

# Monitoring and Evaluation: Lessons from Tubbataha Reef National Park and Coron Island Ancestral Domain, Philippines

G.P.B. Samonte-Tan<sup>1</sup>, M.D. Pido<sup>2</sup>, N.P. Abesamis<sup>3</sup>, S.Naguit<sup>3</sup>, M.C.A. Pontillas<sup>2</sup>, R. B. Trono<sup>3</sup>

- 1) Conservation International, 2011 Crystal Drive, Arlington, Virginia 22202, U.S.A.
- 2) Center for Strategic Policy and Governance, Palawan State University, Tinguiban Heights, 5300 Puerto Princesa City, Philippines
- 3) Conservation International-Philippines, # 6 Maalalahanin Street, Teachers Village, Diliman, Quezon City, Philippines

**Abstract.** Few efforts have been directed at evaluating the biophysical, socioeconomic and governance effectiveness of marine protected areas (MPAs) based on MPA objectives and management actions. This paper describes the process, indicators and lessons learned in developing monitoring and evaluation (M&E) programs for two MPAs in the Philippines: the Tubbataha Reef National Park and the Coron Island Ancestral Domain. The Tubbataha reefs, a World Heritage Site, covers 33,200 hectares of offshore reefs with exceptionally high biodiversity. Coron Island covers 22,284 hectares of ancestral (*Tagbanua* tribe) land and waters. The process to develop monitoring programs included: stakeholder consultations and consensus on indicators; creation of a monitoring team; data collection; information sharing; capacity building of monitoring team; and, institutionalization of management structure. Biophysical indicators measure the protection of marine species and habitats. Socio-economic indicators identified largely measure the economic status of the coastal communities in terms of household occupational structure. Governance indicators identified are mostly process indicators such as existence of a decision-making/management body and clearly defined enforcement procedures. Key lessons learned include: capacity building is a major bridge for overcoming technical difficulties in undertaking M&E functions; developing partnerships between local government and local stakeholders helps in accessing relevant information; and, a multi-disciplinary approach provides a comprehensive assessment for measuring the success of MPAs.

**Key words:** Coron Island Ancestral Domain, marine protected areas, monitoring, Philippines, socioeconomic, governance, Tubbataha Reef National Park

---

## Introduction

In the Philippines, few efforts have been directed at monitoring and evaluation of marine protected areas (MPAs). The lack of adequate socioeconomic data and analysis of these information to provide concrete correlations between management actions and desired conservation outcomes of MPAs have not been well documented. This situation, in turn, weakens the support for establishing and maintaining MPAs. Without an effective monitoring and evaluation (M&E) program, tracking progress and providing feedback to MPA management cannot be achieved.

Monitoring and evaluation are distinct management functions, yet these are interactive and mutually supportive activities. M&E supports accountability in the use of resources and informed decision-making for corrective actions and to reinforce early signs of success. Various regulatory and management entities

independently conduct M&E programs, which has resulted in duplication of efforts. Additionally, these entities often fail to present monitoring results in a form that is useful for shaping policy, resulting in the lack of a feedback loop that would permit periodic evaluation of the management effectiveness. Failure to effectively use information to undertake action and policy interventions leads to continued inefficient use of resources, and further deterioration of biodiversity in protected areas.

The purpose of this paper is to present the process in developing an M&E program to assess the effectiveness of management regimes for the Tubbataha Reef National Park (TRNP) and Coron Island Ancestral Domain (CIAD). These two MPAs are extremely high priority coral reef areas in Palawan Province, Philippines. The M&E indicators are described, as well as the lessons learned. This paper

forms part of the project of Conservation International–Philippines titled, ‘Development of Management Monitoring and Evaluation Programs for Two Marine Protected Areas in Palawan, Philippines’, funded by the U.S. National Fish and Wildlife Foundation.

### Methods

Figure 1 presents the MPA location. Both protected areas are nationally and globally significant, not only because of their high levels of biodiversity, but also due to their high economic and social benefits. The TRNP covers 33,200 ha of offshore reefs in the midst of the Sulu Sea. It was established as a national marine park in 1988, and was designated a UNESCO World Heritage Site in 1993. Marine biodiversity is exceptionally high with at least 417 fish species, 372 coral species, 23 seabirds and eight species of marine mammals. These include a critically endangered sea turtle, an endangered marine mammal, seabird and sea turtle, and two vulnerable giant clams.

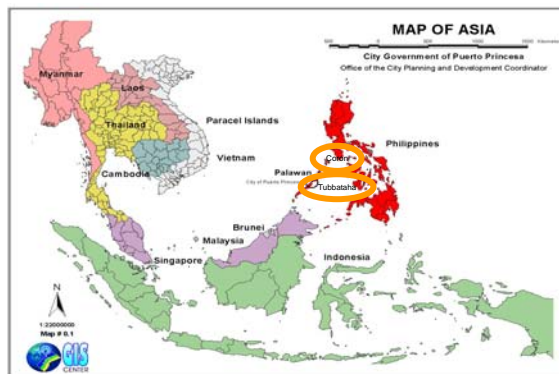


Figure 1: Location map of Tubbataha Reef National Park and Coron Island Ancestral Domain, Philippines.

The area of CIAD is within the Calamianes group of islands in northern Palawan Province, covering an area of 22,284 ha of ancestral land and waters. A unique marine biogeographic zone, CIAD harbors approximately 462 coral species, with at least 30 more new species recorded, and more than 700 species of fish. What makes this MPA unique is its direct management by indigenous peoples called *Tagbanwa*. A Certificate of Ancestral Domain Claim, a legal instrument given to indigenous groups to gain security of tenure over their ancestral land and waters, was awarded to the *Tagbanwa* tribe in June 1998.

Six key intricately-related and overlapping activities were undertaken to develop the M&E programs for the two MPA’s. First, a series of multi-stakeholder consultations were undertaken to develop a consensus on identifying and selecting appropriate biophysical, socioeconomic and governance indicators. This involved participants from agencies and institutions that have mandate - in one form or another - in managing the two MPAs. This resulted in the

formulation of an action plan for developing the M&E program strategy, including implementation and management arrangements. Second, the M&E team was created. This team was comprised of representatives from regulatory, management and research/academic bodies, other environmental groups, and indigenous peoples that were conducting monitoring programs or planning monitoring programs within the two protected areas. The team’s main output was the design of the M&E program. Third, data collection was undertaken. It involved literature review, secondary analysis and primary data gathering. This was done as a collaborative endeavor among the participating institutions and stakeholder groups. Fourth, there was sharing of information collected. Primary data generated were analyzed and synthesized with the existing data and literature. This was followed by trainings as part of capacity building for the M&E team and stakeholders were conducted. Training exercises included topics on M&E concepts, rationale, socioeconomic survey methods, analysis and interpretation of results. Lastly, the institutionalization process for the implementation of the M&E program was initiated. This included the designing and agreement on the M&E proposed management structure.

### Results

Three key result areas are presented. These relate to the following: (1) selection process for M&E indicators; (2) sample of datasets generated for indicators; and (3) rating for the relevant indicators.

Selection of the M&E indicators was based on the MPAs’ management objectives contained in their respective plans.<sup>1</sup> The management objectives of both MPAs cover relevant biophysical, socioeconomic and governance dimensions (Table 1). Typical to most protected areas, these MPAs are trying to achieve an array of human and natural resources-related objectives. Based on these management objectives, coupled with intensive consultations with relevant stakeholder groups, the M&E indicators were selected. CIAD had 22 indicators (Table 2), while TRNP had 20 indicators (Table 3).

Table 1: Examples of biophysical, socioeconomic and governance objectives contained in management plans of Tubbataha Reef National Park and Coron Island Ancestral Domain.

Objectives	Tubbataha Reef Management Plan	Coron Ancestral Management Plan
Biophysical	To protect biological diversity and ecological processes	To protect and rehabilitate ecosystem function, communities,

<sup>1</sup> The TRNP already had a well established management plan. For the CIAD, this project assisted Coron management in drafting the Coron Ancestral Domain Sustainable Development and Protection Plan.

Objectives	Tubbataha Reef Management Plan	Coron Ancestral Management Plan		
	from unnatural threats and human impacts.	habitat quality, species and gene pools.		
Socioeconomic	To increase income potential from ecosystems targeted for conservation.	To stabilize or diversify household occupational and income structure through reduced marine resource dependency.		
Governance	Ensure stakeholder participation and representation.	To ensure compatibility and enforceability between legal and local arrangements and improve the application of laws and regulations.	Governance indicators	<ol style="list-style-type: none"> <li>1. Level of resource use conflict</li> <li>2. Existence of a decision-making and management body</li> <li>3. Existence and adoption of management plan</li> <li>4. Existence and adequacy of enabling legislation</li> <li>5. Availability of and allocation for MPA administrative resources</li> <li>6. Degree of interaction between managers and stakeholders</li> <li>7. Clearly defined enforcement procedure</li> <li>8. Degree of information dissemination to encourage stakeholder compliance</li> </ol>

Table 2: Indicators for assessment of Coron Island Ancestral Domain management effectiveness.

Biophysical indicators	<ol style="list-style-type: none"> <li>1. Focal species abundance</li> <li>2. Focal species population structure</li> <li>3. Composition and structure of the community</li> <li>4. Type, level and return on fishing effort</li> <li>5. Area showing signs of recovery</li> <li>6. Area under no or reduced human impact</li> </ol>
Socioeconomic indicators	<ol style="list-style-type: none"> <li>1. Local marine resource use patterns</li> <li>2. Level of understanding of human impacts on resources</li> <li>3. Household income distribution by source</li> <li>4. Local values and beliefs about marine resources</li> <li>5. Perceptions of local resource harvest</li> <li>6. Household occupational structure</li> <li>7. Number of tourists</li> </ol>
Governance indicators	<ol style="list-style-type: none"> <li>1. Level of resource use conflict</li> <li>2. Existence and adequacy of enabling legislation</li> <li>3. Local understanding of MPA rules and regulations</li> <li>4. Level of stakeholder participation and satisfaction in management</li> <li>5. Level of stakeholder participation in surveillance, monitoring and enforcement</li> <li>6. Number of local legislations adopting national policies</li> <li>7. Effective MOA among implementers of the ADSDPP</li> </ol>

Table 3: Indicators for assessment of Tubbataha Reef National Park management effectiveness.

Biophysical indicators	<ol style="list-style-type: none"> <li>1. Focal species abundance</li> <li>2. Focal species population structure</li> <li>3. Habitat distribution and complexity</li> <li>4. Composition and structure of the community</li> <li>5. Type, level and return on fishing effort</li> <li>6. Water quality</li> <li>7. Area showing signs of recovery</li> <li>8. Area under no or reduced human impact</li> </ol>
Socioeconomic indicators	<ol style="list-style-type: none"> <li>1. Local marine resource use patterns</li> <li>2. Level of understanding of human impacts on resources</li> <li>3. Perceptions of non-market and non-use values</li> <li>4. Household income distribution by source</li> <li>5. Number and nature of markets</li> <li>6. Distribution of formal knowledge to community</li> </ol>

For the TRNP's eight biophysical indicators, the first four measure how much of the marine resources, biological diversity, individual species and habitat is protected. Species abundance (diversity) is defined as the number of individuals of a particular species found to occur within and outside the MPA. A focal species is an organism of ecological or human value that is of priority interest for management through the MPA. Data from the literature indicates that the seabirds' breeding populations have been maintained over the years (CI-Philippines, 2006).

Three examples for socioeconomic indicators are provided. The number of tourists engaged in diving has fluctuated over the years but shows an increase from about 500 tourists in 1989 to over 800 tourists in 2003 (Figure 2). Compared to other dive destinations, the trip to the TRNP is only feasible for about three months a year (March-May) due to weather conditions. The people of the Cagayancillo municipality, by virtue of political geography, are the TRNP's local stakeholders. Their dependence on marine resources (eg, fishing) has declined by over 50% since the establishment of the TRNP (Figure 3). The park's use values are largely generated through tourism (Figure 4). The TRNP is one of the most highly regarded diving destinations in the world.

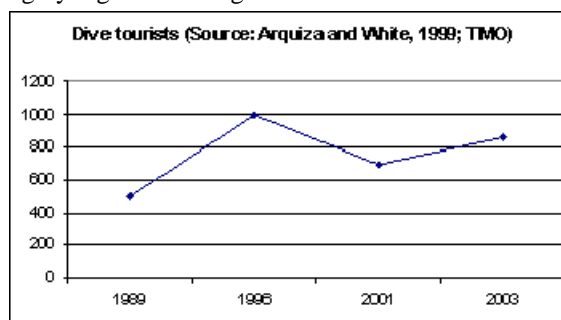


Figure 2: Local marine resource use patterns in terms of dive tourism in Tubbataha Reef National Park.

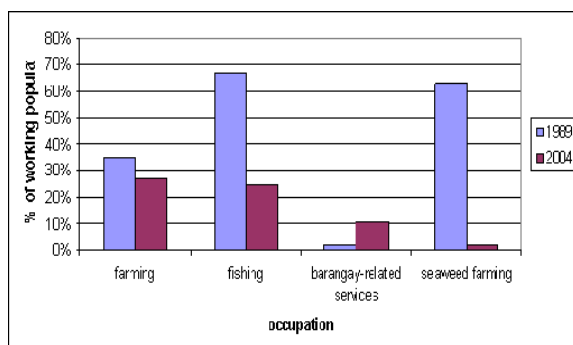


Figure 3: Household income distribution by source in Tubbataha Reef National Marine Park.

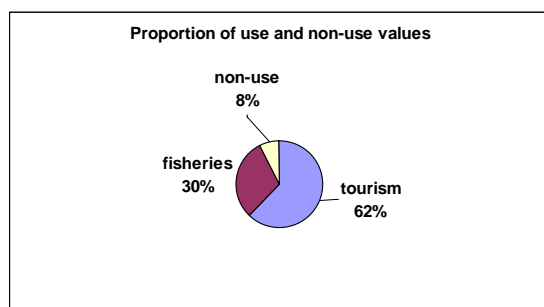


Figure 4: Perceptions of non-market and non-use values in Tubbataha Reef National Marine Park (Estimated value at US\$ 64 million)

Two examples on the socioeconomic and governance indicators are provided in the case of CIAD. The stakeholders' perceptions of local resource harvest and opinions on level of resource use conflict are provided in Table 4 and Table 5, respectively. The people perceived that their yield from the fisheries is decreasing. Since smaller fishes are caught now, it implies biological overfishing. Conflicts appear to be escalating and appropriate measures are needed to resolve them. Legally, the municipal government largely operates through the Local Government Code of 1991 while the local *Tagbanuas* manage their ancestral domain through the Indigenous Peoples Rights Act of 1997. Although the municipal council did not dispute the evidence that the Calamianes *Tagbanuas* have held since time immemorial possession of CIAD areas, it claims also to have rights to the ancestral land and waters occupied by the indigenous peoples.

Table 4: Perceptions of local resource harvest by stakeholders at Coron Island Ancestral Domain.

Compared to 10 years ago	Response
Has the available target species changed?	Several species can no longer be seen like big eye scad, rabbit fishes, and siganids
What is the quantity of available target species?	A lot less- Before, fishing half a day yields 5 kg but now, fishing one day yields 2 kg.  Before, 4 hours of fishing for fish yields 6-8 kg but now, zero.

Compared to 10 years ago	Response
Has the size of target Species changed?	Smaller fishes are caught now

Table 5: Opinions about level of resource use conflict by stakeholders at Coron Island Ancestral Domain.

Existing data	Data source
<ul style="list-style-type: none"> <li>Coron Municipal Council filed more than 14 municipal resolutions opposing the ancestral domain claim</li> <li>Cited the interest of the burgeoning tourism industry, large-scale commercial fishing</li> </ul>	Local NGO report
Primary data	Data source
<ul style="list-style-type: none"> <li>Small-scale fishers conflict among commercial fishers, tourist operators, local government</li> </ul>	Key informant interview and stakeholder consultation

The suites of indicators are presented in summary format. Qualitative ratings are provided as follows: '+' for positive; '-' for negative rating; '0' for no change rating; and '?' for indeterminate rating due to insufficiency of information. As part of M&E process, the stakeholder groups and representatives of site M&E teams agreed on the above ratings and applied them in their preliminary assessments of their respective MPAs. This was undertaken during several stakeholder consultation workshops where stakeholder participants discussed and agreed on final appraisal of each indicator against baseline data

The biophysical objective in TRNP is 'to protect biological diversity and ecological processes from unnatural threats and human impacts'. Since most of the summary ratings for biophysical indicators are positive, it implies that the above objective has been largely met (Table 6). Except for 'perceptions of non-market and non-use values' which is rated indeterminate due to limited information, the rest of the socioeconomic indicators are all positive (Table 7).

Table 6: Summary rating for biophysical indicator on focal species abundance and diversity in Tubbataha Reef National Park.

Appraisal Against Baselines		Remarks
Seabirds:	Diversity +	Monitor breeding species only
	Abundance +	
Turtles:	Diversity 0	No data to determine abundance
Cetaceans:	Diversity ?	Cannot directly attribute to management effectiveness; 2004 data of TRNMP set as baseline.
Fishes:	Diversity +	1997 data of WWF set as baseline.
	Biomass +	
	Density +	
Indicator Fish:	Biomass +	Pomacentridae (negative)
	Density +	
Top Predators:	?	No sufficient data; Use 2005 data as baseline.

Table 7: Summary rating for socioeconomic indicators in Tubbataha Reef National Park.

Socioeconomic Indicators	Appraisal	Remarks
1. Local marine resource use patterns	+	Adapt 1986 baseline data
2. Level of understanding of human impacts on resources	+	Adapt 2004 baseline data
3. Perceptions of non-market and non-use values	?	Adapt 2004 baseline data; Uncertain trend
4. Household income distribution by source	+	There was diversification of income source and an increase in per capita
5. Number and nature of markets	+	Cagayancillo benefited from dive fees; stable price of seaweed
6. Distribution of formal knowledge to community	+	Need to examine impact of IEC materials; need to diversity IEC media (eg:TV, radio)

In the case of governance indicators, all are rated positively, except the indicator on 'availability and allocation for TRNP administrative resources' (Table 8).

Table 8: Summary rating for governance indicators in Tubbataha Reef National Park.

Governance Indicators	Appraisal	Remarks
1. Level of resource use conflict	+	There is positive effort towards reduced conflict (local fishers); emerging conflict between energy and fisheries
2. Existence of a decision making management body	+	Baseline data from Tubbataha Management Office, 2002
3. Existence and adoption of a management plan	+	
4. Existence and adequacy Of enabling legislation	+	
5. Availability and allocation for TRNMP administrative resources	-	Funds were adequate due to external funding through UNDP-GEF 2000-2004; Funds utilized in 2002 were from the dive fee collection
6. Degree of interaction between managers and stakeholders	+	
7. Clearly defined enforcement procedures	+	
8. Degree of information dissemination to encourage stakeholder compliance	+	Use radio for information dissemination.

## Discussion

Developing and sustaining the operations of M&E programs for MPAs are difficult endeavors. This component of MPA management is not as well developed, when compared to other established components, such as information and education campaigns or law enforcement.

Attempts were made to come up with quantitative measures of success, which are beyond anecdotal evidences. Some substantial insights may be generated from this study. For TRNP, many of the indicators are rated positive based on trend or compared to an agreed baseline. Particular attention, however, must also be given to the allocation of financial and administrative resources.

In the case of CIAD, the fishery resources is apparently dwindling. If more people perceive that target species is decreasing, then this is not favorable and implies that more effort needs to be directed at determining and addressing the cause of this declining trend.

Several lessons were also learned in the course of developing the M&E programs for these MPAs. First, active involvement of the local government units is crucial for effective MPA management. Secondly, capacity building for the management staff and participating agencies is a major bridge for overcoming technical difficulties in undertaking M&E functions. Linking with local researchers and academic institutions is important. Thirdly, developing partnerships between the local government and the local stakeholders helps in accessing relevant information. Lastly, a multi-disciplinary approach, utilizing relevant mix of indicators, provides a more complete assessment for measuring the success of MPAs.

## References

- Arquiza D, White AT (1999) Tales from Tubbataha, Natural History, Resource use and Conservation of the Tubbataha Reefs, Palawan, Philippines. Bookmark, Philippines, 190 pp.
- Conservation International – Philippines (2006) Development of Management Monitoring and Evaluation Programs for Two Protected Areas in Palawan, Report submitted to the National Fish and Wildlife Foundation, Conservation International, Quezon City, Philippines, 277 p.
- MO (Tubbataha Management Office). 2002. Annual Report. Tubbataha Reef National Park and World Heritage Site.