



BRAZILIAN ATLANTIC ISLANDS | Fernando de Noronha and Atol das Rocas Reserves

Unique biodiversity is a hallmark of remote volcanic islands that once enchanted Charles Darwin

When he spotted Fernando de Noronha for the first time from the deck of the Beagle, Charles Darwin remarked, "It appears an extraordinary place." The following morning he was ashore on one of the first landfalls of a voyage that would transform both Darwin and the world of science.

Transformation was not in the cards for the remote South Atlantic archipelago — islands that are so far off the beaten path that even in this age of supersonic travel they remain little visited and scarcely known to anyone other than the most ardent researcher or armchair traveler. But as for so many of the marine sites around the globe inscribed on the Unesco World Heritage list, extreme isolation is exactly what saved Fernando de Noronha and the nearby Rocas Atoll from the environmental depredation that has befallen so many tropical isles.

More than 170 years after Darwin described them, the islands are still extraordinary, and in many different ways. "We are in the middle of the ocean," says Ricardo Araújo, chief of the Fernando de Noronha National Marine Park, "but on these two little island groups you have all of this biodiversity and endemic animals. The two groups are

also very different when it comes to landscapes and species — unique from each other and also the rest of the planet."

Formed by volcanic action millions of years ago, both the Noronha archipelago and Rocas Atoll are the summits of high mountains that rise from the submarine ridge that runs down the middle of the South Atlantic. Floating between Brazil's northeastern shore and western Africa, this is one of the few places on Earth where one can set off north and south in a straight line and hit nothing but ocean until you reach the poles.

Noronha and Rocas are magnets for creatures both great and small, and are important breeding, feeding and resting places for tropical seabirds, sea turtles, myriad fish species and marine mammals. As such, the islands are vital for preserving the region's biodiversity and endangered species, and they play a key role in the reproduction, dispersal and survival of marine organisms throughout the tropical South Atlantic.

The 21-island Fernando de Noronha archipelago is by far the larger of the two sites,

and in fact the largest landfall in the entire South Atlantic. The eponymous main island represents more than 90 percent of the total land area and is home to the entire human population — around 4,000 year-round residents who cluster on the north shore between the airport and a small seaport.

The offshore waters are a gathering place for sharks, tuna, billfish, turtles and dolphins

Noronha's fauna is unique, including several bird species and two lizard species that are found nowhere else on the planet. The offshore waters are a gathering place for all sorts of sea creatures, including sharks, tuna, billfish and turtles, as well as resident dolphins of Baía

dos Golfinhos on the north shore of the main island.

Rocas Atoll offers a dramatic contrast, a reef formation around a central lagoon. During high tide, the atoll nearly disappears, with only two sandy islands and a few coral formations protruding above the surface. The warm, shallow lagoon and coral warrens provide refuge for many fish species as well as sponges and algae.

Despite its extreme isolation, the World Heritage site does face threats. Araújo says

the most serious of these at present is illegal fishing in Brazil's territorial waters by long-line commercial boats from Asia.

"They come here with their big boats and take all kinds of fish and species," he says.

The looming danger is Fernando de Noronha's growing population. For now, the human presence is manageable, but Araújo worries about the future.

"A lot of people want to come here," he says, "because of the sea life, the beautiful landscapes and incredible beaches. If the population keeps growing at its present rate, in the future we will have to confront problems like garbage disposal and sewage treatment that are not problems now."

Although still in its infancy — and limited by high airfares from mainland Brazil — tourism is the only viable economic activity for island residents. Beaches like Praia Sen-

cho with its dramatic headlands — Araújo's personal favorite — easily rival Brazil's best. But many of those who make the long journey to Noronha come for a chance to dive its warm and remarkably clear waters.

Araújo estimates that around 65,000 people visit Fernando de Noronha each year (Rocas Atoll is off-limits to tourism). Anticipating even more visitors in future, Brazilian national park authorities are developing

ways for people to enjoy the park without destroying the very things they have come to see.

"We are building elevated trails from recycled plastic," says Araújo, "and developing ways to capture solar power for park buildings and capture rainwater or recycled wastewater for our water needs. We want to develop more tourism infrastructure but also keep our nature safe."

J.R.Y.

Preserving marine heritage

"Tides of Time" is a partnership among Jaeger-LeCoultre, the Unesco World Heritage Centre's Marine Program and the International Herald Tribune. The series presents some of the people who are helping preserve marine sites on the World Heritage List. To see videos about World Heritage marine sites, visit the "Tides of Time" archive at whc.unesco.org/tidesoftime

WORLD HERITAGE | Evaluating and monitoring sites

Fortieth anniversary of the World Heritage Convention

The World Heritage Convention celebrated its 40th anniversary this year, providing an occasion to assess its impact and realign its future course.

The convention is unique in that it provides for both the preservation of cultural sites and the conservation of natural sites, and in its nearly universal acceptance: it has been signed by 190 countries.

"The convention continues to be relevant and in demand from member states," says Kishore Rao, director of the Unesco World Heritage Centre, "because it is their convention."

The theme of the anniversary celebration this year was sustainable development, the direction that Rao says member states want to take in the future: "They want to see the convention having meaning or a function in the life of the community."

To help build that sustainable future, the World Heritage Centre looked backward to find models for the future. The recently published "World Heritage: Benefits Beyond Borders" (Unesco/Cambridge University Press) contains 26 case studies that show-case how the sites have "contributed to the sustainability of the communities that



Kishore Rao (left), director of the Unesco World Heritage Centre, and Tim Badman, director of the IUCN's World Heritage Program.

depend on them and to sustainable development as a whole." The study of the Great Barrier Reef in Australia found that this site alone generates more than 5 billion Australian dollars (\$5.2 billion) per year and supports more than 60,000 jobs.

One explanation for such success stories is the World Heritage Convention's rigorous inscription, monitoring and evaluation process, which holds sites accountable for their management actions. For the 217 natural sites (46 of which are marine sites), the

convention relies on the International Union for Conservation of Nature, an independent advisory body. Before a natural site is added to the list, according to Tim Badman, director of the IUCN's World Heritage Program, the IUCN establishes whether or not the site meets the criteria that demonstrate "out-standing universal value" and whether the necessary management and legal provisions are in place.

Once a natural site has been accepted by the World Heritage list, however, it is not left to its own devices. The monitoring and follow-up process requires each country to submit detailed assessments every six years, and the IUCN is charged with "reactive monitoring," the evaluation process triggered when any threat to a site is reported. The IUCN reports on it to the World Heritage Committee, and the country the site is located in decides whether to implement the steps prescribed to safeguard it.

"The convention is intended to mobilize international attention, concern and support to ensure that these fantastic sites retain their importance in the long term," says Badman.

The IUCN carries out some 50 reports a year. "That's quite a significant number of sites attracting some degree of concern," says Badman, "and that's despite being World Heritage areas."

One example of the monitoring process leading to conservation action is the Whale Sanctuary in El Vizcaino, Mexico, where the expansion of a salt factory threatened the last pristine reproduction lagoon for the Pacific gray whale. A warning from the World Heritage Committee led the Mexican government to deny permission for the saltworks in 2000.

On its own initiative, the IUCN is now assessing the state of conservation of all 217 natural World Heritage sites, 8 percent of which are on the List of World Heritage in Danger, and 25 percent of which have serious conservation issues. The goal of this Conservation Outlook Assessments process, says Badman, is to identify potential problems before they arise.

"We also hope it will identify the well-managed sites within the World Heritage system that could serve as beacons," he adds.

H.E.

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A stylish tool for explorers of the deep

The simplest ideas can be the most sophisticated — and the most enduring.

When the sport of scuba diving became popular in the 1950s, thanks in part to Jacques Cousteau, watches that could withstand various levels of underwater pressure soon followed. But it wasn't until 1959 that Jaeger-LeCoultre introduced the first diver's watch equipped with an alarm function — reminding the wearer that his or her tank of air might be running low and it was time to return to the surface.

In retrospect, this potentially life-saving idea seems obvious, but the Memovox Deep Sea created a sensation in 1959. Its movement associating automatic winding with an alarm function was a first. Plus, it was water resistant under pressure of up to 10 bars (equivalent to about 100 meters, or 328 feet of depth).

Its solid case back whimsically bore the image of a frogman surrounded by air bubbles.

The Memovox Deep Sea became an instant classic in two versions, coveted by collectors — as well as scuba divers — around the world, although only 1,061 of the original

timepieces were created between 1959 and 1962. Since demand for this underwater icon has not abated over the years, Jaeger-LeCoultre brought to market a limited re-edition, the Memovox Tribute to Deep Sea, in 2011.

It is equipped with the Jaeger-LeCoultre caliber 956, stemming from the famous Memovox caliber that powered the original models. The new Jaeger-LeCoultre Deep Sea Chronograph represents the first time this historical case has been equipped with a three-counter chronograph movement. The latter includes a highly practical innovation: an indicator of how chronograph function is operating that guarantees optimal readability — indispensable for divers. The Jaeger-LeCoultre Deep Sea Vintage Chronograph is equipped with a two-counter chronograph movement: the Jaeger-LeCoultre caliber 751G.

As validation of the watchmaker's technical skill, Jaeger-LeCoultre is currently partnering with U.S. Navy SEALs to develop innovations in depth gauge and water resistance for underwater divers.

C.F.

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