

Monitoring and Evaluation of Coral Reef Management

Introduction

The greatest problem facing coral reef ecosystems is unsustainable resource use and other human impacts. The purpose of monitoring and evaluating coral reef projects is to assess the performance of management to halt and reverse the decline of coral reefs. Specifically, the goals of monitoring and evaluation are:

1. to quantify change in the socio-ecological system
2. to assess the impact of anthropogenic activities
3. to appraise how effectively functions/activities were executed
4. to evaluate perceptions/attitudes and values of change among stakeholders

Threats or barriers to monitoring and evaluation include:

- Incomplete knowledge of resource use and production.
- Difficulties of changing people's behaviour.
- Lack of alternatives to current resource use or other behaviour patterns
- Lack of adequate capacity (skills and resources) to manage.

Key Lessons Learned and Recommendations

Monitoring design

- Long term commitment required (10+ yrs) especially to identify ecological changes.
- Question-driven monitoring increases productivity and relevant management interventions (what is the question to be answered?).
- Identify the purpose of the data. Who is end user or target audience?
- Balance benefits and costs (e.g. time, money, equipment) to create an affordable programme.
- Determine acceptable level of change and the statistical power to detect it.
- Monitor variables that will change on the timescale of management interventions (i.e. fish populations recover faster than coral cover).
- Use methods that allow comparison with other findings and can be easily replicated.
- Create appropriate data handling, analysis and storage systems before data collection begins.
- Consider the needs of the end user as regards software used in data storage and dissemination.
- Establish a baseline and control to assess the impact of activities.
- Inform stakeholders of the monitoring programme and plans to disseminate, being mindful of interview fatigue.

- Consider change in perceptions, attitudes and behaviour as important measures to monitor for determining success.

Monitoring implementation

- Delegate tasks at the appropriate level of expertise.
- Identify clear responsibilities for various tasks and list names associated with data collection to allow for future verification of numbers and correcting errors.
- Adequately train and undertake trial runs before collecting data to familiarise observers with methods.
- Concentrate activities into clear and realistic time blocks to ensure specialised people are available and to use time and resources efficiently.
- Better to use simple technologies but if high-tech equipment is needed, ensure service and spare parts available.
- Outsourcing can be the most efficient and cost-effective way of gaining high level, high maintenance, demanding technical information.
- Develop a system of double checking and create redundancy to find errors early in the process.
- Enter data and undertake preliminary analysis during or shortly after data collection to search for and rectify errors.
- Maintain back ups of data in the form of electronic and hard copies of data sheets.
- Check and compare current data collection with past data collection to identify possible errors and immediate trends for confirmation.

Dissemination

- Take into account the local languages and cultures.
- The information and means of relaying it should be adaptable to the receivers' level of education or understanding.
- Relate information relevant to potential management interventions and tools.
- Distinguish advocacy from objective information.
- Distinguish between information derived from other studies versus locally sourced data.

Conclusions

- Careful consideration and collaboration of design elements will ensure that the program has relevance to stakeholders and long-term value to the project and similar future projects (to avoid changing methodologies in ways that invalidate time series).
- Implementation requires sound management and involvement of people and resources in order to complete work efficiently and in a repeatable manner that reduces the many potential sources of error.
- Dissemination requires knowledge of the audience, what they can do, and what information they need to affect changes in behaviour.

- Monitoring and performance evaluation are long-term activities and should be adequately funded and supported.