Safeguarding the Coral Reefs of Cayos Cochinos, Honduras

BIOSPHERE EXPEDITIONS.ORG

Text by Jon Shrives
Photography by Curt Bowen

First charted by Christopher Columbus in 1502, the idyllic Los Cayos Cochinos Islands lie nestled between the Caribbean coast of mainland Honduras and the more commonly visited Bay Islands. The warm waters around this archipelago are home to one of the few actively managed marine reserves in this region. Stretching from the Yucatan down through Belize, Guatemala, and on to Honduras, is a network of coral reefs that form the second largest barrier reef in the world: the Mesoamerican Barrier Reef System. The Honduran Marine National Monument Cayos Cochinos forms an essential part of the 'string of pearls' – the name given to the handful of marine reserves that have been formed to protect the sparkling diversity of corals and fish found along this trans-national reef.

Photo: Social Feather Duster worms (*Bispira brunnea*) are just part of the myriad of invertebrate life that can be found on the coral reefs of the Marine Protected Area, Los Cayos Cochinos, Honduras.

The protected reefs of Los Cayos Cochinos reserve help conserve and bolster fish stocks within the region. This allows divers to enjoy colourful sights such as this Queen Angelfish (*Holacanthus ciliaris*), seen darting through a gap in the reef.

As most well know, the majority of the world's coral reefs are under threat of extinction from human activities. The opportunity to conserve, understand, and monitor such an important reef is what has drawn Biosphere Expeditions to the Los Cayos Cochinos region.

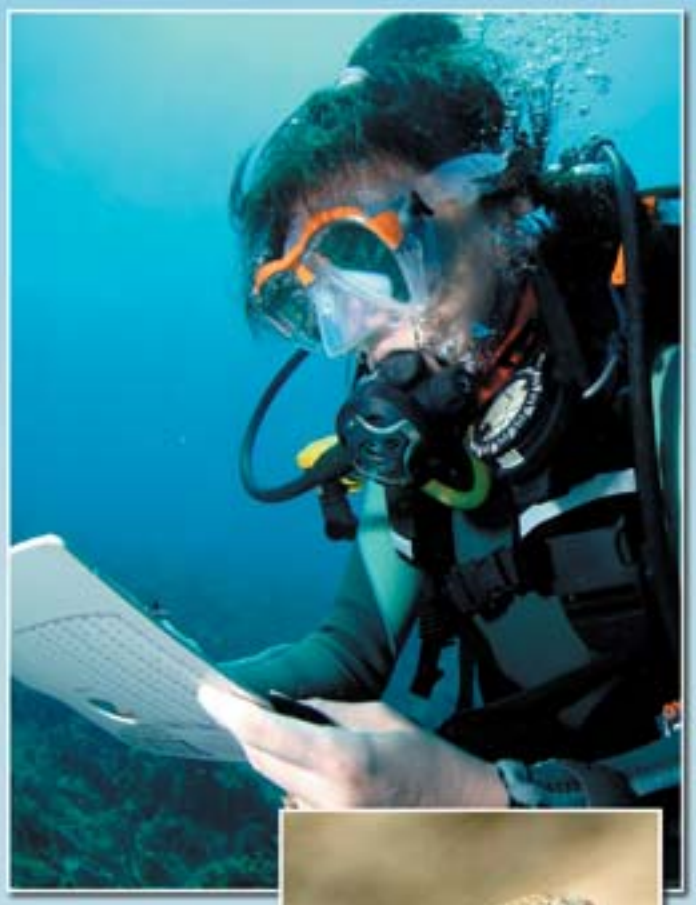
Biosphere Expeditions is an international non-profit conservation organisation that takes teams of volunteers to work on wildlife research projects around the world. Originally founded in 1999, Biosphere runs several international projects around the globe. Expedition team members do not need any previous experience; they come from all backgrounds and join on one-week or two-week expeditions to work alongside scientists collecting data for research and conservation. These projects are aimed at those who want to 'do something' with their vacations. There is an increasing market for those who want to go back home not with just a good tan, but also able to say they actively took part in conservation and research.

Biosphere's various projects also present a spectrum of experiences, wildlife, and challenges. Some projects require a high level of fitness for activities such as high-altitude tracking of snow leopards in the mountains of the Altai Republic. Other projects have a lower fitness requirement, such as the boat surveys of whales and dolphins in the Azores. The level of home comforts available can also vary, from field camps based in tents, such as those tracking jaguar in Peru or Brazil, to the comparatively luxurious game lodges of the chamois, wolf, and bear project in Slovakia. The project in Honduras is right down the middle, with a moderate fitness level required for diving surveys. Although housed in comfortable cabins, Biosphere Expeditions rates the accommodation as 'rustic' with no running water or flushing toilets. This is still an expedition, after all!

The focus of Biosphere Expeditions research in Los Cayos Cochinos is surveying the fringing reefs around the two main islands and the thirteen smaller sandy keys. Biosphere first

started surveying these reefs in 2006; and by using the same methodology and returning to the same sites each year, they provide a basis for continued monitoring of reef health within the marine park. Expedition team members join the project for two weeks, and all must be a minimum of PADI Open Water or equivalent. The expedition staff consists of an Expedition Leader, a Team Scientist and a Dive Instructor, all of whom participate in training team members for the first few days of the expedition. Training consists of lectures, DVD presentations, and practice runs. Of particular popularity with the team members each year is the outstanding DVD created by the Reef Check organization, which is followed by a mock, dry land dive survey conducted on the local beach, featuring the highly dangerous duct tape barracuda!

The objective of all this is to transform the volunteers from recreational divers into science divers. For many, the use of survey tapes, slates, SMBs, and other unusual equipment underwater comes as a new experience. Dealing with task loading is an important part of the training, and safety is paramount. Divers have to work hard to collect data whilst handling equipment – one section of the survey work requires divers to dive head-down whilst looking under rocks for invertebrates and also collecting data on the general state of the reef. With so much to think about at once, it's possible for divers to forget basic aspects of dive safety, such as checking air on the SPG. For this reason, the training is thorough and there are always two PADI professionals in the water with the teams during surveys.



Top right: Expedition team members need to maintain good buoyancy to be able to assess the reef whilst handling a variety of underwater equipment.

Middle Right: Fish and Corals aren't the only interesting wildlife in Cayos Cochinos. The Islands are also home to a rare species of endemic Spiny Tailed Iguana; *Ctenosaura Melanosterna* (pictured), and the elusive Pink Boa Constrictor (not pictured!).

Inset: For two weeks at a time, team members call this beach home. Boat survey dives depart from this, the island's only dock, up to three times a day.

The survey protocol that the Biosphere teams use is called 'Reef Check.' Since 1997, the Reef Check survey method has been used in dive sites around the world, giving the first ever global assessment of coral reefs and their associated fisheries. The unique feature of Reef Check is the ability to recruit and use regular, non-specialist divers. The survey work focuses on indicator species, i.e. those that 'indicate' the state of the reef and the level of human impact upon it. For example, groupers are a popular commercial fish, and some reefs suffer from low populations due to over extraction. Likewise, banded coral shrimp are popular in the aquarium trade, and hard coral percentage cover of a reef can help to explain the status of one dive site's ecology versus another. This allows useful between-site comparisons; for example, whether one site suffers more fishing pressure than another. The use of a standardised methodology also allows this data to be collated by Reef Check, and compared across regions, the wider Caribbean, and even globally. The established pedigree of Reef Check, availability of high quality multi-media teaching materials, and ease of introducing divers to diving science, makes it an ideal survey program for Biosphere Expedition's work in Los Cayos Cochinos.

But it's not all work, work, work on the expedition. The diving schedule does allow time for the team members to get out and enjoy some of the fascinating wildlife in the region, be it above or below the water. On their day off, team members can venture deeper into the island's steep jungle, in hopes of catching a glimpse of the rare pink boa constrictor, found only in Cayos Cochinos. It's not uncommon to find some of the indigenous black-chested iguanas strutting about the research base during the day, followed by the eerie large ghost crabs scuttling in and out of their burrows at night.

Top Photo: One of the many small inhabited islands in the Cayos Cochinos Marine Preserve.

Top Left: There is much for the keen macro photographer, such as these stunning and delicate Blue Bell Tunicates (*Clavelina puerto-secensis*).
Left: Night divers are treated to the elegant meanderings of a Giant Basket Star (*Astrophyton muricatum*).

Below Left: A night dive reveals many very interesting animals normally not seen during the day. This large Basket Star curls up into a tight ball during the day, but at night spreads out its multiple appendages to gather food.

Underwater, the team experienced colourful acrobatics by reef squid, a close encounter with hawksbill turtles, stumbled across a sleepy nurse shark, tucked away under a sandy ledge of reef, and had a flyby from an inquisitive eagle ray. On a night dive, with their torches briefly switched off, the team experienced bioluminescence, their movements exciting the glowing plankton in the water, whilst elegant and delicate basket stars, roamed slowly over the reef, wafting their giant fern-like arms in an attempt to catch a tasty night time snack.

Back on dry land, the team have the evenings free to input data from the day's diving into the expedition's computer. Some evenings have lectures scheduled for those who are interested in learning a little more reef ecology from the marine biologists who are on hand. However, some nights are free to just sit back, enjoy the warm Caribbean breeze, the clear starry sky, sip some rum, and watch the eagle rays swoop past the local dock to hunt out small fish that have been attracted by the light.

Currently, the Reef Check monitoring project in Los Cayos Cochinos is the only diving project offered up by Biosphere Expeditions, who will be running expeditions to Los Cayos Cochinos in March 2009. There are also plans to set up a similar reef monitoring project in Oman in the near future. The proximity to the coastal town of La Ceiba allows relatively easy travel arrangements, which in turn provides a good opportunity to travel up to the beautiful Mayan temple ruins of Copan before flying home from the city of San Pedro Sula. Currently, dive tourism is very limited in Cayos Cochinos, certainly in comparison to the diving of Roatan and Utila. This expedition allows members a unique way to not only dive and experience the reefs of this marine reserve, but to get directly involved in research and reef conservation, whilst learning diving science at first hand.

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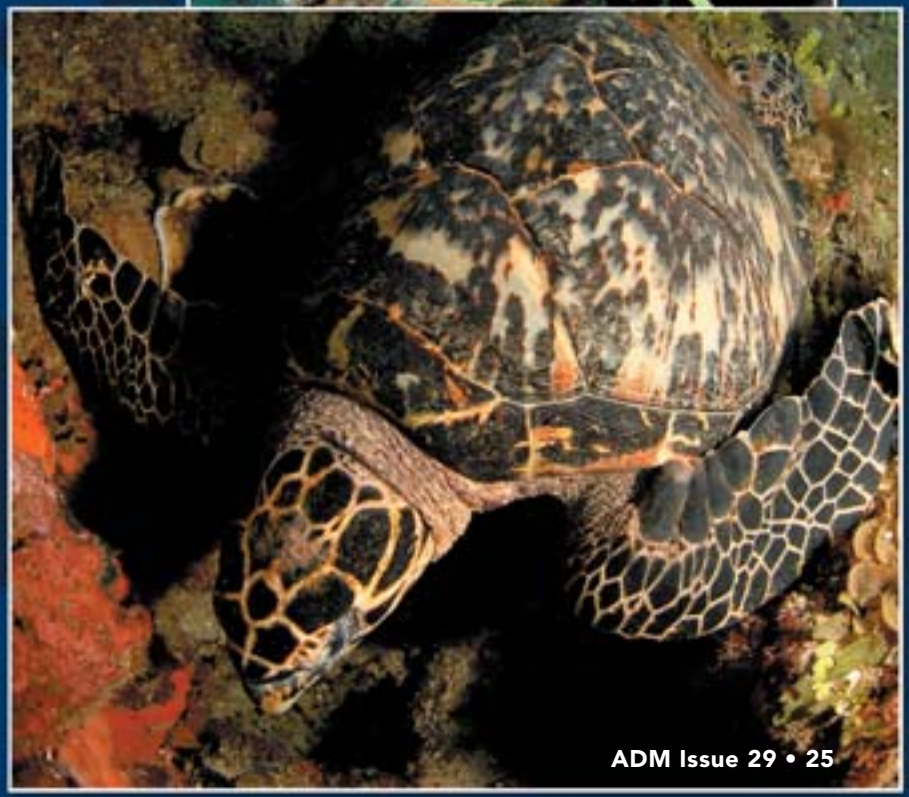

Top right: Divers use long lengths of PVC plumbing tubing, in conjunction with a long fibreglass tape, to help measure width and length of survey areas for fish counts.

Bottom Right: Although divers concentrate on counting key species of fish, corals and other reef invertebrates, there is time to enjoy rare sights, such as this slightly sleepy Hawksbill Turtle (*Eretmochelys imbricata*).