

MANAGEMENT PLAN

TUBBATAHA REEFS NATURAL PARK & WORLD HERITAGE SITE

2011 - 2021



The applicability of this Management Plan is ten (10) years from the date of its approval subject
for review every three (3) years.

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TPAMB RESOLUTION NO. 11-008: A RESOLUTION APPROVING THE MANAGEMENT PLAN OF THE TUBBATAHA REEFS NATURAL PARK (TRNP)

Excerpts from the Minutes of the Special TPAMB Meeting held at Victoriano J. Rodriguez (VJR) Hall, January 12, 2011

Present:

1. Atty. Noel Aquino, Rep., Office of the Governor	Acting Chairman
2. Mr. Juan dela Cruz, Rep., DENR	Member
3. Mr. Felomino Racuya, PCSDS	Member
4. Mr. Ador Adoro, Rep., Office of the Mayor, LGU-Cag.	Member
5. Mr. Randy Buñag, Cagayancillo SB-Committee on ENR	Member
6. Lt. Col. Juan Ismael Villadolid, Rep., WESCOM	Member
7. COMMO Edgardo Tamayo AFP, NAVFORWEST	Member
8. CAPT Rolando Legaspi, PCG	Member
9. Mr. Geronimo Reyes, Rep., DOT- PCSSD	Member
10. MR. Paciano Gianan, BFAR	Member
11. Prof. Joel Becira, WPU	Member
12. Mr. Elvis Fabricante, Office of the Rep., 1 st District	Member
13. Mr. Romeo Trono, CI-Phils	Member
14. Ms. Marivel Dygico, WWF-Phils	Member
15. Mr. Romel Carbonell, SAGUDA Palawan	Member
16. Ptr. Jehu Cayaon, Tambuli ta mga Kagayanen	Member

TPAMB Resolution No. 11-008

"A RESOLUTION APPROVING THE MANAGEMENT PLAN OF THE TUBBATAHA REEFS NATURAL PARK (TRNP)"

WHEREAS, Section 10 of Republic Act No. 10067 created the Tubbataha Protected Area Management Board (TPAMB) as the sole policy-making and permit granting body of the TRNP;

WHEREAS, Section 6 of the Act vested the management and administration of the TRNP with the TPAMB, which shall be consultative and participatory;

WHEREAS, Section 7 of the Act states that within one (1) year from the effectivity of such Act, there shall be an initial management plan to be prepared by the Tubbataha Management Office (TMO) in coordination with various stakeholders, and paragraph (g) thereof provides that the management plan shall be reviewed and approved by the TPAMB, and submitted to the PCSD and the DENR;

WHEREAS, the TPAMB conducted a management planning workshop with a theme TUBBATAHA THROUGH CHANGING TIMES on January 11-12, 2011 to update its management plan in response to the current and emerging issues and challenges in the TRNP and in compliance with the Tubbataha Act ;

WHEREAS, the management plan **also** responds to the queries of the UNESCO World Heritage Committee as stated in WHC-09/33.COM/20;

WHEREAS, the updated management plan as an output of the workshop requires formal approval of the TPAMB;


NOW THEREFORE, be it resolved, as it is hereby resolved, to approve the updated management plan of the TRNP effective for ten (10) years subject to periodic review every three years or as the need arises;

APPROVED AND ADOPTED this 12th day of January, 2010 in Puerto Princesa City.

Prepared by:


MA. THERESA R. AQUINO
Secretary

Attested by:


ATTY. NOEL E. AQUINO
Acting Chairman

INTRODUCTION

The Tubbataha Reefs Natural Park (TRNP) lies in the middle of the Sulu Sea, some 80 nautical miles southeast of Puerto Princesa City, Palawan, Philippines. It is composed of two uninhabited atolls and a reef with bustling reef platforms that are submerged in most parts. The North Islet, oblong-shaped, 16 kilometers long and 4.5 kilometers wide encloses a lagoon of sand and corals with a maximum of 30 meters in depth. The South Islet is a triangular reef structure about five kilometers long and three kilometers wide with a lagoon 21 meters at the deepest section. The islets are separated by a 5-nautical miles channel. Jessie Beazley Reef, which lies about 13 nautical miles from the atolls, has an area of 45 hectares with a small islet made of marl exposed during low tide. The boundaries of TRNP are located three nautical miles from the edge of these marine formations. Tubbataha or the Park, as the TRNP will occasionally be referred to in this document, is composed of over ten thousand hectares of coral reef and more than 87,000 hectares of surrounding waters.

Relatively undisturbed for hundreds of years largely due to its remote location and inaccessibility, marine life in these parts thrived to spectacular abundance. It fell victim to fishing overexploitation and abuse in the late 1980s. Conservationists thus sounded the alarm and clamored for the protection of Tubbataha by proposing its declaration as a national park. Presidential Proclamation 306 issued by President Corazon Aquino on August 11, 1988 established the 33,200-hectare no-take Tubbataha Reef National Marine Park (TRNMP). It was expanded to include Jessie Beazley Reef by President Gloria Macapagal-Arroyo on August 23, 2006 through Presidential Proclamation 1126 and renamed the Tubbataha Reefs Natural Park. Today, TRNP is 97,030 hectares and stands as the country's only marine protected area inscribed in the UNESCO World Heritage List.

Below is a chronology of developments in the management of Tubbataha:

September 7, 1987	The Provincial Board of Palawan approves Resolution 244 requesting the national government to declare the Tubbataha Reefs as a marine sanctuary.
August 11, 1988	President Corazon C. Aquino issues Presidential Proclamation 306 establishing the Tubbataha Reef National Marine Park (TRNMP) as a no-take protected area and placing it under the management of the Department of Environment and Natural Resources (DENR).
1990	The DENR and Tubbataha Foundation Inc., a non-government organization, enter into a Memorandum of Agreement for the management of the Park. The foundation generates resources and conducts information and education programs to help the DENR in managing the Park.
December 11, 1993	TRNMP is inscribed as a UNESCO World Heritage Site, becoming the only purely marine World Heritage Site in Southeast Asia.

July 20, 1995	President Fidel V. Ramos issues Memorandum Circular (MC) 128 establishing the Presidential Task Force on the Tubbataha Reef National Marine Park. The body serves as the policy and program coordinating mechanism for TRNMP. It is headed by the Secretary of DENR as Chairman and the Chairman of the Palawan Council for Sustainable Development (PCSD) as Co-Chair. Its members include the Secretaries of the Department of Tourism, and Department of Budget, the Commander of Naval District IV of the Philippine Navy, the Mayor of Cagayancillo and five NGOs.
November 7, 1996	Memorandum Circular 150 is released, amending MC 128 and turning over the Chairmanship of the Presidential Task Force to the Secretary of the Department of National Defense with the DENR and PCSD representatives as Co-Chair.
November 12, 1999	Tubbataha is included in Ramsar List of Wetlands of International Importance.
November 26, 1999	The Palawan Council on Sustainable Development approves the TRNMP Management Plan, which provides for the establishment of the Tubbataha Protected Area Management Board (TPAMB).
August 11, 2001	The Tubbataha Management Office is formally established by the TPAMB.
November, 2002	The 9 th draft of the Tubbataha Protected Area Bill, a product of various multi-stakeholder consultations, is filed for the first time with the 12 th Philippine Congress.
August 23, 2006	President Gloria Macapagal-Arroyo issues Presidential Proclamation 1126 expanding TRNMP to include Jessie Beazley Reef and renames the park Tubbataha Reefs Natural Park (TRNP).
June 26, 2009	UNESCO World Heritage Commission expands the TRNP World Heritage Site.
April 6, 2010	TRNP Act of 2009 also known as RA 10067 is enacted. This law provides for the establishment of a 10-nm buffer zone from the Park's boundaries and provides for more stringent penalties for violation of statutes.
November 13, 2010	The Implementing Rules and Regulations of RA 10067 was published. One of the highlights of the IRR was the establishment of the Tubbataha Adjudication Board (TAB).

LEGAL FRAMEWORK AND MANDATE

As a signatory to various international conventions, the Philippines is committed to protect the Tubbataha Reefs Natural Park and World Heritage Site. Some of these treaties are:

The Convention on Wetlands (Ramsar Convention) of 1971 aims to stem the loss of wetlands worldwide especially those that are important for migratory waterfowl. It defines wetlands as fresh, brackish and saltwater marshes, including marine waters up to six meters in depth at low tide and any deeper marine waters contained within the wetland area. The Tubbataha Reefs was included in the Ramsar List of Wetlands of International Importance on November 12, 1999.

World Heritage Convention (Convention Concerning the Protection of the World Cultural and Natural Heritage) of 1972 seeks to create international support for the protection and maintenance of sites demonstrating outstanding cultural and natural heritage. All 187 Parties to the World Heritage Convention assumes an obligation to identify, protect, conserve and transmit to future generations their unique cultural and natural heritage. Tubbataha was inscribed in the World Heritage List on December 11, 1993.

Convention on Biological Diversity of 1992 seeks the conservation of biological diversity and the sustainable use of its components. It provides for the establishment of protected areas where special measures are to be taken to conserve biological diversity and the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings.

The UN Conference on Environment and Development (UNCED or the Earth Summit) of 1992 stipulates in Chapter 17 of Agenda 21 (Protection of the Oceans) that partner States shall undertake “measures to maintain biological diversity and productivity of marine species under national jurisdiction...including...establishment and management of protected areas.”

The 1994 UN Convention on the Law of the Sea (UNCLOS) which aims to regulate all marine activities in any area of the sea and “provides legal basis upon which to pursue the protection and sustainable development of the marine environment and its coastal resources”. Signatories to the convention are obligated to conserve and manage the living marine resources under their jurisdiction.

The Philippine Government has enacted laws that call for the protection of biodiversity and land/seascapes through the following instruments:

Republic Act 7160 (Local Government Code of 1991) provides for genuine and meaningful local autonomy of territorial and political subdivisions of the State to enable them to attain their fullest development as self-reliant communities and make them more effective partners in the attainment of national goals. It requires all national agencies and offices to conduct periodic consultations with appropriate LGUs, non-government and people's organizations, and other concerned sectors of the country before any project or program is implemented in their jurisdiction.

Republic Act No. 7611 (Strategic Environmental Plan for Palawan of 1992) provides the framework for the sustainable development of Palawan compatible with protecting and enhancing natural resources and the endangered environment.

Republic Act No. 7586 (National Integrated Protected Areas System Act of 1992) aims to secure for the Filipino people of present and future generations the perpetual existence of all native plants and animals through the establishment of a comprehensive system of integrated protected areas.

Republic Act 8550 (The Philippine Fisheries Code of 1998) ensures rational and sustainable development, management, and conservation of the fishery and aquatic resources in Philippine waters including the Exclusive Economic Zone and within adjacent high seas. It guarantees the conservation and protection of the country's fishery and aquatic resources to achieve food security.

Republic Act 9147 (Wildlife Resources Conservation and Protection Act of 2001) conserves and protects wildlife species and their habitats to promote ecological balance and enhance biological diversity. It also aims to pursue, with due regard to the national interest, the Philippine commitment to international conventions, regulate the collection and trade in wildlife, and initiate or support scientific studies on the conservation of biological diversity. The Palawan Council for Sustainable Development (PCSD) is the key implementer of this law as it applies to Palawan.

Republic Act 10067 (TRNP Act of 2009) provides for the protection and conservation of the globally significant economic, biological, socio-cultural, educational and scientific value of the Tubbataha Reefs into perpetuity for the enjoyment of the present and future generations.

THE EVOLUTION OF THE MANAGEMENT PLAN

The Department of Environment and Natural Resources (DENR) developed the first Tubbataha Management Plan in 1991. The Plan served as a blueprint for the administration and operation of the Tubbataha Reefs and has since been updated to respond to current challenges.

Several consultations involving various stakeholders were conducted in 1996, resulting in the inclusion of the Armed Forces of the Philippines in the Board and the formulation and adoption of a more up-to-date management plan in 1999. It was then approved by the PCSD during its 70th meeting held on November 26, 1999, paving the way for the creation of a Tubbataha Protected Area Management Board (TPAMB) with the following composition:

1. Gov. Salvador Socrates representing PCSD, Chairman
2. DENR, Regional Executive Director, Vice-Chair
3. Commander, Western Command, Member
4. Provincial ENRO, Member
5. Mayor of Cagayancillo, Member
6. Cagayancillo ABC President, Member
7. Project Manager, Conservation International, Member
8. President, WWF-Philippines, Member
9. President, Saguda Palawan, Member
10. President, Haribon Palawan, Member

A 2002 revision of the Plan integrated ecosystem research and tourism management. In 2007, through a resolution passed by the TPAMB, Palawan State University and Western Philippine University were incorporated as members of the Board to represent the academe.

In January 2011, a much needed updating of the TRNP management plan was addressed through a workshop entitled “Tubbataha through Changing Times” held in Puerto Princesa City. The outputs of the workshop were incorporated into the 2004 plan and approved by the TPAMB. The workshop objectives were as follows:

- To review and update the current Management Plan of the TRNP pursuant to the TRNP Act of 2009;
- To develop a management plan for the newly created buffer zone of the Park;
- To include a tourism strategy in the conservation management program of TRNP that will ensure the protection of its Outstanding Universal Value.

MANAGEMENT VISION, MISSION, GOALS AND OBJECTIVES

VISION

A World Heritage Site that is effectively conserved to maintain ecological integrity contributing to the equitable distribution of benefits and sustained socio-economic development of present and future generations.

MISSION STATEMENT

We, the stakeholders of Tubbataha, commit to conserve its natural endowment through responsible stewardship and genuine partnerships.

MANAGEMENT GOAL

To preserve the globally significant biological diversity and ecological processes of Tubbataha and to manage it and the surrounding areas in a sustainable basis

Three overarching policies apply for the long-term management of Tubbataha. These are:

1. The TRNP shall be managed under a no-take policy to conserve and protect its values for the enjoyment of present and future generations.
2. In consonance with the above, any exploration for and extraction of resources shall be prohibited within the Park.
3. The collaboration and participation by all stakeholders shall be actively pursued in the management of TRNP.

The following specific outcomes reflect the desired results of management programs for TRNP.

- Biological diversity and ecological processes protected from unnatural threats and direct human impact;
- Legal and management structures are effectively maintained;
- Stakeholder participation and representation are ensured;
- Public understanding of the benefits of conserving TRNP is improved;
- Revenues from ecosystems targeted for conservation is enhanced.

BIOPHYSICAL PROFILE

It is thought that the formation of the Tubbataha Reefs is similar to that of coral atolls in the South Pacific where coral communities have developed on the slopes and rims of submerged mountains and old islands. Based on Darwin's theory of atoll formation (1836), the submersion of old islands combined with the upward growth of encircling barrier reefs lead to formation of atolls and result in the creation of a lagoon where the islands once were.

The nucleus of the Park is comprised of the North and South Atolls and the Jessie Beazley Reef. Both the North and South Atolls enclose an islet about one hectare in size with the North Islet or Bird Islet being bigger than South Islet. Jessie Beazley Reef, with an area of 45 hectares, supports a small emergent islet made of marl.

Both the North and South atolls have large inner lagoons and sandy areas. The reef systems are composed of continuous reef platforms 200-500 meters wide, completely enclosing sandy and coral substrate lagoons. Portions of the atoll's shallow coralline reef platforms are exposed at extreme low tide. The reef platform deepens at the outer reef flat and reef crests. It ends in steep, often vertical, walls on the seaward side. On the inner side of the platform are shallow reef flats and sea grass beds. Jessie Beazley Reef is characterized by an encircling shallow reef flat about 30-40 meters wide ending in drop-offs up to about 70 feet deep. Its western portion widens and deepens to around 20 feet before culminating in vertical walls, undercuts and ledges.

Tubbataha is exposed to yearly monsoons. The seas are generally rough during the months of July to October with the prevalence of the southwest monsoon. Monsoon breaks, which bring a week or so of calmness, usually transpire before monsoonal shifts. Rough seas predominate during the months of November to March when the northeast monsoon occurs. Moderate winds from the northeast between mid-March and June allow for regular visits to TRNP.

The predominantly westward movement of ocean currents in the Sulu Sea is believed to transport fish eggs and larvae to the eastern coast of Palawan (Dolar & Alcala, 1993), contributing to the sustainability of fisheries in mainland Palawan significantly. This theory was later substantiated through studies commissioned by Conservation International-Philippines in 2006 and 2007 (Campos, et al., 2006).

TRNP harbors a diversity of marine life equal to or greater than any such reef of its size in the world. It is home to at least 360 species of corals representing 80 out of the 111 coral genera known in the world. Researchers have also documented seven species of sea grass, 66 species of algae, over 600 species of fish, two species of marine turtles, and 13 species of marine mammals. Rays and sharks are common in the reefs of which 19 species have been identified, so far (TMO, 2010). Pelagics such as tuna, mackerel, jacks and barracudas are observed in schools near the reef crests.

The islets of the North and South Atolls are breeding and rookery grounds for migratory and resident seabird species, some of which are classified as priorities for conservation. North Islet is the breeding ground of an endemic sub-species of Black Noddy *Anous minutus worcestri* and

an important rookery of the critically endangered Christmas Island Frigate. The Jessie Beazley Reef's emergent cay strategically provides feeding seabirds a dry place to rest during low tide.

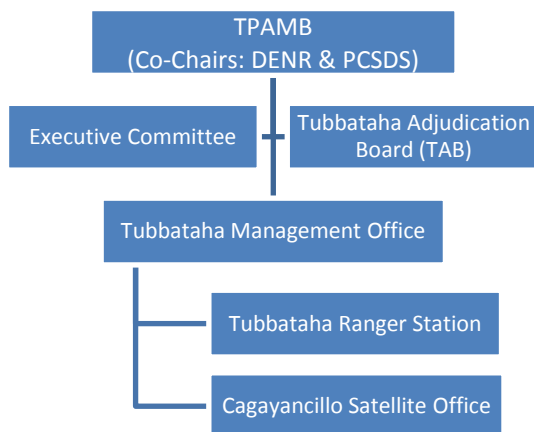
The first recorded visit to Tubbataha was made by Dean C. Worcester in June 1911. He described the Bird Islet as a "low, flat, sandy island ... some 400 meters long and 150 meters wide... no vegetation except a few plants of pursley" (Worcester, 1911). Seventy years later, during the visit of ornithologist Robert S. Kennedy, he observed that the islet had shrunk to 268 by 70 meters. He noted that grass and purslane were the only vegetation on the islet (Kennedy, 1982). Today, the islet is about 211 m long and 76 m wide with a total area of about 11,038 sqm based on GPS measurements (Jensen, 2010). The invasive ipil-ipil trees (*Leucena leucocephala*), which were introduced by fishermen in the 1970s as an aid to navigation and to provide shade and fuel wood, have been largely eradicated by the marine park rangers in order to provide breeding grounds for boobies and terns.

MANAGEMENT AND ADMINISTRATION, STAKEHOLDERS, AND ISSUES AND CONCERNS

PARK MANAGEMENT AND ADMINISTRATION

The Park is under the management of the Tubbataha Protected Area Management Board (TPAMB) composed of the following members:

1. Governor, representing PCSD, Co-Chairperson
2. Regional Executive Director of Region IV-B of the DENR, Co-Chairperson
3. House of Representative, 1st District of Palawan
4. House of Representative, 2nd District of Palawan
5. Office of the Governor, Palawan
6. Mayor, Cagayancillo, Member
7. Chair, Environment and Natural Resources Committee, Cagayancillo SB, Member
8. Provincial Board Chairman, Committee on Environment & Natural Resources, Member
9. Provincial Board Chairman, Committee on Appropriations, Member
10. Commander, Western Command, Member
11. Commander, Naval Forces West, Member
12. District Commander, CGD-Pal, Member
13. Executive Director, Philippine Commission on Sport Scuba Diving, Member
14. Provincial Officer, BFAR, Member
15. President, Palawan State University
16. President, Western Philippines University
17. President, WWF-Philippines, Member (NGO)
18. Executive Director, Conservation International, Member (NGO)
19. Chairperson, Saguda Palawan, Member (NGO)
20. Tambuli ta mga Kagayanen, Member (People's organization)



The TPAMB meets once every quarter to discuss policy issues. An Executive Committee meets on a monthly basis to address operational and administrative issues. The Tubbataha Management Office (TMO) serves as its secretariat and administers the day-to-day affairs of the Park. The TAB, made up of members of the TPAMB, is responsible for hearing the administrative cases filed for non-compliance to regulations within the Park as well as those identified by the TRNP Act of 2009.

TRNP STAKEHOLDERS

The stakeholders that are interested in the future of Tubbataha are:

- The Provincial Government of Palawan
- The Palawan Council for Sustainable Development
- Relevant national government agencies
- Non-government organizations and the international conservation community
- The Municipality of Cagayancillo, which exercises political jurisdiction over Tubbataha
- Tourism operators who promote scuba diving tours in TRNP
- Fishers operating outside the boundaries of the Tubbataha Reefs benefiting from its rich and diverse marine resources
- Non-users, who are interested in the bequest values of TRNP

MANAGEMENT ISSUES AND CONCERNS

ACCESSIBILITY

Tubbataha's remote location poses a logistical challenge to its effective management. Supplies and equipment need to be transported regularly year-round despite rough sea conditions to ensure that marine park rangers have sufficient resources to monitor activities within the entire complex at all times for the effective enforcement of regulations. Limited and seasonal access impinges on management effectiveness.

ILLEGAL USE

Fishers from the coastal communities of Palawan and from the Visayan Islands enter the Park to harvest protected species, like the *Trochus niloticus*, and to fish in the reefs. Poachers likewise enter the Park to catch endangered marine species and commercially important fishes.

SOLID WASTE

The increasing volume of solid waste materials that are brought by tidal currents and wind from outside Park boundaries may negatively impact on the health and reproductive capacity of the birds and other marine life in TRNP. Being external in origin and global in scope, its management is beyond the capacity and jurisdiction of the TPAMB and the TMO.

STAKEHOLDER OWNERSHIP

Management experiences in Tubbataha and elsewhere have proven the importance of an enlightened stakeholder base cognizant of the critical role they play in the welfare of the reefs even as they indirectly impact and benefit from it. The TPAMB strives to develop an informed public constituency by directly engaging the various sectors in issues and concerns involving the Park. However, there is scarce opportunity to enable local stakeholders to experience the Park as a result of seasonal access and isolation, limiting appreciation and sense of ownership of TRNP.

FINANCING AND OTHER CHALLENGES

Tubbataha requires adequate financial and manpower resources in order to maintain effective management. Thus far, conservation fees collected from dive tourists remain the main source of income. However, these revenues are not sufficient to sustain the high cost of managing an offshore marine protected area (MPA) like Tubbataha. To guarantee consistent implementation of management activities a more secure source of financing needs to be obtained.

ENERGY EXPLORATION

Energy exploration around TRNP has been sanctioned by the Department of Energy. These activities can pose a threat to marine mammals and other migratory species within the Park unless mitigating measures are established prior to exploration activities.

PARTICULARLY SENSITIVE SEA AREA

Declaring the Sulu Sea as a Particularly Sensitive Sea Area (PSSA) has been viewed by several stakeholders as a suitable response to the potential impacts of general shipping, e.g., oil spills, introduction of alien invasive species, marine garbage. Applying for the designation of Sulu Sea as a PSSA, however, is an action that has to be undertaken by the Department of Foreign Affairs and will require the approval of the International Maritime Organization – a process that will, again, be beyond the scope of the TRNP management. The TPAMB and the TMO can merely advocate for its pursuit.

MANAGEMENT PROGRAMS

The following programs have been identified for long-term implementation as a means to pursue the goals for the Park. These identified strategies are subject to review every three years.

CONSERVATION MANAGEMENT. The *raison d'être* for the management of TRNP is to effectively conserve and protect the marine and terrestrial resources of the park into the future. This will require prudent use of human and other resources to maximize scarce financial assets. A competent organization that harnesses the contributions of its partners and practices the principles of adaptive management is vital towards this end.

CONSERVATION AWARENESS. This program aims to promote awareness, generate support and achieve voluntary compliance with regulations. It seeks to foster a holistic view of the Park ecosystem as an interrelated and interdependent system, and thus engender a sense of stewardship towards the marine environment. Conservation awareness activities will cater to the general public, with special focus on children and the youth.

ECOSYSTEM RESEARCH AND MONITORING. A regular, uninterrupted monitoring regime is required to provide understanding of biological resources and ecological processes and their interrelationships. Dependable scientific assessments provide inputs for anticipating potential problems and serve as a basis for decision-making.

SUSTAINABLE RESOURCE MANAGEMENT. Resource management strategies will be implemented in the island municipality of Cagayancillo in order to conserve biodiversity and maintain marine resource productivity to enhance living standards in the locality and serve as a disincentive to fishing within TRNP. If deemed necessary, similar activities will be initiated in other localities where fishers have impacts on the conservation of TRNP.

MANAGEMENT STRATEGIES

1. CONSERVATION MANAGEMENT

1.1. MAINTAIN AND ENHANCE THE CAPABILITY OF THE TPAMB AND PARK STAFF TO ADMINISTER TRNP AND ITS BUFFER ZONE

The TPAMB is composed of representatives of various agencies whose tenure ends upon change of official status either through retirement, transfer or shift in political status. Because of the constant turnover of individuals sitting in the board, regular capacity enhancement activities will need to be conducted. The capacity of Park staff in the technical aspects of offshore MPA management will likewise be enhanced. Additionally, the provision of opportunities to improve knowledge on MPA science and regional MPA initiatives will be pursued.

The composition of the new TPAMB will be considered in specifying the functions of the different committees and that of the TMO. Appropriate strategies will be incorporated and implemented reflective of the new TPAMB composition.

There is a need to provide TMO staff with security of tenure to endow positions within the office with a degree of permanence and render positions more attractive to qualified personnel. Since the establishment of TMO a decade ago, its personnel have been engaged on a contractual basis, suggesting the transience of positions and reducing the prospect of a long-term career in the conservation of TRNP. Acquisition of permanent positions for TMO staff will be explored in the context of TPAMB directions.

1.1.1. ENHANCEMENT OF LEGAL CAPACITY OF THE TUBBATAHA ADJUDICATION BOARD (TAB) AND CULTIVATING A POOL OF VOLUNTEER LAWYERS FOR THE PURPOSE OF STRENGTHENING THE PROSECUTION OF CRIMINAL AND ADMINISTRATIVE CASES.

There is a need to capacitate the TAB members in the conduct of quasi-judicial proceedings that is fair and transparent to all. Additionally, volunteer lawyers need to be engaged to assist the Provincial Prosecutors' Office and to further strengthen prosecution.

1.2. DEVELOP A COMPETENT AND PROFESSIONAL CORE OF MARINE PARK RANGERS (MPRs) WITH ADEQUATE INFRASTRUCTURE AND EQUIPMENT TO CURTAIL RESOURCE DESTRUCTION AND STRENGTHEN ENFORCEMENT OF PERTINENT LAWS AND REGULATIONS

The likelihood of timely detection, arrest, prosecution and sentencing in court will serve as a deterrent for potential violators of regulations within the TRNP and the buffer zone. Thus, sufficient patrol presence by a competent and professional team of MPRs will be maintained. Law enforcement guidelines will need to be periodically reviewed and enforcers' skills upgraded. Adequate infrastructure and enforcement equipment will be provided to enable MPRs to perform their functions effectively.

Improvement on the TRNP enforcement will be dealt with at three levels: Detection, Apprehension/Arrest and Prosecution by providing education, equipment and effective prosecution. The enforcement program will apply in the buffer zone plan as well.

Changes in TPAMB membership cause lapses in carrying out specific roles and affects continuity in decision-making. To enhance the knowledge of new members on laws and regulations that apply as well as on the environmental aspects of the TRNP, periodic orientations in the form of courtesy calls will be conducted.

Jessie Beazley is difficult to monitor due to its distance from the ranger station. An additional ranger station will have to be set up. There is a lack of manpower in monitoring and apprehending park violators. Twelve MPRs would be the ideal number for the present setup, hence recruitment of additional rangers will be pursued.

Trainings on equipment use, maintenance and repair will be conducted for park rangers and TMO staff. Detection of illegal fishers will be enhanced by upgrading of monitoring equipment. A radar that will be able to sense small water crafts up to 36NM away 24hrs a day will be purchased. The entry point of most foreign vessels to the Sulu Sea is through the Balabac Strait, therefore monitoring by pertinent agencies will be strengthened along the Strait through coordination with other agencies such as the Philippine Navy.

A database of MPR witnesses against illegal fishers will be maintained comprising of information such as contact details and the like.

1.3. DEVELOP THE RESOURCE MANAGEMENT CAPABILITY OF MPRs TO ENABLE LAW ENFORCERS TO MAKE MEANINGFUL CONTRIBUTIONS TO RESEARCH AND OTHER CONSERVATION ACTIVITIES WITHIN TRNP AND THE BUFFER ZONE

The presence of MPRs in the field provides opportunity for the collection of relevant data year-round, a practical alternative to 'importing' researchers during rough sea conditions. Rangers will be capacitated with specific skills to enable them to assist in monitoring and research, e.g., seabird monitoring and census, fish and coral survey, crown-of-thorns infestations, coral bleaching, etc.

1.4. MANAGE TOURISM WITHIN TRNP

Tourism and research are the only activities allowed in the Park. It has been documented in other marine parks that even recreational diving and snorkeling can cause substantial damage to sensitive marine habitats. In order to ensure enjoyment of the attributes of the Park into the long-term, tourism activities will be managed and regulated while self-regulation by dive boat operators will be encouraged. Adequate information and education activities targeting users will likewise be provided to generate support for conservation.

1.4.1. CREATE AND DEVELOP A TOURISM DEVELOPMENT AND MANAGEMENT PLAN

It is envisioned that Tubbataha will be accessible not only to the diving community but also for other water sports enthusiasts. This will need careful development studies especially in determining the impacts of these new activities not only on the fragile reef ecosystem but surface wildlife and habitats as well. The activities will need to be identified (e.g., snorkeling, kayaking, kite boarding, wind surfing) and new guidelines will be formulated for their regulation, with particular emphasis on zoning. Training of guides for these new activities will be done in cooperation with the TMO.

More nature-focused activities include bird-watching, dolphin and whale watching, as well as glass-bottomed boat use for reef observation will be encouraged. These new activities are expected to bring in additional park revenues and increase appreciation of the marine environment.

The TPAMB is expected to provide for the needs of its legitimate users. Dive boat operators request for additional mooring buoys especially in the South Atoll and at the ranger station. The addition of mooring buoys will ensure that the maximum allowable number of dive boats will be accommodated in the dive sites. There is also a need to rehabilitate the old buoys.

A tourism development and management plan will be articulated to ensure the sustainability of leisure activities within the Park and that these are non-detrimental to the ecosystem and its inhabitants. An important aspect of the plan will be the determination of the carrying capacity for visitors and vessels and the limiting factors that will dictate numbers allowed in the Park. A visitor flow management system will also be part of the plan. Impacts of tourism activities will be determined and monitored through various studies. The information derived from planning meetings and studies will be used as an input to the tourism development and management plan.

1.4.2. PROMOTE BOAT/TOUR OPERATOR SELF-REGULATION

Boat and tour operator self-regulation needs to be enhanced as MPRs cannot monitor tourism activities at all times. To meet this objective, a pool of accredited dive masters/dive guides (based in Palawan and preferably Palawenos) will be tapped. An increase in compliance is expected because 'locals' have more at stake and therefore are assumed to be more concerned with protecting the resources in their own backyards. The plan to at least have the presence of one local dive master in each dive trip will be pursued.

Dive boat operators will be encouraged to form an organized group to deal with safety and crisis management issues at sea. An organized group will also allow for smoother cooperation among the dive operators. TMO is expected to work closely with the association and in the future require membership for those wishing to gain access to the TRNP.

The Department of Tourism is expected to require all dive boats operators to seek accreditation with the Philippine Commission on Sports Scuba Diving. When in place, this accreditation will be an additional requirement for entry to TRNP.

To enhance compliance to rules and regulations, TMO will make sure that these are made known and are clear to all leisure industry stakeholders. Moreover, the TMO shall provide a venue in which these stakeholders can express their views and recommendations for the enhancement of the management of the Park. These may be through, but not limited to:

- A detailed briefing for dive masters/dive guides and tour coordinators before the dive season.
- A seminar/consultation with dive boat and tour operators every year before the start of the dive season.
- A pre-departure briefing on board the vessels for guests before deployment to the Park.

Attendance of the seminars and briefings will be required of operators and guides to secure a permit to enter the Park. An annual certification will be granted to those who have undergone the seminars and have fulfilled the requirements.

Information materials for foreign tourists shall be translated into various languages such as Korean, German, French, Russian, Japanese, and Mandarin to ensure that the visitors comprehend the park rules and regulations.

1.4.3. ENCOURAGE RESEARCH PARTICIPATION OF THE TOURISM SECTOR

Observations of tourists during their dives in Tubbataha may be used to complement monitoring and data gathering to feed into the TRNP research program. An easily implementable data collection system with forms, guidebooks and submission scheme will be established.

1.4.4. UTILIZE THE TOURISM NETWORK FOR MARKETING TRNP

There is a need to increase support for the Park in terms finances and awareness at the local, national and international levels. The supply chain and distribution network of the tourism can be utilized generate awareness and revenues for the Park. Boat and tour operators could be tapped to circulate information about the TRNP through marketing and advertising. With the opening of non-diving activities in TRNP, the patronage to TRNP is expected to increase as it will be catering to a broader market. The Department of Tourism will similarly be requested to market Tubbataha internationally.

TMO will promote tourism activities in the TRNP through familiarization trips for tour operators as well as by providing information through various print and online media. To firm up its image and marketing, it may be necessary to re-brand and create a new image for the TRNP. A professional PR firm will be engaged as a partner in conceptualizing the Tubbataha make-over, if necessary.

1.5. DEVELOP AND IMPLEMENT A PLAN TO SUPPORT LONG-TERM FINANCING OF RESOURCE MANAGEMENT INITIATIVES IN TUBBATAHA

While project grants to Tubbataha contribute to the maintenance of park operations, the Park needs to develop its own sustainable funding mechanism for long term management. It is known that the TRNP does not have enough funds to implement a full management program on its own, as it generates only half of its required budget. This is mainly due to the limited financial contribution of the government. The bulk of the funds come from the user's fees from tourism activities. However, tourism is a very volatile market, making this an undependable fund source. Viable courses of action will be identified and pursued to ensure a secure financial future for the Park and to obviate dependence on external funding.

Section 16 of Republic Act 10067 provides that "the DENR and the PCSD shall coordinate closely to ensure the sound management and conservation of the TRNP, provide technical and financial assistance to the TRNP as may be needed." The TPAMB strongly invokes this provision and would coordinate closely with these institutions to ensure that funds for TRNP are included in the annual General Appropriations Act. To increase its funds outside of government sources and park fees, the TMO will focus on two things:

1.5.1. EXPANDING TRNP'S DOMESTIC SUPPORT BASE

A broad local support base will be achieved by marketing, capitalizing on the World Heritage status of the TRNP as a brand. Supporters will be asked to contribute to an investment portfolio using an online facility where a futures fund (iTubbataha/Tubbataha Trust Fund) will be established.

1.5.2. INCREASING PATRONAGE THROUGH A BROADENED CONSTITUENCY

Another strategy is for the TRNP to diversify its users by opening the Park to non-diving activities. Bird-watching is one of the major activities identified and could be developed the soonest. The increased number of visitors (as guided by the carrying capacity of the TRNP) will ensure a more stable source of funds.

1.6. IMPLEMENT THE ZONING SCHEME FOR TRNP AND THE BUFFER ZONE

Zoning will separate conflicting activities within the Park and will allow areas that need permanent conservation to be protected from potentially threatening use. The lagoons in the North and South Atolls are off-limits to scuba diving and snorkeling to protect fragile life forms. A review of the activity zoning in the TRNP in light of potential new activities will be undertaken and may be revised accordingly.

The inclusion of the buffer zone in the TRNP means that a management program should be in place in that zone, too. A new management plan in consonance with the existing TRNP management plan will be developed for the buffer zone. A buffer zone management planning workshop where the strategies and actions will increase protection of the TRNP will be conducted, the results of which will be deliberated by the TPAMB. One of the major concerns would be the clarification of the role and authority of the TPAMB over the buffer zone. TMO will work with PCSD to designate the buffer zone as part of its Environmentally Critical Areas Network (ECAN) and lobby for the designation of the TPAMB as the management authority. There is also a need to harmonize RA 10067 with other relevant laws.

1.7. CULTIVATE INTER-INSTITUTIONAL COLLABORATION IN PLANNING AND IMPLEMENTATION WITH VARIOUS GOVERNMENT AGENCIES, NGOS, AND PRIVATE ENTITIES IN THE MANAGEMENT OF TUBBATAHA

The complexity of managing an offshore reef like Tubbataha is a challenge to collaborating agencies and institutions and unquestionably impossible for one agency to successfully undertake. Management will continue to promote partnerships with government, non-government agencies, the private sector and individuals in the conduct of enforcement, research, information and education, etc.

Participation and engagement of the TRNP with higher government and academic institutions as well as with MPA networks will be maximized to enhance the profile of the Park nationally and internationally. Through this strategy, the issues that are beyond the control of the TPAMB will be dealt with at a higher level and larger scale, e.g., PSSA status.



2. CONSERVATION AWARENESS

2.1. DEVELOP AND IMPLEMENT A PUBLIC OUTREACH PROGRAM

Public outreach activities are critical to the success of MPAs around the globe. An understanding of the ultimate goal for TRNP by all segments of society can generate greater support for conservation initiatives. A public outreach program will be conducted to encourage a sense of stewardship not only for the Park but also for the marine environment in general, and increase compliance to regulations. This will be in the form of special events, campus tours, exhibitions, site visits, participation and organization of events, etc.

The program will target schools, local communities and local government units regarding species that are commercially important to gain conservation support for the marine ecosystem. The IEC activities will be done quarterly to sustain the campaigns. Different organizations, especially the private sector, will be tapped to support or conduct their own IEC campaigns for the TRNP.

2.2. DEVELOP INFORMATION MATERIALS AND OTHER PRODUCTS THAT WILL FOSTER GREATER APPRECIATION AND UNDERSTANDING OF THE VALUE OF TRNP

The development and production of information materials such as brochures, radio plugs, activity books, calendars, etc., on TRNP for various sectors will be conducted to heighten appreciation for the values of the Park and inspire support for its protection.

2.3. RE-BRANDING AND MARKETING OF THE TRNP

As mentioned in the preceding section, the re-branding of the TRNP may be necessary to increase visibility, effectiveness in sending out a message, and thereby improving retention with the public and specific target audiences. This will be accomplished in partnership with a private entity having the capacity for effective public relations work. Read-along programs and the publication of a photo coffee table book highlighting the ecosystems services derived from the TRNP are some of the other proposed projects. .

2.4. TARGET AUDIENCE AT AN INTERNATIONAL LEVEL

International awareness will be gained through an IEC campaign as well. The focus will be on countries that have been caught poaching within the Park. The issue of poaching, especially of endangered marine wildlife will be highlighted at the ASEAN Wildlife Enforcement Network. The activities under this strategy will be coursed through the Department of Foreign Affairs. Activities with neighboring countries involving partners such as the Western Command of the Armed Forces of the Philippines will be used as opportunities to further the cause.

2.5. CONDUCT IEC ASSESSMENT

An annual assessment of the communication tools, methods and message will be conducted in coordination with some of the audience of previous IEC activities. Planning for the succeeding years' IEC activities will be guided by the critique from these participants to ensure that IEC efforts are maximized and are meeting its targets.



3. ECOSYSTEM RESEARCH AND MONITORING

Information gaps and research needs will be identified to determine which studies are to be prioritized and conducted. The inability to generate sufficient funds for research activities renders it essential to seek financial support from other institutions. It is essential that research

is designed well and proposals prepared early for submission to funding agencies. A work and financial plan for the TRNP research program will be developed. Partnerships with research institutions will be pursued.

3.1. CONDUCT REGULAR MONITORING ACTIVITIES TO DETERMINE GENERAL REEF AND TERRESTRIAL HABITAT HEALTH

Baseline data for TRNP were gathered beginning in 1997 against which standards for resource protection are being measured. A monitoring regime will remain in place to inform and allow the TPAMB to respond to changing ecological trends in the Park in a timely manner. Annual research and monitoring activities will likewise measure the biological management effectiveness indicators for Tubbataha.

3.1.1. CONDUCT BIOLOGICAL ASSESSMENTS

Aside from the continuing monitoring and research activities implemented in the TRNP, the following research gaps to be satisfied:

- Water quality will be measured through automatic data loggers to determine changes and trends that may or may not be linked to human activities and climate change.
- Water and currents modeling will be conducted as it is an important continuing research for the TRNP. Trainings and workshops will be conducted on the methods appropriate for the TRNP with the Marine Science Institute as a partner.
- Connectivity studies will be conducted to identify sites critical to the survival of the ecosystem. Large scale studies with implications on the TRNP will be conducted. A source and sink model will be produced. In consideration of the unsecured funds of TMO, other partners need to step up and do this.

3.1.2. CONDUCT ANTHROPOGENIC DISTURBANCE ASSESSMENTS

The impact of human activities needs to be assessed within the TRNP, the source of which could be on-site and off-site.

- Climate change impacts will be determined through a vulnerability assessment study which is identified as a priority research activity. Funds for climate change related research will be sourced from external donors and from partners.
- User impacts including divers, tourists, rangers, researchers and vessels within the TRNP will be assessed. The research design will allow the isolation of the causes of damage to determine the source of the problem.
- Tourism carrying capacity will be determined and considered a priority.

- The effects of vessels passage, overfishing outside of the Park, oil spills risks and pollution will be determined through appropriate studies. Again, given the magnitude and scope of such as study, partners and other stakeholders need to take responsibility for the conduct of this study which will be beyond the capacity of the TMO.

3.1.3. CARRY OUT RESEARCHES, ENCOURAGING THE PARTICIPATION OF REPUTABLE EXTERNAL RESEARCH INSTITUTIONS FOR MANAGEMENT DECISION-MAKING

Researches will be conducted to serve as basis for determining courses of action. Reputable research institutions will be encouraged to participate in or guide crucial scientific studies to generate robust data and contribute to the further training of MPRs in the conduct of research.

3.1.4. ESTABLISH DATA PROCESSING, MANAGEMENT AND SHARING PROCEDURES

Information, reports and publications throughout the years will be collected, consolidated, catalogued and stored at the TMO. The TRNP database will be improved to include this collection. A way to gather and share information is through symposia and partnering with research institutions to carry out the data processing. A policy on information sharing and management needs to be created, with the provision of trained staff to manage this.

A 'State of Tubbataha Report' will be produced on an annual basis. This will provide stakeholders and the public with a glimpse of the condition of the TRNP and move them to action, if needed.



4. SUSTAINABLE RESOURCE MANAGEMENT

4.1. CONDUCT STUDIES TO IMPROVE UNDERSTANDING OF LOCAL RESOURCE USE AND SOCIO-ECONOMIC FACTORS THAT CONTRIBUTE TO RESOURCE DEPLETION IN TRNP

Protected area management experiences point to the importance of integrating socio-economic considerations in planning and decision-making. An understanding of the resource use patterns and motivations of major stakeholders, e.g., residents of Cagayancillo, fishers from mainland Palawan, will be generated to aid in the identification of strategies to ensure the conservation of TRNP.

4.2. CONDUCT COMMUNITY-BASED RESOURCE MANAGEMENT ACTIVITIES INCLUDING THE ESTABLISHMENT AND MANAGEMENT OF LOCAL RESERVES

The TPAMB will contribute to the improvement in the capacity of the Municipality of Cagayancillo in marine resources management by providing technical and other forms of assistance available in the maintenance of its MPAs. Resources will be mobilized to contribute to the management of local marine reserves and to support other viable marine conservation strategies that may be identified by the Municipality.

The TPAMB will support efforts of the Municipality of Cagayancillo to formulate a strategic enforcement plan. The plan will identify the needs of the area in terms of enforcement and address them through a management program. It was identified that there are insufficient logistics to sustain enforcement activities in Cagayancillo.

Monitoring system of Cagayancillo MPAs by its local government unit will be included in the plan as well as the zoning of the different areas of activities like seaweed farming, fish cages, and fishing ground. The water use plan will be incorporated into the CLUP.

Protection of the MPAs in Cagayancillo particularly against illegal fishing activities will be enhanced with stricter implementation of the laws by the LGU and the coordination of Cagayancillo with neighboring municipalities. This will help enhance the natural resources in the area.

4.3. IMPLEMENT COMMUNITY-BASED LIVELIHOOD PROJECTS LINKED WITH SUSTAINABLE RESOURCE MANAGEMENT

The TPAMB allots 10% of conservation fee collections from Tubbataha to fund livelihood initiatives in Cagayancillo. The TPAMB, through WWF-Philippines, has set up a micro-credit facility to support livelihood activities as part of integrated conservation management. The TPAMB will ensure that its contributions are judiciously utilized, assist in the management of the local micro-credit facility, and support the Municipality in its tourism plans contingent upon the exercise of sound management of the marine environment by the local government unit.

To increase the production of aqua farming, water quality study will be conducted. By first determining the cause of decline, the debility of the seaweed industry in Cagayancillo could be addressed.

Support for local efforts to generate revenues from tourism will be provided. Assistance will be made available to the local government unit to strengthen its tourism fee collection system which can help fund marine enforcement activities for community MPAs.

MANAGEMENT EFFECTIVENESS EVALUATION

There are several methods for monitoring and evaluation. Being a pilot site of the IUCN WCPA-Marine Management Effectiveness Initiative, the TPAMB has adopted the IUCN Management Effectiveness Framework which presents an iterative protected area management cycle of design, management, monitoring, evaluation and adaptation.

A set of indicators for evaluating specific management objectives was chosen from the book *How is your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness* (Pomeroy, Parks, & Watson, 2003). Methods for measuring the indicators are flexible depending on variations in context, available resources and evaluative purposes.

Participatory planning and analysis of the needs of the Park in terms of evaluation was initiated by WWF-Philippines in 2003. After three other consultations spearheaded by Conservation International-Philippines and WWF, the set of indicators listed below were selected. Eight indicators for biophysical, eight for governance and six for socio-economic conditions have been chosen by the stakeholders of Tubbataha. Biophysical and governance indicators will be measured annually, while socio-economic indicators will be measured once every three years.

BIOPHYSICAL INDICATORS

Relevant Indicator	Method	Unit of Measure
1. Focal species abundance and diversity	Seabirds – Direct count and species inventory	# of individuals + # of species
	Turtles – Direct count (through timed swim or manta tow), tagging	# of species
	Cetaceans – Line transect, photo identification	# of species
	Commercially important species – Fish visual census (FVC)	Biomass/unit area
	Indicator fish species – Fish visual census	Abundance/unit area
	Top predators – Timed swim, manta tow	Biomass/unit area
	Giant clams and large gastropods – belt transect	Abundance/unit area
	Corals – (?)	# of individuals and species
	Seagrass – quadrant, line transect	# of individuals/per unit area
		# of species
2. Focal species population structure	Cetaceans - line transect (count of adult, sub-adult, calf) photo identification	#of individuals/ unit area
	Seabirds - direct count of # of nests, eggs, juveniles, adults (male/female)	#of individuals/ unit area
	Turtles - direct count of nests, eggs,	

	nesting adults (measurement of carapace width, length, etc) Mollusk –abundance estimate (?)	#of individuals/ unit area
3. Habitat distribution and complexity	Coral reefs -manta tow (in situ) Seagrass	Broadscale surveys as need arises(GIS resource mapping, video manta tows to assess changes brought about by large scale disturbances such as storms, bleaching, COTS)
4. Composition and structure of the community	Corals - video/benthos point transect Seagrass -quadrat/transect Fish – FVC Seabirds - direct count	% cover Species count, biomass Biomass/unit area, abundance %cover or frequency
5. Type, level and return on fishing effort	Random sampling at known fish landing locations in Cagayancillo and Mapun (to be done by pertinent member agencies of TPAMB)	Species, size, fishing ground, fishing method, size of boat/gear, number of crew, engine type & power, fishing time & duration, total weight of catch, monetary value
6. Water quality	Use of temperature logger, refractometer, secchi disk, chlorophyll and plankton sampling, random garbage collection & weighing of composition	Temperature, salinity, turbidity, solid waste volume, counts and diversity and density of plankton
7. Area showing signs of recovery	Benthos - point intercept Seagrass – quadrat Seaweeds – line transect, quadrat	temporal variation in % cover temporal variation in % cover temporal variation in habitat
8. Area under no or reduced human impact	Diver impact study, damage assessment Trocus Area – line transect, quadrat	Unit area placed under protection, temporal variation in % cover, incidence of coral damage
9. climate change effects monitored	Assessment of vulnerability to climate change	Temporal variations
10. water currents model	Computer modeling, disaster risk preparedness	Pattern changes
11. effects of human activities	Quantification of pollution sources Risk assessment to oil spills Identification/delineation of navigational lanes Tourism activity effects	Water quality changes Risk units Incidence of coral damage

GOVERNANCE INDICATORS

Relevant Indicator	Method	Unit of Measure
1. Level of resource use conflict	Key informant interview; review of existing literature	Identification of nature and level of conflict (conflicts to be defined); assessment of nature and characteristics over time; response of managers;
2. Existence of a decision-making and management body	Key informant interview; review of records of meetings	Presence/absence of legally mandated body; frequency of meetings; process of decision-making; roles and responsibilities of actors of the body (formal and non-formal)
3. Existence and adoption of management plan	Key informant interview; review/evaluation of the plan	Presence or absence of park (including buffer zone and tourism) management plan; planning, adoption and implementation process; completeness of the plan; enforceability of the plan
4. Existence and adequacy of enabling legislation	Legal analysis	Existence of legislation to support MPA; legislative support for management plan; assess appropriateness of legislation
5. Availability of and allocation of MPA administrative resources	Interview of MPA staff, analysis of secondary data on administration and finance	Availability and allocation of resources for each MPA activity against needed resources; external resources generated/mobilized
6. Degree of interaction between managers and stakeholders	Key informant interview- MPA staff and stakeholders, review of records of meetings; stakeholder analysis	Regularity of meetings with stakeholders; assessment of topics of discussion, attendance, problems and issues, solutions; comparison of views between MPA staff and stakeholders; analysis of stakeholders' interest and participation in MPA management; assessment of stakeholders; level of satisfaction with their participation
7. Clearly defined enforcement procedure	Key informant interview; review of enforcement records	Presence or absence of enforcement guidelines & procedures, adequacy and availability of the guidelines, procedures to undertake enforcement actions
8. Degree of information dissemination to encourage stakeholder (local and international) support and compliance	Key informant interview; review of records; social surveys	Assess training/IEC activities/program in terms of number & type provided, expenses against total budget, level of satisfaction of stakeholders; level of understanding/feedback from stakeholders; active participation of direct and indirect stakeholders; information retention measures

SOCIO-ECONOMIC INDICATORS

Relevant Indicator	Method	Unit of Measure
1. Local marine resource use patterns	Secondary data collection, primary data collection through KIs, FGDs, HH survey, observations (HH surveys every 4 years, KIs & FGDs on specific resource use as need arises)	Assess marine related activities, who are involved in each activity, technology used, location and boundaries, timing and seasonality
2. Level of understanding of human impacts on resources	FGDs, KIs, HH survey	Assessment of threats to natural environment, changes due to these threats, and to what extent stakeholders believe their own activities affect the natural environment
3. Perceptions of non-market and non-use values (include other economic values i.e. direct use value, indirect use value and option value to get total economic value)	Analysis of secondary data, survey (WTP)	Economic valuation
4. Household income distribution by source	Household survey and analysis of secondary data	Income by occupation
5. Number and nature of markets	Key informant interview, analysis of marketing channels	Number of major marine products and their corresponding market channels (include characterization of market channels)
6. Distribution of formal knowledge to community	HH survey, FGDs	Types of information disseminated to stakeholders, level of confidence on the information

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