were considered at an adequate level.
- (iv) The protected status of the marine environment of the island was important/ the main reason that influenced decisions to visit.
- (v) The coral reefs and marine life around the island were extremely attractive to visitors.
- (vi) The snorkeling/diving areas were perceived as moderately crowded.

Findings from the study provide clearly show that the physical conditions were regarded as important attributes to a satisfactory holiday in Tioman. Outcomes also demonstrated that visitors value the resource conditions for a satisfactory dive/snorkeling activity. Recreational expectations sought by tourists visiting the island depend largely on the qualities of the physical conditions. Safeguarding the environmental quality is thus the most crucial factor in the equation.

The Resource Survey focused on data gathering of the substrate, fish and invertebrates at 22 survey sites around the island in addition to determining marine water quality parameters. A major point stressed was the need for continuous monitoring to understand the normal state and variability of the environment, detect changes to the system arising from human activities, as well as determine the extent of success of management efforts to mitigate impacts.

The proposal and way forward

The study recommends a reactive monitoring programme emphasizing on limit-setting by an expert panel or a technical working group involving the relevant stakeholders towards for establishing specific use zones. The need to set standards through continuous mutual dialogues, learning and public participation, providing expertise and improving the management actions were also considered important. The application of the LAC framework in the management of desired conditions would assist marine park management in meeting their policy objectives and in achieving ecologically sustainable and quality tourism industry. Feedback received from the presentation made to the Council was encouraging with requests for an update of the study considering latest survey data for the island, and a detailed presentation to the respective stakeholders in a separate forum.