

Reef Balls - a scientific approach to building artificial reefs.

by MED BODEN

Cliff Lee-Jeffcoat remembers diving the reefs in Grand Case, St. Martin thirty years ago. "They were just bursting with marine life," he says. "Now the area is a marine desert." He says, devoid of the fish and coral that once brought beauty and liveliness to local tourists. St. Martin is not alone. Worldwide, 100 countries have reef systems. Of them, 93 are now extremely damaged.

Destruction of the reef forests has grabbed public attention in recent years, with good reason. Valuable natural resources are destroyed forever; the food chain is interrupted.

Though it's harder to see, under the ocean nature and humans hang on the same destructive. Hurricanes are, of course, a major cause. Storms and on-shore construction drain silt into the once-clear waters. The sediment settles on coral, killing it by blocking light and food supplies. Since fish can

no longer feed on the coral, the underwater food chain is interrupted. Careless anchor placement by yachters, divers gathering living coral and over-fishing are all to blame.

Throughout the Caribbean, Cliff has seen juvenile reeffish that for miles at local marinas. And he notes, "The fish density is getting smaller and smaller - nothing except."

Coral is a vital link in the sea's food chain. Loggers, poachers, and regulation on fishing, corals and marine life are roots. Divers disrupt the interdependent ecosystem and disrupt the food chain, so fish cannot find further and further out to find fish.

Cliff is concerned about the underwater environment. He's been diving all his life, has degrees in Marine Sciences and Marine Biology and is currently working on a Masters in Oceanography. Since natural reefs take thousands of years to form, he has

turned his interest to creating artificial reefs.

Many methods are used to reproduce the coral environment. Often ships, cars or limestone boulders are sunk, creating a place for coral to take hold. But ships and cars move with the tides, breaking up coral life and releasing toxins. They biodegrade in 30 to 80 years. Limestone has few pockets for small micro-organisms to attach themselves, and all those methods are costly, requiring heavy equipment to deploy.

Seven years ago Todd Barton, an American businessman and avid diver, was also troubled by the damage to the world's reef systems. He discussed the issue with some diving buddies and they experimented with pouring concrete over a large ball. "Because of the inflated cost, we could afford it into the ocean by small boat and have the tremendous expense involved with renting a crane and barge to transport the object,"

Todd said. "Sinking the ball would be easy, just deflate the beach ball content." And so began an innovative company - Reef Ball Development -

with a new approach to artificial reef formation. Two years of research and development followed the A Reef Ball beach ball experiment. Five years ago, patents were issued.

The beach balls are transformed to bottom-heavy concrete mounds with irregular Swiss cheese-like holes drilled over the surface. The holes create wrinkles within the ball, aiding stability and simulating a natural habitat for marine life. Reef balls have maintained the same position after Category 3 hurricanes in less than 10 feet of water and their life expectancy is estimated at 500-plus years. The concrete is pH balanced to the ocean - in fact, fish move in as the balls are placed. Once the ball is in position that rugged balloon inside is dotted slowly, making pinpoint landings possible. In essence, reef balls are designed for a purpose.

They are used worldwide for a variety of purposes - with custom add-ons attract shell or hard coral, angelfish, lobsters,

Diveplay used them to create underwater habitat to be viewed in glass-bottom boats. In Cancun, Mexico, 300 reef balls were put in five years ago. Compared to other artificial reefs of the same size over the same period, the fish population doubled and there was three to five times the diversity in types of fish. Special interest to divers is humor. Reefs, reef balls have also been used to build a protective barrier to mangrove planting.

Reef balls range in size from 6 pounds to 8000 pounds, measuring from inches to 84 feet in height. Costs range from \$125 to \$1000 US.

Cliff has become a champion for the artificial reef cause, giving talks school children about the state of oceans. He now operates "Off the Wall," the Caribbean distributor of Reef Ball Development Corp.

And he's hoping to appeal to the Caribbean tourism market developing a Reef Ball program resorts and hotels. His convictions

two-day schedule - the first day will be educational. The second day participants will place their reef ball in the ocean. They will register the GVI coordinates under their names.

cultural activities, including participants, as well as the events based economy. Year after year, participants add the reef life they've contributed.

Soldiers benefit by having reefs to benefit dollars. When asked how we can help, I stressed placing anchors with care taking only loose, non-living corals. Then he described farming. "When you're diving, take a moment to feel the reef, wash the sediment off, etc. Some divers take off everything, but you can just do it with your hand. Don't actually touch the corals, that's harmful. Now just move your hand close to the coral, letting water wash over the surface. You'll amazed at how quickly the coral can back to life - you can watch the new growth. And the sun starts feeding right away!" You can almost hear

the diving divers jaws drop.

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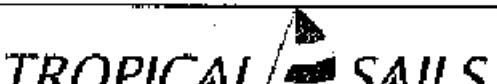
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