

Tides of time

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Tubbataha Reef Marine Park, a Unesco World Heritage site in the Philippines, offers a stunning diversity of marine life, but its vastness and isolation make it difficult to monitor



A school of pennant bannerfish.

SPOTLIGHT | From hawksbill turtles to coral sand caves

The Philippines's Tubbataha Reef Marine Park: A pristine coral reef in the Sulu Sea

Geography has made the Philippines's Tubbataha Reefs unique. They lie in the middle of the Sulu Sea, a vast area whose remoteness has helped keep the reefs unspoiled. Unesco's World Heritage Centre calls the Tubbataha Reef Marine Park "an excellent example of a pristine coral reef with lagoons and two coral islands."

One reason for its protection as a World Heritage site is its location in what is known as the Coral Triangle. Explains Unesco Program Specialist Ron Van Oers, "This area is recognized as the birthplace of coral species and the world center for hard coral diversity." From there, notes Van Oers, corals have migrated into the rest of the world's tropical areas. A huge diversity, especially in hard corals, can be found here, and Tubbataha is at the very heart of it. The diversity, Van Oers adds, extends to marine and other animals, too. "There's a huge range of fish, and at the surface one sees lots of coral sand caves housing thousands of sea birds." Tubbataha also harbors important habitats for threatened sea species — in particular, hawksbill turtles and green turtles. All this makes Tubbataha Reefs a wide, open-air laboratory where scientists can study the biological and ecological processes of the area's reef systems.

The vast remoteness that makes Tubbataha special is also a challenge because it

means that monitoring human activities within the 33,200-hectare (82,000 acres) Tubbataha Reef Marine Park is a more difficult task. The Philippine Navy, Coast Guard and representatives from a local community patrol the area, and the year-round presence of park rangers since 1997 has helped fight problems like illegal fishing. Though rangers are equipped with patrol boats, radar and GPS equipment, poaching remains rampant. Each year, a number of local or foreign fishermen are apprehended. As recently as Oct. 23, the Philippine News Agency reported that park rangers caught 45 fishermen gathering a threatened marine species inside the no-take reserve; the rangers confiscated 132 sacks of the top shell *Trochus niloticus*, locally known as samong, worth one million Philippine pesos (\$20,000).

Taking samong or any other endangered species is punishable by 12 to 20 years in prison and/or a 120,000 peso fine, but poachers risk it, according to the Philippine daily Business Mirror, because dealers buy top shells for about 150 pesos a kilo, reselling them at 400 pesos a kilo.

The poaching problem is not new. Though its inaccessibility and isolation once shielded Tubbataha from overexploitation, by the 1980s, fishermen from other parts of

the Philippines had begun casting their nets here; the decline of fisheries elsewhere in the nation forced them to seek new revenue sources. At the same time, motorized vessels began replacing traditional paddle craft or sailboats, then larger ships from China started showing up, taking home large catches. Anglers even resorted to destructive fishing methods, including the use of dynamite and poisons. As at other World Heritage sites, combating this menace is often a matter of building local awareness in the neighboring communities, who need the park and make use of it.

The remoteness of this vast area helps keep the reefs unspoiled

Successful conservation efforts often rely on partnerships to build, and then extend, the communities concerned. These can include agreements with government institutes and nonprofit organizations. But the private sector is also joining up to see how it can help Tubbataha park management fight threats to the site's conservation.

After a site is inscribed as World Heritage, Unesco stays involved by bringing stakeholders together to discuss current challenges in that site's preservation and management. Notes Van Oers, "At Unesco Paris, we get requests from private-sector companies who want to help conservation of World Heritage. Our role is to seek a part-

ner at the demanding end who has requested financial or technical support. We're a clearinghouse for connecting partners, matching the demand and the offer."

Such a matchup was made in a project between the World Heritage Centre and the Tubbataha park management, in which the Shell Foundation, an independent charity in London, provided training for site managers in the basic business-planning skills of running a protected area. Says Van Oers: "Shell wanted to do something with World Heritage, and this pilot project was set up. We're trying to look beyond just protecting the park because of its biodiversity, to see how it can generate benefits that can be used for management." In his preface to "Business Planning for Natural World Heritage Sites — A Toolkit," prepared by Unesco and Shell Foundation, Chris West, the foundation's deputy director, describes the project as

mutual experience-sharing: "In addition to the specific business-planning support provided to managers of World Heritage sites, business managers from Shell Foundation and Shell — with little previous knowledge or experience of conservation — gained valuable insights about the management of areas of rich biological diversity."

Tubbataha's World Heritage listing opens other doors to private companies. Petron, a Philippine oil company, is financing the long-overdue embedment mooring system and a five-year community development project; the latter includes summer fellowships for students to engage with local communities — working, for example, in seaweed farming. The island municipality of Cagayancillo, which has political jurisdiction over Tubbataha, relies heavily on seaweed farming and forwent fishing rights to Tubbataha when it was declared a marine reserve. ■

The World Heritage program

Unesco World Heritage sites, no matter where they are located, belong to all people of the world, for all time. Cultural and natural heritage sites are irreplaceable sources of biological life and inspiration. They are what we live with today, and what we will pass on to future generations. The global community comes together through World Heritage. With its ongoing technical support, fund-raising, site monitoring and training workshops, the Unesco program showcases precise needs at specific sites, highlighting action to be taken there, then repeated elsewhere. As an engagement and partnership, World Heritage shows what nations can and should do worldwide. Visit <http://whc.unesco.org>

ALL IMAGES: SCOTT LUASON

EXPLORING | The jewel of Palawan

Hard to reach, and worth the effort

Getting there isn't easy. To reach Tubbataha Reefs, visitors usually take a one-hour flight from Manila to Puerto Princesa City in Palawan, then a boat. These are usually piloted by dive-tour operators, and many leave Puerto Princesa late in the day and only haul in to Tubbataha the following morning. Although monsoons churn up rough seas from July to October and from November to March, limiting the diving season to March through June, the World Heritage site that Filipinos call "the jewel of Palawan" remains a magnet for tourists, divers and marine scientists.

Tubbataha Reefs serve as a breeding ground for many species, offering occasions to observe hundreds of coral and fish, dolphins, whales and even nesting sea turtles. The Palawan Council for Sustainable Development says, "Tubbataha's trademark among the world's divers is its coral walls with extensive colonies of fish."

Ron Van Oers, a Unesco program specialist in the Special Projects Unit and a keen diver, visited Tubbataha Reefs in April. He notes that in marine protected areas, corals are usually healthy, which is not always the case for fish. But Tubbataha Reefs, he points out, is different. "I was absolutely stunned by the enormous abundance and diversity — really in the thousands," he

says. "Go underwater and let yourself drift for 45 minutes. You'll be surrounded by thousands of individual species of fish. I saw a family of 50 humphead wrasse grazing close to the reef. They didn't move at all, and I could watch them for several minutes. I've been diving almost everywhere, but have never seen a family of 50 humphead wrasse this big. It was amazing. This is a true World Heritage experience. And that is quite rare nowadays."

Recent initiatives, taken by park management in the Philippines, as well as by the local chapter of the World Wildlife Fund, seek to attract nondivers to Tubbataha Reefs. Unesco, in cooperation with local and national authorities, is trying to create opportunities for visitors to spend more time in, and attention on, regions surrounding World Heritage sites. Now on offer at Tubbataha Reefs from March through May are World Heritage Expeditions. These start in Palawan, visiting the Puerto Princesa Subterranean River National Park — a World Heritage site — and Tubbataha Reefs; they move on to the Visayas to visit the church of Miagao in Iloilo, one of the country's four Spanish-era Baroque churches on the World Heritage List. These expeditions offer snorkeling tours and sailing trips in Tubbataha Reefs to nondivers, sharing with this



Close encounters: A manta ray in Tubbataha.

new public the marvels of what was the exclusive playground of divers.

The initiative opens other parts of the nation to people who ordinarily come only to Tubbataha to dive. Says Van Oers: "It offers the wonders of Palawan, which has caves and forests, and the Visayas, where visitors can experience local cultures. We're trying to get people to not only fly in, spend five days diving at Tubbataha, then fly out. We want them to make a two- or three-week trip to the Philippines. The central part can be Tubbataha for diving, but we'd like them to spend time in outlying regions to experience the wonders of the country. We're hoping to generate extra benefits and revenue for the communities surrounding Tubbataha." ■

From the 1950s to the present, a history of Jaeger-LeCoultre diving watches

The Swiss luxury watchmaker Jaeger-LeCoultre registered its first patent in a watch's resistance to water in 1911. The manufacture became involved in diving watches in the 1950s. In 1959, it developed the Memovox Deep Sea, the first diving watch with an alarm, reminding the diver that it was time to resurface.

Since then, Jaeger-LeCoultre has been steadily advancing underwater watchmaking technology. From 1959 to 1970, it created several models for divers that had names like Barracuda, Shark or Dolphin. In 1965 came the Memovox Polaris, still the most popular of the antique line of Jaeger-

LeCoultre diving watches. This 1960s icon was larger than the Memovox Deep Sea, offering better readability under water; its vibrating alarm sounded louder, thanks to its bronze inside casing. The Master Mariner, produced in 1968-69, was watertight to 120 meters (394 feet). The Memovox Polaris II was rolled out in 1970-72; only about 1,000 of this popular model were produced.

The design of the first Memovox Polaris inspired the newest Jaeger-LeCoultre diving watches: the Master Compressor Diving series for professionals. The Master Compressor Diving GMT and Master Compressor

Diving Chronograph are watertight to 1,000 meters, another huge step forward. Jérôme Lambert, Jaeger-LeCoultre's chief executive, says: "We focus on water-resistance because it's part of our DNA in sports watches. We consider them instruments for professionals. It's not just the look — casing and dial. It's what's inside. You need the particular functions linked to sports: miniaturization, water resistance, high technology. We put them all together." Seventy people work in Jaeger-LeCoultre's research and development division alone to ensure that these diving watches remain on the cutting edge.

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