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- ensuring that the use of renewable natural resources is sustainable
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TUBBATAHA

A MARINE PROTECTED AREA

REEFS

A THAT WORKS

A Case Study on the Philippines

Tubbataha's towering walls laced with giant sea fans attract diverse marine creatures and divers from all over the world (this page). ***Lighthouse in South Islet*** (cover).

TUBBATAHA REEFS

A MARINE PROTECTED AREA THAT WORKS

A Case Study on the Philippines

This case study on the Tubbataha Reefs is the third in a series of analyses being undertaken by WWF-Philippines. This series aims to communicate key issues and lessons from field projects to fellow practitioners, program and policy staff, personnel of managed and/or protected areas, partners and donors. The first in the series was on the Turtle Islands in Tawi-Tawi, which tackled the issues of entry points for conservation and how resource management ultimately depended on governance. The second case study discussed the establishment and operating systems of the multi-stakeholder enforcement program of El Nido, Palawan. This third study analyzes how Tubbataha, a pair of offshore reefs 130 kilometers away from the nearest island, is able to exist as a protected area.

The goal of these case studies is to help create a stronger understanding of the issues, and to promote further learning and sharing of successes and challenges. We welcome feedback on this case study and any others in this series. Please send feedback to Joel Palma (jpalma@wwf.org.ph).

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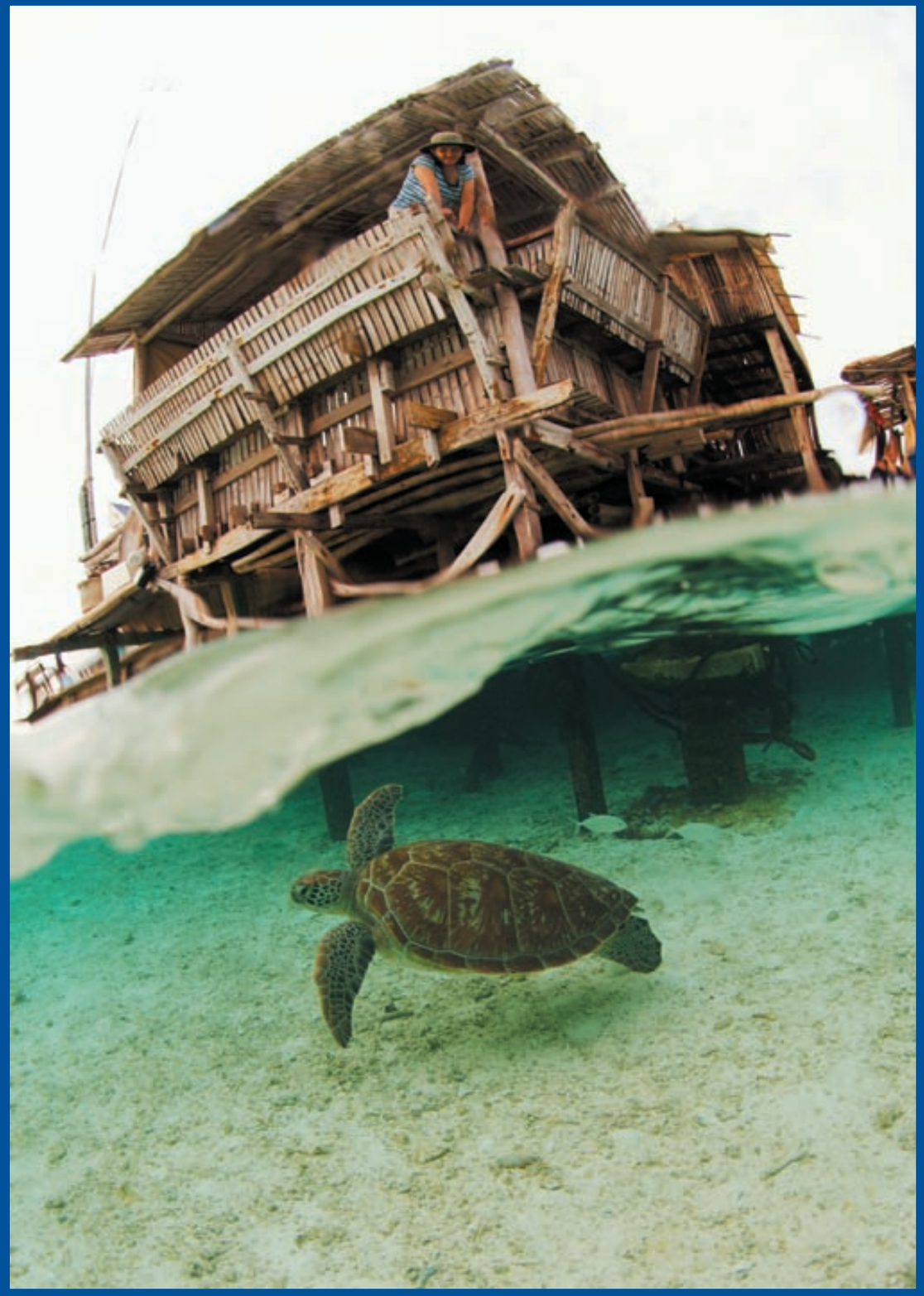


This green sea turtle visits the ranger station like a regular tour of duty with the marine park rangers.

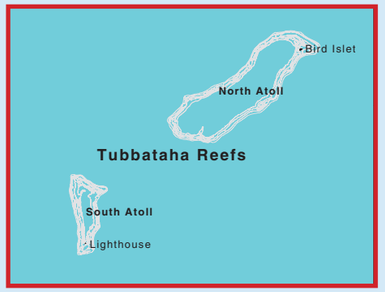
Source Of Life

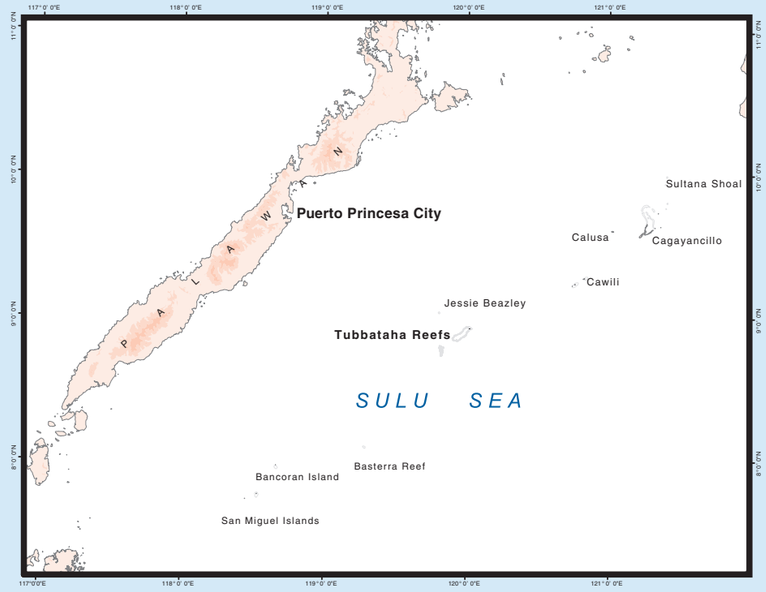
Nestled within the Coral Triangle, home to the most abundant marine biodiversity on earth, the Tubbataha Reefs are a pair of the largest true coral atoll formations in the Philippines. These islets, fringing reefs, coral walls and drop-offs are home to a multitude of creatures of all shapes, sizes and colors. Over the years, researchers have recorded 396 species of corals—85% of all coral species in the Philippines, 80% of those in the Coral Triangle and about half of all coral species in the world. There are 479 species of fish, 79 species of algae, 10 species of seagrass, seven species of breeding seabirds, nine species of whales and dolphins, and two of seven species of marine turtles. Large marine animals commonly sighted are manta rays, sharks and nine species of marine mammals.

The Tubbataha Reefs are found at the very center of the Sulu Sea. They lie along the Cagayan Ridge, which traverses the Sulu Sea from the northeast, from the Sultana Shoal in Cagayancillo, to the southwest, to the San Miguel Islands of Tawi-Tawi. The nearest land mass of considerable size is mainland Palawan, with the capital of Puerto Princesa City lying 150 kilometers northwest of Tubbataha. The nearest islands are 130 kilometers in the other direction, northeast—Cagayancillo, the municipality where Tubbataha belongs.

The reefs themselves are estimated to cover an area of 100 square kilometers, with the larger north reef measuring about 16 kilometers long and 4.5 kilometers wide and the south reef measuring about five kilometers long and three kilometers wide. Both reefs have lagoons and scattered sand cays. The islet in the north reef is called Bird Islet, and hosts most of the seabirds. The South Islet has a lighthouse that was constructed by the Philippine Coast Guard in 1980, to replace the older one constructed in 1938.

Map of the Philippines showing the isolated location of the Tubbataha Reefs in relation to the rest of the archipelago.





The only true atoll formation in the Philippines, Tubbataha Reefs is composed of two uninhabited atolls (left)***. The chain of reefs in the Sulu Sea known as the Cagayan Ridge*** (right)**.**

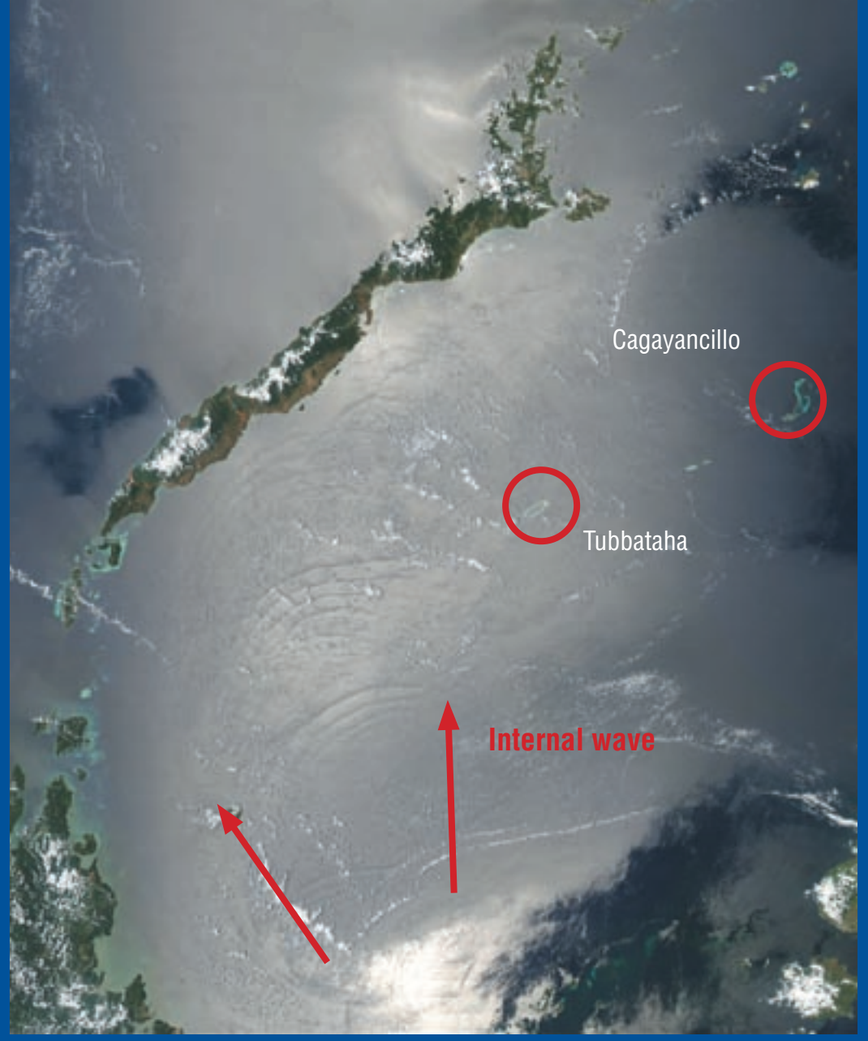
Ancient flows

Tubbataha has been in existence for millennia. The accepted theory, credited to Charles Darwin, is that an atoll is formed when volcanic eruptions give birth to an island. Corals then start to grow on the shores of the islands, developing fringing reefs. As eons pass, the islands themselves slowly sink beneath the oceans and only the fringing reefs remain, like a skeleton of a vanished island, but still alive. The corals continue to grow until the reef eventually forms a ring, usually with a lagoon at the center, as is the case with both the north and south atolls of Tubbataha.

Because of Tubbataha's ancient history and its ideal conditions for supporting life, its biology has also become as rich as its geological past. Larvae of corals and fishes are believed to be carried by currents from Tubbataha to the surrounding reefs, especially on the eastern side of Palawan, which supports the bigger human population in the province.

This larval dispersal is made possible by the circulation pattern in the Sulu Sea, currents resulting from tidal shifts and wind-driven surface currents. Tide-induced currents last for 10 to 12 hours, while shifts in current due to wind have shorter durations of one to two hours. The effect is that the current intensifies in one direction for one to two hours, when two currents flow together, then slows down when they flow opposite one another. Scuba-divers who frequently visit the Tubbataha Reefs are aware of this phenomenon, and plan their dives in such a way that they are able to surface where they descended. They merely allow themselves to be carried by the current flow, thus using up less energy.

Furthermore, a large-scale water circulation system occurs in the Sulu Sea, produced by the tidal flow in the Pearl Bank sill near Tawi-Tawi. The internal waves are produced every 14 days, when weak ebb tidal currents flow over the Pearl Bank,



Satellite image showing internal waves from the Pearl Bank sill radiating towards mainland Palawan (top)**. Lunday** ***sailing from Cagayancillo*** (bottom)**.**

followed by strong flood currents. This system moves regularly from Tawi-Tawi towards the eastern coast of Palawan, where it enters Puerto Princesa Bay. It produces standing waves, taller waves resulting from the collision of crests of waves traveling in opposite directions. These waves were shown and documented to pass Jessie Beazley and Tubbataha, supporting the belief that these reefs are indeed larval sources, seeding the greater Sulu Sea.

Tubbataha is also subject to the monsoons. The northeast monsoon, usually from November to March, brings rain and moderate waves. The southwest monsoon from July to October creates stronger waves and currents. There is a short window of calm seas from April to June. But in recent years, shifts in the monsoons have become less predictable. Boat rides to Tubbataha have therefore become adventures in themselves, a game of chance between endless tossing on the waves and gliding on glassy water for a good 10 to 12 hours.

The name “Tubbataha” came from the language of the Samal, a seafaring people of the Sulu Sea. The term refers to “a long reef exposed at low tide,” an accurate description of the reef crests marking the atolls’ edges. Although the Samals bestowed the name by which the reefs became known, Tubbataha is more closely associated with the islands of Cagayancillo, the nearest human settlement. The reefs were traditionally called “Gusong” by the Cagayanons, the people of Cagayancillo. They, along with the Samals, Badjaos and Tausugs, have been the traditional users of Tubbataha’s resources. No humans have settled on the islands through the ages because of the absence of fresh water.

The 1980s ushered in events which had great bearing on the fate of Tubbataha. At the start of the decade, Cagayanon fishers started to perceive the pressure of overfishing in their immediate surroundings. Using traditional wooden sailboats called *pangko*, they sailed to Gusong to fish and gather shells, turtles, seabirds and their eggs. Trips to Tubbataha from Cagayancillo took anywhere from one week to a month, depending on the winds. There were times when three to five *pangko* would sail in fleets. The fishers would anchor their boats in the lagoons for safety and roam the reefs and islets freely, taking as much as their boats could carry, because they never knew when the conditions would be good enough to make another trip. In the minds of most Cagayanons, Tubbataha was a place of plenty.

Soon after, by the mid-1980s, the traditional *pangko* used by the Cagayanons was replaced by boats with motorized engines, making trips to Tubbataha faster and more frequent. At about the same time, seaweed farming was introduced in Cagayancillo. Seaweed farming became a good source of income for the Cagayanons, and should have relieved fishing pressure on Tubbataha. This did not happen, however, because fishers from Cagayancillo were replaced by those coming from the neighboring Visayan provinces of Cebu and Iloilo. In turn, the Cebuanos and Ilonggos were pushed to Tubbataha and other offshore reefs in the Sulu Sea by the deteriorating conditions of the coastal and marine environment in their own provinces.

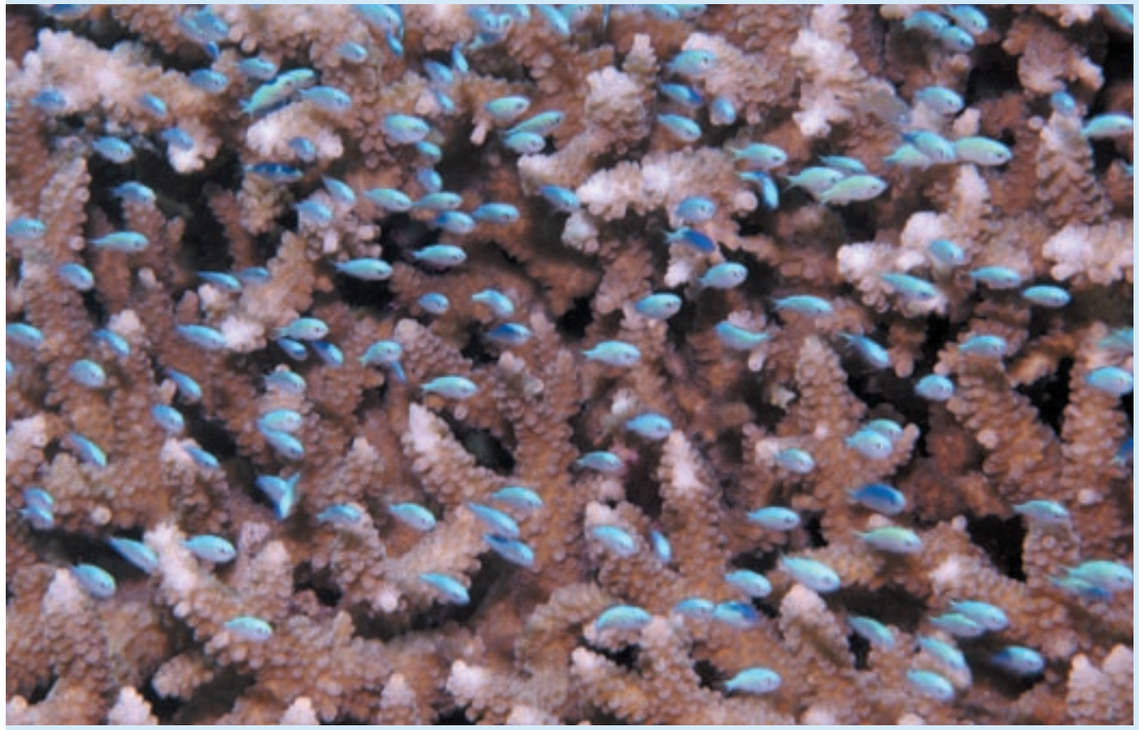
From plenty to protection

The arrival of fishers from the Visayas marked a turning point in the history of Tubbataha, because they introduced dynamite and cyanide fishing. Thus, they inflicted more damage in a few years than traditional Sulu seafarers did over a thousand years. The Visayans resorted to the use of dynamite and cyanide to make their long-distance trips pay off, ensuring big hauls in a short period of time. At first they only used Cagayancillo as a jump-off point to replenish supplies and recruit Cagayanons as crew or guides. But later on, some of them intermarried with Cagayanon women and settled there, and eventually influenced local fishers to use cyanide on the reefs of Cagayancillo and Tubbataha.

It was also in the early 1980s that local and foreign scuba-divers discovered Tubbataha, its remoteness appealing to their adventurous spirit. The presence of dive boats during the calm months of March to June helped to deter illegal fishing. But because of their unregulated activities, divers, too, had a negative impact on the reefs by way of anchor damage, the dumping of wastes and the collection of wildlife. Some divers were also into spear fishing, and some would light bonfires on the islets, driving away nesting seabirds and turtles.

As early as 1981, Tubbataha was attracting the interest of researchers, as shown by recorded studies on corals, fishes and seabirds. Beginning in 1984, specific research sites were being monitored more regularly on the outer fringing reefs of the north and south atolls, including the south lagoon.

Towards the end of the decade, the results of studies, and increasing evidence of damage wrought on the reefs and their wildlife populations, led to efforts to place Tubbataha under protection. Ernesto "Bebot" Sta. Cruz, a diver from Palawan and a member of Task Force Pawikan, a project of the Department of Environment and Natural Resources (DENR) working to save marine turtles, requested the Provincial Government of Palawan to declare the reefs a marine sanctuary. This request became the basis for then Vice-Governor Arthur Ventura's decision to sponsor Resolution 244 dated 27 September 1987, requesting DENR to declare Tubbataha a marine park.



Damselfish (Chromis sp.)

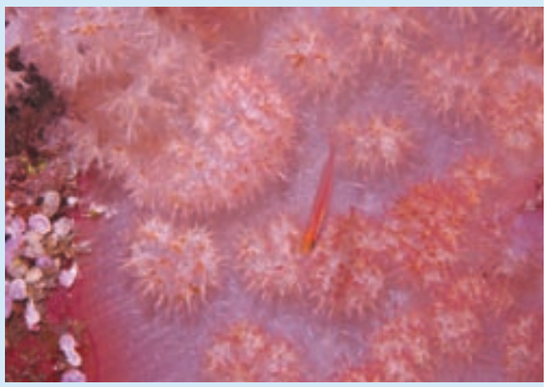
On 11 August 1988, President Corazon Aquino signed Presidential Proclamation 306, creating the Tubbataha Reef National Marine Park (TRNMP), making it the first national marine protected area (MPA) in the country. This proclamation transferred Tubbataha's management jurisdiction from the municipal government of Cagayancillo to the national government through the DENR. It also banned the collection and gathering of corals, wildlife and any marine life, and outlawed the disturbance and destruction of the habitat. This meant that by law, Tubbataha had become off-limits to fishing. However, the implementation of this provision took a much longer time.

By the 1990s, the unique and outstanding natural characteristics of Tubbataha had earned enough renown to command international attention. The United Nations Educational, Scientific and Cultural Organization (UNESCO) declared it a World Heritage Site on 11 December 1993. It is the only purely marine World Heritage Site in Southeast Asia today. On 19 November 1999, Tubbataha was inscribed on the List of Wetlands of International Importance, also known as the Ramsar List.

Within a span of two decades, Tubbataha was transformed from a remote and unknown marine wilderness into one of the most popular destinations for fishers, scuba-divers and researchers, and then declared a protected area by different levels of government, with international recognition to boot.

Soldierfish Sargocentrum spineferum)

Wrasse (Novaculichthys taeniorus)



Gobii of the Gobiidae family

The Backbone Of Effective MPA Management

II

Park management is in good part enforcement which entails surveillance and patrol in a vast expanse of sea.

The isolation of Tubbataha is its greatest protection, but it also poses a great challenge for management. Because the reefs are literally so far from everywhere, it took a while to find the right body that was up to the task of managing them. The most workable conditions for management were finally agreed upon, including easier access by the management team and the collaboration of stakeholders through the sharing of responsibilities. The most significant achievement of the Tubbataha Reefs as an MPA was not that it has become totally off-limits to fishing. Rather, it was the delivery of such dramatic results—100% increase in fish biomass and 90% increase in income for the nearest fishing villages—over a relatively short period of time, and the recorded confirmation of such results, that make this a unique case.

A workable structure

The increase in threats to Tubbataha culminated in its declaration as a national park in 1988, creating the need to set up a proper management system. This feat was far from easy, given the logistical difficulties posed by an offshore reef. What happened was akin to management by trial and error. A management body was created to take care of Tubbataha; when the designated body failed to deliver, the responsibility was passed on to another group. This went on for a decade.

In retrospect, the success in managing Tubbataha can be attributed to a management structure that enabled local stakeholders to take the lead in decision making. Management changed hands, from national bodies based in far-away Manila to the provincial government, with participation from the national and municipal governments as well as private organizations. This is about an evolution of collaborative management, featuring a group that was willing to experiment on who took the lead until the most workable setup was found.

A merry-go-round of responsibility

Understandably, this evolution had shaky beginnings. In March 1988, five months prior to its declaration as a national park, a Cebu-based seaweed company called Shemberg Marketing Corporation set up operations in Tubbataha. At the time, Shemberg was a giant in the seaweed industry, ranking among the top five seaweed companies in the world. With huge assets at its disposal, the company exerted considerable influence on the politics that surrounded its investment in Tubbataha. Although the seaweed farm was not illegal by virtue of its having preceded the declaration of the park, the company's plan of

Dolphins have become regular companion inside the park (above)**.** ***Watching a manta ray fly never fails to enthrall, inspiring park management to do better each time*** (below)**.**

bringing 24,000 people to the reefs would have been an ecological disaster for a place that was unsuitable for human habitation in the first place. The fact that Shemberg was able to operate in Tubbataha for two years was proof that park management had not yet gotten its act together. It was only through increasing stakeholder pressure that pushed Shemberg to cease operations in 1990.

Along with the presence of Shemberg, the deteriorating conditions of Tubbataha prompted private individuals, mostly scuba-divers and many foreigners, to establish the Tubbataha Foundation. In 1990, the foundation entered into a memorandum of agreement with the DENR for the protection of the Tubbataha Reef National Marine Park (TRNMP). According to the agreement, DENR was to maintain administrative jurisdiction and control over the park, while the Tubbataha Foundation would assist in fund-raising, information and education programs, and provide training to DENR employees on park management.

The primary weakness of the setup between DENR and the Tubbataha Foundation was that the latter did not have the management systems to ensure efficiency in resource use and accountability of actions. The foundation was new, and did not have previous experience in managing marine parks. Its financial operation was fully dependent on external funding, and it did not have a public constituency to check its performance. The foundation was based in Manila, so local stakeholders were unable to participate in management decisions. The situation also lent itself to a lack of transparency.

The situation was further aggravated by the persistence of fishing activities in Tubbataha, despite the ban that had been in effect since the area was proclaimed a park in 1988. The Tubbataha Foundation reportedly drove away local fishers but allowed game fishing among divers, fueling a sense of discrimination among locals. There was also the damage wrought by dive boats through anchorage and the dumping of wastes.

The foundation's image and credibility suffered, and by the end of 1994 the foundation had lost its de facto capability to manage the park. When funding from various local and international sources eventually ceased, the foundation itself became inactive.

The continuing fishing activity in Tubbataha was not limited to game fishing, however. Because park rules and operations had not yet been established, the municipality of Cagayancillo was reportedly issuing Mayor's permits and police clearances for commercial fishing boats to operate on the reefs until 1994. At that time, Cagayancillo was classified as a sixth class municipality, and the bureaucracy was operating on a meager budget. Revenue generated from the issuance of fishing

A sea slug moving slowly but surely.

Blennies of the Blennidae family (above)***. A juvenile napoleon wrasse is protected to mature and produce millions more of its kind*** (below, left) ***and octupus*** (below, right)**.**

permits was a significant part of the municipal budget. Furthermore, because of widespread poverty and lack of alternative livelihoods among the inhabitants, the municipal government could not hinder local fishers from fishing in the national park. Unfortunately, there was misuse and abuse of the fishing permits issued by the municipal government. Poaching by fishers from Taiwan and China was also reported.

On 20 July 1995, a multi-sectoral Presidential Task Force was established through Memorandum Circular 128 to fill the management void. The Task Force was created to serve as the policy and program coordinating mechanism for the park, with the DENR Secretary as chairperson and the Chairman of the Palawan Council for Sustainable Development (PCSD) as co-chair. The PCSD's mandate stemmed from Republic Act 7611, the Strategic Environmental Plan for Palawan.

Members of the Task Force included the Secretaries of the Departments of Tourism and of Budget, the Commander of Naval District IV of the Philippine Navy, the Mayor of Cagayancillo, and five NGOs. The fact that the cabinet secretaries were all based in Manila once again became the bane of this management body. On top of that, the other members were either too busy, or the park was not among their priorities. The original members of the Task Force never held a single meeting.

However, the Task Force did form an Executive Committee composed mostly of locally based institutions. Its purpose was to pursue conservation objectives on-site. The greatest problem was still the enforcement of park rules from the seat of management, which was Puerto Princesa.

Leaving it to the locals

On 7 November 1996, after a visit by then President Fidel Ramos, himself a scuba-diver, Memorandum Circular 150 amended the previous Circular 128, turning over the chairmanship of the Presidential Task Force to the Secretary of National Defense (DND), with the DENR and PCSD representatives as co-chairpersons. Through its headquarters in Palawan, the DND assigned military personnel to the park, creating a new detachment.

At this point, WWF-Philippines started working in Tubbataha by providing technical assistance in drafting the Interim Action Plan for the TRNMP through research and monitoring. When it was able to secure additional funding from WWF-United States, it contributed funds for the military law enforcement team, and for the information and education campaign.

Other NGOs also started to become more involved, such as Saguda Palawan, a local group that was into information, education and fundraising to set up a park mooring system. Grants and donations came in from the Government of Japan, the Philippine Department of Tourism, and the Sulu Fund, then headed by Dr. Alan White.

Because the Task Force was unable to fulfill its function, the late Governor Salvador Socrates, also the chairperson of the PCSD, initiated the establishment of the Tubbataha Protected Area Management Board (TPAMB), formalized through a memorandum of agreement between PCSD and DENR. Acting as chairperson, Governor Socrates convened the first TPAMB meeting on 15 June 1999.

To this day, the TPAMB acts as the policy-making body responsible for the general

administration and management of the park. It decides on matters relating to planning and resource protection. It approves proposals, projects, annual work and financial plans. Under the TPAMB is the Executive Committee (Execom), which reviews, evaluates and recommends actions on proposals, activities and plans. In June 2001, through a project implemented by WWF-Philippines and co-funded by the Global Environment Facility –United Nations Development Programme (GEF-UNDP) and the David and Lucille Packard Foundation, the Tubbataha Management Office (TMO) was established. The TMO functions as the implementing arm of the TPAMB, overseeing the day-to-day operations of park management.

The TPAMB has 17 members. Represented are government agencies such as the PCSD and PCSD staff, DENR, the Provincial Government, the Philippine Commission on Sports and Scuba Diving (PCSSD) of the Department of Tourism, the Provincial Council, the Municipal Government of Cagayancillo and the Chairperson of the Environmental Committee of its Municipal Council, the Western Command, the Philippine Navy, the Philippine Coast Guard, and the Bureau of Fisheries and Aquatic Resources (BFAR). NGO members are Saguda Palawan, WWF-Philippines, Conservation International, and Tambuli ta mga Cagayanen.

Unlike previous management bodies, all these organizations have local offices based in Puerto Princesa and Cagayancillo, enabling the members to attend quarterly meetings. Decisions are made by consensus. If the TPAMB determines that additional technical information is required, the matter is delegated to the Execom for further investigation and deliberation.

The Execom is composed of six TPAMB members, chosen because of their direct involvement in the implementation of specific management programs. In this way, those who are engaged in the day-to-day operations of the park are able to relay news and give feedback directly to park management. The Execom members are the PCSD staff, the DENR, the Philippine Navy, the Philippine Coast Guard, Saguda Palawan and WWF-Philippines. The Execom meets monthly and whenever necessary. In the last five years, the TPAMB has almost always endorsed the recommendations of the Execom.

The TMO is headed by a Park Manager. The rest of the staff was recruited from nearby areas, its three marine park rangers coming from Cagayancillo. Prior to the existence of the TMO, the secretariat function of the TPAMB was performed by the PCSD staff. But due to the many other responsibilities of the latter, the secretariat work suffered. The creation of the TMO provided a unit solely dedicated to implementing the park management plan and maintaining a presence in the park. It operates according to the park management plan, which translates into yearly work plans and budgets endorsed by the Execom and approved by the TPAMB.

A relevant plan

When Task Force Tubbataha was created in 1995, with DENR's chairmanship came the responsibility to prepare an appropriate action plan. Pressing matters at the time were the rehabilitation and expansion of the existing park station and other infrastructure; the establishment of a sustainable system for round-the-clock

A traditional sailboat in Cagayancillo maneuvers through the wind coming from whichever direction.

Table 1: Important milestones in the history of Tubbataha management

Year of Issuance	Developments in the management of the reefs
Early 1980s	Cagayanon fishers start to go on fishing trips to Tubbataha; Tubbataha discovered as a dive site; start of research studies
Mid-1980s	Cagayanons convert to motorized fishing boats; introduction of dynamite and cyanide fishing by Visayan fishers
1988	Tubbataha was declared a National Marine Park under Presidential Proclamation 306, placinng Tubbataha under no-take policy
1990	MOA between DENR and Tubbataha Foundation
1993	Tubbataha declared a UNESCO World Heritage Site
1995	Memorandum Circular 128 creates the multi-sectoral Presidential Task Force, chaired by DENR Secretary
1996	Issuance of Memorandum Circular 150 amending MC 128 and turning over the chairmanship of the Task Force to the Secretary of National Defense with DENR and PCSD representatives as co-chairpersons
1998	Tubbataha Protected Area Management Board (TPAMB) created, chaired by the Provincial Governor, who also chairs the PCSD; park management plan prepared and approved by the TPAMB
1999	Tubbataha inscribed in List of Wetlands of International Importance, also known as Ramsar List; park management plan approved by PCSD; stakeholders agree to adhere to the no-fishing policy
2001	Tubbataha Management Office (TMO) established
2002	Management plan revised—entry permits, collection of conservation fees, ecosystem research
2004	Management plan revised—incorporation of park management effectiveness monitoring and evaluation program

monitoring and surveillance; the formulation of a system to accredit dive masters and their activities in the area; the regulation of activities through a permit system and collection of fees; and the formulation of a funding program to implement the action plan.

An interim action plan was prepared in 1996, to be implemented by the Presidential Task Force. In 1998, a park management plan was prepared and presented to the PCSD for approval. By then, the newly created TPAMB was already at the helm of park management. Prior consultations with the local government and fishers from Cagayancillo, who stood to lose park jurisdiction and access to fishing grounds respectively, were facilitated to arrive at agreements. These agreements were essential to securing their cooperation and support for the management plan. The management plan was approved in November 1999, and has since become the basis of park protection and management.

Juvenile red footed booby (Sula sula)

Interestingly, the park management plan was approved by the PCSD, and not the DENR. This was significant, because even as the park remained part of the National Integrated Protected Area System (NIPAS) of the DENR, by way of the PCSD approval, the DENR turned over its overseeing function over the TPAMB to the PCSD. The representation of DENR was delegated from the Regional Executive Director to the Provincial Environment and Natural Resources Officer (PENRO), which actually served to greatly increase the department's participation in park management because the PENRO is based in Puerto Princesa.

Seven years since its adoption, the management plan has been updated twice. In 2002, after three years of implementation, the TPAMB revised the management plan to incorporate systems developed in regulating park activities, entry permits, collection of conservation fees, and ecosystem research. In 2004, the management plan was again revised to incorporate the park management effectiveness monitoring and evaluation program, and other programs were streamlined, based on experiences in the implementation of the UNDP-GEF-funded Tubbataha Conservation Project. This revision institutionalized the monitoring and evaluation system in managing Tubbataha, and provided a more structured feedback mechanism. The program on policy and advocacy was also incorporated into the conservation management program, as the TPAMB became more adept at policy formulation.

Tubbataha is considered one of the last refuges of seabirds in Southeast Asia, supporting large populations of breeding seabirds (above)***. Brown booby (Sula leucogaster)*** (below)**.**

Shared stewardship

Marine protected area management, in the case of Tubbataha, is 80% law enforcement. This figure is based on the percentage of resources spent on safeguarding the reefs as compared to the amount spent on other activities. Ironically, a more effective enforcement did not translate into decrease in costs. On the contrary, the expenses kept rising, and the reasons went beyond inflation and the prices of equipment, fuel and other items for operations. Maintaining a constant presence in Tubbataha is a daunting and seemingly insurmountable financial task. It is made possible not only by sharing obligations, but by going beyond the call of duty in performing one's daily tasks.

Richer treasures, greater threats

The park's rich biological resources became increasingly attractive as fisheries outside the park and in other provinces dwindled. One negative effect of proclaiming Tubbataha's success is that the wealth of its fisheries is advertised, making it an attractive target for unscrupulous fishers. And the stronger the attraction of Tubbataha, the greater the effort required for its protection. Unfortunately, this phenomenon is not limited to Philippine fishers. The lucrative live fish trade and the demand for ornamental marine products, such as turtles and clams, draw fishers from as far away as Taiwan and China to poach in Philippine waters, including the Tubbataha Reefs.

Because poaching involves the crossing of international borders, politics comes into play. There have been instances of collusion between Philippine and international fishing companies. For example, a fishing company from the northern part of the country allowed Taiwanese fishers to use its fishing license. This practice diminishes the force of law, because instead of being guilty of poaching, which carries graver penalties, the Taiwanese were protected by local registry and therefore could only be sued for regular illegal fishing, an offense with meager penalties. When the stakes are high and income opportunities are plentiful, small-time penalties are just loose change for offenders.

More recently, the number of fish aggregating devices immediately outside the boundaries of the park increased. These were operated by nationally registered fishing companies, but there have been unverified reports that illegal fishers also used them as jump-off points to enter the park.

Waters surrounding Tubbataha have also been identified as offshore oil and gas exploration sites. As of this writing, a quandary on the possible impact of such exploration persists because of lack of information on the technology involved. There was also a lack of transparency and participation in the process, because the oil exploration grids were awarded at the national level, and apparently with no involvement of the local government.

Solid waste that drifts into the park is also a problem. These wastes are either dumped into the sea from passing boats or from areas as far away as Malaysia, as evidenced by the labels. Birds often make nests of these non-biodegradable wastes, so it is not uncommon to find toothbrushes, toy parts, plastic bags and strings making up part of the structure of nests.

Faced with these evolving threats and challenges, it is almost a wonder how the Tubbataha Park manages to stay afloat. The

The Tubbataha marine park rangers are researchers as well, monitoring the seabirds population and habitat (above)***. Confiscated boats from poachers in the Sulu Sea coming from Taiwan and China*** (below)**.**

Conservation fee from dive tours is the highest source of collection in Tubbataha. About ten boats are operated regularly during dive season which is the summer months of March to June(above)***. Some intruders to the park need not be apprehended; in most cases, it was more important to make them aware of the park's existence, its importance to fisheries and their lives*** (below)**.**

TPAMB banks on its partnership with NGOs, the Philippine Navy, the Philippine Coast Guard and dive tour operators to maintain physical presence and surveillance operations in the park. The park rangers deserve particular mention, because they perform tasks far beyond their duties. They should be given credit for the fact that they live in isolation for three months at a time while on duty at the ranger station.

Collaboration and concerted efforts

Partnerships provide the support system necessary for law enforcement operations. The Philippine Navy and the Philippine Coast Guard play the biggest role by detailing personnel on rotation duty at the ranger station. Their contribution, through the use of fast water crafts that can navigate even rough sea conditions, is invaluable.

The municipal government of Cagayancillo provides a buffer to the park by protecting its own reefs and hence improving local fisheries. This has encouraged local fishers to opt for sustainable fishing practices, such as the use of passive gear and catching just enough for local food consumption. The improved fisheries management in Cagayancillo means Cagayanons are less likely to encroach on the Tubbataha Reefs to fish.

The present ranger station in Tubbataha was built in 1997 through the efforts of the Marine Parks Center of Japan, the Sulu Fund, the Philippine Navy, the Provincial Government of Palawan, and the local NGO, Saguda Palawan. The Philippine Navy provided most of the materials, the solar panels, and an SSB radio, while the DENR donated lumber for the construction. The ranger station serves as living quarters for the rangers, and houses the solar panels for the radar, communication equipment and television, the only link of the rangers to the outside world. The year-round presence of rangers equipped with monitoring and communication facilities resulted in a big improvement in park operations.

Mooring buoys were installed in 1996 and 1998 through grants from the Government of Japan and the Department of Tourism. The Rotary Club of Puerto Princesa pitched in by providing fiberglass buoys. The Philippine Coast Guard provided the buoy tenders to install the buoys.

In 1999, UNESCO conducted a series of capacity-building activities on park protection mechanisms and increasing awareness of marine conservation for members of the TPAMB and local stakeholders. It also provided funds for information materials and for the purchase of equipment. In 2003, it funded research on cetaceans, plankton and seabirds.

Additional mooring buoys were installed in 2002 and 2003 by WWF-Philippines to accommodate bigger dive boats, with funding from the Packard Foundation and the GEF-UNDP. This project also provided additional park rangers, equipment and information and education materials to sustain enforcement activities.

The role of the park ranger

When the TMO was established in 2001, the law enforcement team developed the operational guidelines for marine park rangers, with assistance from WWF-Philippines. This defined the functions and accountability of rangers on the field, which proved critical, as they came from various agencies with different mandates and levels of understanding of the tasks at hand.

The process of developing the operational guidelines started with formal and unstructured interviews with local law enforcers, which involved training needs assessment and analysis. Being

The Tubbataha ranger station stands isolated, providing shelter to a composite team of marine park rangers.

mostly from the military service, the interviewees' common perception of their function was "to secure the country from internal and external threats," not to guard fish. They also saw themselves as accountable to their respective mother units, and viewed their job as mainly to "secure" the reefs in military fashion.

It became apparent that military and civilian personnel assigned to protect the Tubbataha Reefs had insufficient knowledge in key areas. They did not comprehend the operational work of protecting a marine park. There was little understanding of the marine environment, as well as of the ecological and socio-economic significance of conserving the marine protected area. There was also a lack of paralegal knowledge in cases of apprehensions and consequent legal suits. Coupled with these, they lacked the equipment and facilities necessary for law enforcement.

To address these problems, the TMO developed and has since been conducting the Comprehensive Training for Marine Park Rangers among the various institutions involved in enforcement. The scope and objectives of the training are:

- Basic ecology/the marine environment—to enhance participants' understanding and appreciation of the resources they are tasked to protect
- Visitor management—to provide pointers and advise on how to deal with tourists visiting the park
- Philippine environmental laws—to familiarize law enforcers with all the laws that apply to Tubbataha
- Paralegal procedures—to increase participants' understanding of law enforcement procedures and operating practices, such as the conduct of arrests, searches and seizures, proper documentation procedures, etc.
- The TRNMP management plan—to impart understanding of the management structure and the strategies being implemented, and to increase appreciation of the vital role of effective enforcement in park management
- Crisis management—to enable participants to determine appropriate courses of action to take in crisis and/or emergency situations, and to develop a contingency plan for Tubbataha
- Equipment maintenance and trouble shooting—to minimize the need to send technicians and spare parts, because of the inaccessibility of, and costly transport to, the reefs
- Study tours—to expose the enforcers to educational opportunities and lessons learned in other marine protected areas
- Briefings prior to assignment and after a tour of duty—to enable the rangers to give feedback and recommendations on how to improve procedures and performance of their functions.

At present, a team of eight marine park rangers is detailed to the Tubbataha Reefs all year round, on three-month rotations. The composite law enforcement team is composed of four personnel from the Philippine Navy, two from the Philippine Coast Guard, and two from the Tubbataha Management Office.

Park rangers assist in data gathering and provide continuous inputs even during the lean tourist season. During the three-month diving season, park rangers monitor the activities of park users and ensure adherence to park rules. All boats are boarded for inspection. The rangers interact with passengers by giving them information on the conservation side of the park, widening their perspective. In return, dive operators and tourists assist in law enforcement by reporting the presence of suspicious vessels and the conduct of prohibited activities within the park.

Park rangers also board fishing boats discovered within park boundaries to verify the activities of encroachers and provide information on the protected status of the reefs. Dissemination of information to fishers who claim to have inadvertently entered the park is standard operating procedure for rangers. If intruders are found to have conducted fishing activities within the park, the case progresses from monitoring to arrest. Most of the intrusions are made by fishers on their way to fish aggregating devices outside Tubbataha. Boat captains utilize the lighthouse on the South Islet to obtain bearings around the area. Others seek shelter in the reefs during bad weather.

In the early years of law enforcement by the Presidential Task Force, the rangers were housed in a canvas tent held up by wooden poles. In 1996 a wooden structure was built, but this did not last long, because the shifting sand rendered the foundation unstable. The current housing for the enforcement team is a styrofoam-reinforced concrete structure erected on a sandbar in the north atoll of the TRNMP. It is equipped with two patrol boats, a utility boat, radar, radio communications, geo-positioning system (GPS) unit, and basic research equipment.

The Tubbataha marine park rangers getting hands-on training from the seabird specialist.

Bed of soft corals

Shouldering costs and reaping benefits

Marine protected area management requires substantial financial investment. Tubbataha, being an offshore reef, costs even more to care for. Aside from the operational expense, there are social and economic costs, which are often neglected in marine protected area planning. Closing off a marine area to use initially results in disgruntled stakeholders, whose interests are marginalized because of the restrictions on fisheries. On the other hand, fees are imposed for recreational access to the park, and the donor community and NGOs support park establishment and operations. The key to managing a park of this magnitude lies in the equitable sharing of costs—social, economic and operational. It means balancing the benefits derived and the opportunities given up by each stakeholder. Each stakeholder needs to have a deep understanding and appreciation of his or her sector's symbiotic relationship with the park in order to secure his or her commitment. The best insurance a park could have is the stakeholders' belief that, by protecting the park, they are also protecting their own interests.

The price of a marine treasure

From 2000 to 2005, the management of Tubbataha showed that an annual budget of Philippine Pesos (PhP) 10 million (US$190,000) was required to fully implement the park management plan. Eighty percent of this went to law enforcement and 20% went to program activities such as an information and education campaign, capability building, ecosystem research, policy and advocacy, and assistance to Cagayancillo in developing sustainable coastal resource management strategies and alternative livelihoods. These activities were funded by grants and donations from international and local donors—the David and Lucille Packard Foundation, the UNDP-GEF, Homeland Foundation, World Heritage Center-UNESCO, WWF, Conservation International, the DENR, the Provincial Government of Palawan, the Municipal Government of Cagayancillo and the Rotary Club.

As externally funded projects neared their respective completion dates, the core cost required in protecting the park was estimated at PhP 6 million (US$120,000) annually. This included the salaries of seven park staff, TPAMB meetings and honoraria, food and recreational field supplies and other provisions for the composite team of marine park rangers, patrols, maintenance of the ranger station, maintenance of equipment and facilities, and basic training for park rangers and park staff. Program activities like research, information campaigns and training were not included in the core cost; these activities account for the additional PhP 4 million required for fully implementing the park management plan.

When the externally funded projects drew to a close, the TPAMB turned to revenues generated from dive tourism as its major source of funding. In 2005, half of the PhP6 million core cost was funded by tourism revenues, and the other half shared by the Philippine Navy, the Philippine Coast Guard and WWF-Philippines. To sustain the present level of management momentum, the park will clearly have to continuously engage partners in sharing the cost of park management, while developing a mix of finance mechanisms

Divers in a blue corner

which can raise a sufficient amount to set up an endowment fund.

However, the point of managing Tubbataha is not to treat it as a cost center. Rather, the cost is only a means to ensure that the reefs are able to continue providing the incalculable benefits that people derive from them. In fact, the estimated ratio of the cost of managing the park in relation to the benefits it provides is 1:8—the park gives back to the country eight times more than it costs to maintain it. An economic valuation done for the park estimated a net present value of PhP 840 million (US$15.8 million), taking into consideration tourism and fisheries values. A separate study on the intrinsic value of the park using the social willingness-to-pay method showed a range of values from PhP 3.67 billion (US$69.2 million) to PhP 6.02 billion (US$113.6 million). Hopefully, the day when the value of Tubbataha is reduced to an amount in a bank account will never come. But by any estimate, its value is enough to justify the resources needed to support its conservation for always.

The process of negotiating the costs and benefits resulted from the declaration of the TRNMP as a “no-take” zone in 1988. However, this “no-take” policy went through a long process of negotiation before the stakeholders finally agreed to respect it in 1999.

Balancing stakeholders’ interests

In 1998, a stakeholders’ analysis and subsequent stakeholder workshops were conducted to identify interest groups and their stakes in the Tubbataha Reefs. The stakeholders’ analysis was conducted in preparation for the workshop, in order to guide the presentations and discussions that would encourage dialogue and negotiation.

For the purpose of discussion, interest groups were divided into two categories—preservationists and resource users. The first group consisted of government agencies, NGOs and international donors advocating conservation. The second group consisted of fishers, mainly from Cagayancillo, commercial fishing operators, tourists and dive operators. The workshops and focus group discussions were facilitated by the Palawan NGO Network Inc. (PNNI). Prior to the workshop, PNNI facilitated three meetings in Cagayancillo to distill and consolidate the aspirations and positions of the Cagayanons in order to prepare them for negotiating with other stakeholders during the workshop in Puerto Princesa.

The stakeholder workshop proved to be a turning point in the management of Tubbataha for two reasons. First, the commitment of the various stakeholders to respect the “no-take” policy was secured. Second, an agreement was reached to compensate the fishers of Cagayancillo for their lost access by giving them a share in the conservation fee collections.

Although Tubbataha was declared off-limits to fishing since its proclamation as a park in 1988, recreational fishing continued, and park boundaries continued to be crossed by both commercial and

small-scale fishers. During the workshop, when the discussions swayed toward the closure of the park to extraction, negotiations started for redress for the displacement. The divers agreed to stop fishing in exchange for continued access to dive in the area, despite the fees.

Understandably, it took time and a lot of discussion before the fishers decided to give up fishing in Tubbataha. What tipped the balance was when they learned that the park seeds the Sulu Sea with fish, and therefore plays a critical part in the fish supply chain.

An important lesson from this negotiation process was that displaced fishers and others who pay the cost of conservation deserve some support to empower them to negotiate with those who benefit. Also, science-based data is needed for stakeholders to make informed choices.

Through further discussions and negotiations after the workshop, the stakeholders agreed upon the sharing scheme for conservation fees collected for the park: 7% for Cagayancillo to fund livelihood development activities; 43% for park operations; and 50% as reserve fund which could be used as leverage for other fund-sourcing strategies. This allocation scheme was subsequently approved by the TPAMB.

Turning loss into livelihood

Cagayancillo's share of the conservation fees, used for their livelihood fund, is managed by the municipal government, and has been put to good use. A section of the municipal road, serving as a barangay-to-market road, was constructed. Loans and marketing support for seaweed farming and for basic commodities such as rice and fuel have been provided. Loans for educational, health and other emergency needs have been made available. As of 2004, repayment of loans was recorded at 90%, involving about 250 beneficiaries. These beneficiaries have been made co-owners of the fund through membership and shares in capital build-up. A mechanism for savings has likewise been incorporated into the fund management system.

The livelihood fund was the first and most direct form of compensation for the Cagayanons' lost access to Tubbataha. However, as they saw the increased fish catch in the surrounding areas, they eventually bought into the idea of Tubbataha as a no-take zone. The best tribute Cagayanons have given the effort is that, when they understood the benefits of a marine protected area, they declared marine reserves in their own municipality. In a roundabout way, the process of negotiating the shared costs and benefits became a way of empowering the Cagayanons to protect and manage their own reefs and contribute to the wider effort to save the reefs in the Sulu Sea.

Access and fees of divers and dive operators were also an important aspect of the negotiations for shared costs and benefits. Historically, government agencies often set very low park fees. Collections were nominal, and parks had to rely on national budgets to subsidize park operations. In 1998-1999, dive boats in Tubbataha were charged only PhP 2,000 (US$38) per vessel per entry, regardless of the number of divers aboard or length of stay. Total collections was only PhP 242,000 (US$4,600), way below park expenses.

Tubbataha is a natural fish aggregating device, providing home to reef fishes and attracting schools of large pelagic fishes.

To address this problem, a willingness-to-pay survey was conducted to determine the price that would optimize park revenues, which means striking a balance between price and a manageable number of divers. The survey results served as a springboard for developing the permitting and conservation fee collection system eventually adopted by the TPAMB. In 2000, conservation fees were imposed at US$50 per foreign tourist and US$25 for Filipino tourists, and dive boats were charged PhP 2,500 (US$47) to PhP 6,000 (US$113), depending on capacity. Local tourists and repeat divers for the season were given 50% discount. Fee collection in 2005 reached PhP 3.08 million (US$58,100), the highest in seven years, and contributed 50% of the core cost.

To cover the ever-increasing cost of management, the TPAMB decided to increase the conservation fee in 2006 and use the peso denomination instead of dollars to avoid fluctuations in the exchange rate. Increased fees were set at PhP 3,000 (US$57) per tourist, regardless of nationality, and the floor rate for dive boats was increased to PhP 3,000. The figures from the 2006 diving season indicate that the increase in fees did not deter divers from going to Tubbataha. In fact, the number of guests also increased by 11% from 2005.

Man and sea turtles at play

Tangible impacts and results

The best justification for maintaining a marine protected area is the delivery of concrete results. Unfortunately, the setting up of a system that would show these results is either overlooked or not prioritized by management. Oftentimes, the reason for doing so is lack of resources, both financially and in terms of time. But such an oversight is inexcusable, because inability to deliver proof of the benefits delivered by a protected area puts the entire management structure and system in jeopardy. Tubbataha offers such proof that systems can be set up in a way that is both feasible and practical for a particular protected area, regardless of location, budget, accessibility and available expertise.

Keeping close watch

In 2002, the Haribon-Philippines Foundation evaluated 558 marine protected areas in the Philippines, mostly known as municipal marine reserves and sanctuaries, and showed that only 18% were functional. Most areas were unable to show conservation results. In the case of TRNMP, the development of a monitoring and evaluation system was already in its first management plan, approved in November 1999. Although a structured monitoring system was not yet in place, several activities generated data, providing valuable input to management.

To start with, the book “Tales from Tubbataha” by Dr. Alan White and Yasmin Arquiza compiled practically all available information on Tubbataha until 1999, when its second edition was published. Research by the UP Marine Science Institute and the Marine Laboratory of Silliman University provided baseline information on the conditions of the reefs and some species of wildlife found in Tubbataha. In 2000, WWF-Philippines came out with its first ecosystem research and monitoring report, which standardized research methods applied since 1997 and improved the comparability of data. In 2002, a five-year ecosystem research and monitoring program was adopted, and annual reports on the status of reef health and other marine-associated ecosystems in the Sulu Sea were produced. WWF-Philippines also monitored other nearby reefs such as Jessie Beazley, Cawili, Arena, Calusa, Cagayancillo and Basterra to compare the impact of varying levels of management intervention.

In September 2002, TRNMP was chosen as one of 20 marine protected area pilot sites around the world to participate in the Marine Protected Area Management Effectiveness Initiative of the International Union for the Conservation of Nature and Natural Resources (IUCN) World Commission on Marine Protected Areas and WWF. This facilitated the development of a more structured monitoring and evaluation system for the park.

Participation in this initiative involved demonstrating the applicability of selected indicators of management effectiveness. The combined results from all pilot sites paved the way for a guidebook on evaluating management effectiveness entitled “How is your MPA Doing?” This guidebook recommends simple and more structured methods rather than advanced scientific methods. The indicators selected were for the results of biophysical, socioeconomic and governance interventions. Most of these indicators measure outputs and outcomes that

Table 2: Indicators for evaluating management effectiveness in the TRNMP

Indicators	Description
Biophysical Indicators	
1. Focal species abundance and diversity	Population and abundance of seabirds, turtles, cetaceans, commercially important fish species, indicator fish species, top predators, giant clams and large gastropods
2. Focal species population structure	Population per unit area of seabirds, cetaceans, and turtles
3. Habitat distribution and complexity	Broad scale survey of coral reefs and seagrass beds to assess changes brought about by large scale disturbances such as bleaching, storms, crown of thorns starfish (COTS) infestations
4. Composition and structure of the community	Comparative composition of corals, fish, seabirds, and seagrass
5. Type, level and return on fishing effort	Random sampling at known fish landing locations in Cagayancillo
6. Water quality	Temperature, salinity, turbidity, solid waste volume, and count, diversity and density of plankton
7. Area showing signs of recovery	Changes through time in the habitat as indicated by seabirds population, benthos and seagrass
8. Area under no or reduced human impact	Diver impact study, damage assessment
Socio-economic Indicators	
1. Local marine resource use patterns	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	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)	Income by occupation
4. Household income distribution by source	Establishment of protected areas for biodiversity conservation and sustainable development
5. Number and nature of markets	Number of major marine products and their corresponding market channels (include characterization of market channels)
6. Distribution of formal knowledge to community	Types of information disseminated to stakeholders, level of confidence on the information
Governance Indicators	
1. Level of resource use conflict	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	Presence/absence of legally mandated body; frequency of meetings; process of decision-making; roles and responsibilities of members of the body (formal and non-formal)
3. Existence and adoption of management plan	Presence or absence of park management plan; planning, adoption and implementation process; completeness of the plan; enforceability of the plan
4. Existence and adequacy of enabling legislation	Existence of legislation to support MPA; legislative support for management plan; assessing appropriateness of legislation
5. Availability and allocation of MPA administrative resources	Availability and allocation of resources for each MPA activity against needed resources; external resources generated/mobilized
6. Degree of interaction between managers and stakeholders	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	Presence or absence of enforcement guidelines and procedures, adequacy and availability of the guidelines, procedures to undertake enforcement actions
8. Degree of information dissemination to encourage stakeholder compliance	Assess training/IEC activities/program in terms of number and type provided; expenses against total budget; level of satisfaction of stakeholders; level of understanding/feedback from stakeholders

represent tangible benefits associated with a particular marine protected area.

In November 2003, going a step beyond merely being a pilot site, the TRNMP adopted its management effectiveness monitoring and evaluation system. This was done through a workshop involving TPAMB members and partners from the academe. The workshop started with a review of the TRNMP goal and objectives and by stating its vision and mission. Based on these statements of purpose, indicators were selected. Initially, the group selected almost all of the 42 indicators listed in the guidebook. But when the methods were reviewed against their practicability and applicability, the list was trimmed down to 22 indicators, as listed in Table 2.

More fish, better lives

The point of managing the TRNMP is to preserve the globally significant biological diversity and ecological processes of Tubbataha, and to manage it and the surrounding areas on a sustainable basis. Because of this, the management focused on biophysical indicators. Nevertheless, the evaluation of the socio-economic and governance aspects of park management was also given due attention.

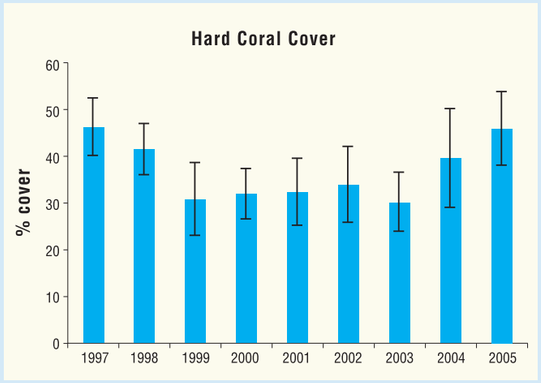
Annual monitoring reports on the biophysical conditions in the Tubbataha Reefs showed that the El Niño phenomenon of 1988, which caused massive bleaching worldwide, reduced live coral cover by 22% in Tubbataha. Later studies showed that fish biomass and density were not significantly affected by this bleaching because of the complexity of the structure of the reefs. Yearly monitoring surveys since 1997 also revealed that factors affecting changes in the reefs were caused by natural forces, such as exposure to strong waves and currents, rather than by human activity, an indicator that the no-take policy of the park is working.

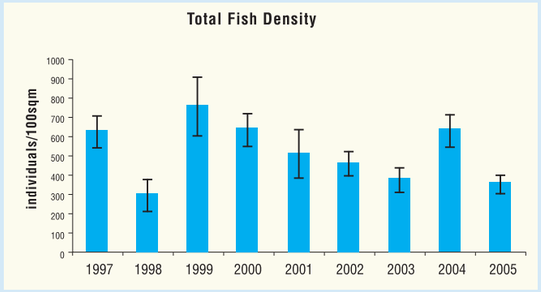
In 2005, hard coral cover increased to 46% from 40% in 2004, surpassing the pre-bleaching figure of 42% in 1998. Fish biomass doubled from 166 metric tons per square kilometer in 2004 to 318 metric tons per square kilometer in 2005. Even if fish density went down by nearly half from 631 to 353 individuals per 100 square meters, biomass doubled due to the increase in sizes of fishes observed. Consistently, the result of the survey on top predators showed a ubiquitously high number of white tip sharks and jacks. The increase in sizes of the reef fishes indicated that spawning stocks are maintained within the boundaries of the park.

Seabirds, considered good biological indicators, showed a declining population in the early 1990s, but picked up in later years, such that the total number of adult seabirds doubled from 7,295 individuals in 2004 to 14,901 individuals in 2005. However, the North and South Islets are becoming smaller due to natural scouring, indicating the need for habitat management. These islets are among the last breeding strongholds of seabirds in Southeast Asia. They are also the only known breeding area of an endemic subspecies of black noddy.

Studies show that compared to other offshore reefs, Tubbataha as a no-take zone has higher fish biomass. The comparatively high fish biomass in Jessie Beazley, which doubled since 2000, is attributed to its proximity to Tubbataha which allowed fish migration. Jessie Beazley is only about twenty kilometers from Tubbataha and is the nearest reef. Basterra which is about seventy kilometers farther to the south is totally unprotected and suffered badly from fishing pressure just like Calusa and Cagayancillo.

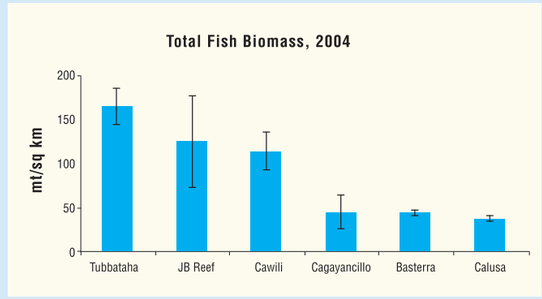
Figure 2: Hard coral cover, fish biomass and fish density





The impact of conservation should not only be measured in biophysical terms, however. Socio-economic information was gathered in Cagayancillo to determine the impact of conservation in Tubbataha on the lives of people. These were the people who were directly using the resources of the reefs before they were declared a no-take

Figure 3: Fish biomass per area, 2004



zone. In 2000, a socio-economic assessment was undertaken, covering the 12 barangays of the municipality. This was followed by a monitoring survey in 2004.

Through a local participatory evaluation conducted in April 2005, review of records on income showed an astounding 90% increase from 2002 to 2004.

To measure the changes in living standard, selected data from the national census in 2000 and the WWF study in 2004 were compared. The living standard showed positive change in the eight indicators used. Lot ownership increased from 82% in 2000 to 86% in 2004. The increase was even greater in house ownership, which jumped from 85% in 2000 to 95% in 2004. The quality of construction materials used for homes, as seen in the change in type of roofing used from native materials to galvanized iron sheets, improved on an even bigger scale from only 58% in 2000 to 72% in 2004.

Household utilities were also upgraded. The number of users of kerosene lamps was reduced from 65% in 2000 to 50% in 2004. This meant that 15% of households gained access to electricity. The percentage of people who used liquefied petroleum gas as cooking fuel remained the same, at 11% from a previous 10%, but toilet ownership increased significantly from 46% to 56%. The ownership of appliances did not change much, from 5% to 6% who owned television sets, and 5% to 7% with refrigerators.

In the governance aspect, the most critical indicator of management effectiveness was the existence of a functional management body, the TPAMB, responsible for the implementation of the park's management plan. It has become a truly functional organization, able to face the evolving challenges of managing the Tubbataha Reefs.

The TMO, in directly supervising park operations, has improved the administrative and financial management of the park. Its most important achievement was clarifying and enforcing park rules and regulations, including the conservation fee collection and permit system.

Tubbataha's operations used as legal framework several existing laws, such as the NIPAS Act, the Fisheries Code, the Strategic Environmental Plan for Palawan Act, and the Local Government Code. The TPAMB uses these laws to its advantage, invoking provisions that are most relevant. To further strengthen Tubbataha's legal foothold, the TPAMB, together with other stakeholders, formulated the Tubbataha Protected Area Bill, and subsequently submitted it to Congress for passage into law. This bill proposes the expansion of the TRNMP to cover the Jessie Beazley Reef, which will increase the size of the park from 33,200 hectares to 97,000 hectares and provide greater authority to TPAMB. This is significant because the expansion will greatly magnify benefits from a no-take area but at the same time will mean greater responsibility and management challenges for the TPAMB.

Branching corals

Hope For Our Heritage III

Tiger shark, a top predator attesting to the increasing richness of the Tubbataha Reefs.

The conservation history of Tubbataha is fairly short, spanning barely two decades. Not surprisingly, given its geographic isolation, half of those 20 years was spent searching for a management body that would be able to achieve conservation results. Only eight years after its establishment, the Tubbataha Protected Area Management Board has been able to achieve what few other national parks or marine protected areas with much longer histories have been able to accomplish. The strength of Tubbataha's management lies in three factors that have been critical to its success:

1. Investment in systems—Perhaps because it took so long to set up its management structure, interventions in Tubbataha have been heavily skewed towards the establishment of systems. The park's goals, objectives and roles were defined very early on. And because it was very expensive just to maintain a presence in Tubbataha, defining the functions of different institutions was important to make park operations more cost-efficient. Whether or not it was a stroke of luck, the selection of Tubbataha to pilot the MPA Management Effectiveness Initiative definitely put its monitoring and evaluation system on track. The park management's commitment to its monitoring and evaluation system is important, because it enables management and stakeholders to make informed choices. What convinced commercial fishers to respect the no-take policy, for example, was the data showing the importance of Tubbataha as spawning grounds for fisheries in the Sulu Sea. Also, the concurrent projects funded by different external donors from 1999 to 2004 had the potential to become an uncoordinated hodgepodge of interventions. Instead, the park management was able to systematically follow the proper cycle of planning, implementing, monitoring and evaluating—with participatory planning, workshops and evaluations conducted at key stages—to respond to the evolving situations in the field.
2. Stakeholder involvement and commitment—The partnerships formed through the management board are the backbone of Tubbataha's success. Interestingly, the five successive bodies mandated to manage Tubbataha were generally made up of the same institutions, even as composition, size and leadership kept changing. But since the membership of the TPAMB became broader and more inclusive, member institutions have demonstrated time and again their dedication to the cause of protecting the park. It is the little things—rangers giving orientations to divers and fishers, the lack of grandstanding among members, Cagayancillo's participation by implementing its own coastal resource management, continuous dialogue, the negotiated sharing of costs and benefits—that make this partnership work. External agencies and organizations also provide inspiration and encouragement through their readiness to support park activities.
3. Resilience—Tubbataha's recovery from the worldwide coral bleaching due to the 1998 El Niño is a testimony to its biological resilience. However, without the appropriate management system in place, this might not have been possible, since unchecked destructive fishing and diving activities could have hampered its recovery. This resilience is also mirrored by the institutions that work in Tubbataha. Five management restructuring in 10 years certainly spell trouble. But such growing pains also demonstrate the sensitivity of the institutions involved, and their willingness to experiment until a solution is found. Coupled with the TPAMB's commitment to systems and strong partnerships, the future of Tubbataha certainly looks promising, even if managing it will never be easy or cheap.

It is no exaggeration to say that Tubbataha is more blessed than other areas in terms of biological riches and resources that have been at its management's disposal for the past few years. It is also a rarity, in a developing and densely populated country such as the Philippines, to find an area of outstanding natural richness without any human inhabitants.

Tubbataha has suffered from fishing pressure, just like any other rich fishing ground. This pressure will likely continue, as other fishing areas are exhausted and the increasing human population demands more food.

This threat is presently held at bay by Tubbataha's park management. This case study proves that the process has not been easy. It also shows the precariousness of Tubbataha's situation, and what hangs in the balance should the management system fail.

Beyond the challenges and risks, what Tubbataha offers is hope. Despite the odds, a management system is in effect. Despite coral bleaching due to El Niño, Tubbataha has not only recovered—it is flourishing. Given the theory of larval dispersal, it is at every moment feeding the fisheries of the Sulu Sea. And while detractors might say that an absolutely-no-fishing policy is anti-development and is only a preservationist's dream, one only has to look at the vast improvements this policy has already brought to the fishing villages of Cagayancillo. Tubbataha is unique, but the management approach is not. More than hope, Tubbataha offers proof that our endangered fisheries can recover, perhaps even faster than expected, if given the chance.

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