

**Recommendation for Reef Ball Technologies;
Reef Balls for Near Shore Diving & Snorkeling,
and an Adopt A Coral /Transplant Program,**

For
Dive Paradise,
Cozumel,
Mexico



With Partners Including:



Executive Summary

Introduction

Reef Ball staff conducted a short visit to Cozumel and meet with Apple of Dive Paradise to discuss options to implement Reef Balls at one or more of the hotel properties served by Dive Paradise. Reef Ball staff conducted bottom surveys in front of 3 hotel properties served by Dive Paradise and found that all three had suitable hard bottom for artificial reef deployment. We also visited an underwater sculpture park built under supervision of the Reef Ball Development Group, Ltd. several years earlier in 3 meters of water depth and found extensive coral growth and fish populations which further indicates the area is ideal for creating diving and snorkeling sites near shore.

We discussed the value of purchasing Reef Balls already built by our Quintana Roo authorized contractor (Marenter) and the value of building your own Reef Balls with purchased mold systems. It was determined that the best approach could be to purchase the larger sized Reef Balls from Marenter for a quickly installed reef system, then to build smaller units over time, often with participation from hotel guests or diving groups, to add to the artificial reef systems. The reefs built in front of the hotels could incorporate underwater trail signage and could be transplanted with hard corals by guests/divers as a way to encourage them to return to Cozumel year after year to check on the growth of “their” coral reef.

Background Information on Reef Balls Why Reef Balls?

Reef Balls are state of the art designed artificial reefs used primarily to restore coral reefs but also to create snorkeling, diving, and fishing reefs. Reef Balls have been used in over 3,500 projects in 42 Countries worldwide and over ½ million Reef Balls have been deployed. Reef Balls are the most widely used designed artificial reefs in the world. The Reef Ball name is well known and highly respected in the Scuba diving sector. Reef Ball has participated in industry dive shows for the last 10 years and over 1,000 articles have appeared in the popular press about reef balls (see <http://www.artificialreefs.org/Articles/news.htm>). This means that Reef Balls will help attract more divers which would be more likely to stay in hotels with Reef Ball activities on site. Reef Balls are also the most studied designed reefs in the world. More than 100 scientific reports (see <http://www.artificialreefs.org/ScientificReports/research.htm>) have been published on Reef Balls making them easy to obtain permission from governments to deploy them. Our experience is able to provide advanced options such as coral transplants, beach protection, unique designs and other techniques not available with older methods of artificial reef construction.



Since snorkeling, diving and other water activities are important to many potential guests of the properties served by Dive Paradise, it is logical to bring these activities closer to the properties.



Reef Balls will create a richly diverse biological reef system that will contribute thousands of kilos of biomass to Cozumel each year of which approximately 30% will be fish life with the balance being reef associated species.

(About 180 Kilos per Reef Ball Per Year for hundreds of years to come)

3 Years Natural Growth in Cancun

Other important artificial reef considerations:

Stability

Physically, the sites experiences a significant wave climate and currents. Cozumel faces threats from hurricanes such as Gilbert. Reef Balls will be engineered to be stable in your area. In all of our projects, Reef Balls have been proven to be stable unlike other materials. This is important when a major goal is coral growth and customer loyalty to return year after year to see the reef grow.

Longevity

Reef Ball has a long history of using high tech concrete to engineer structures designed to last centuries rather than decades. Our work has required it because longevity is an important design criterion when building coral reefs that potentially last for thousands of years. By using specially designed, high strength concrete and using proprietary admixtures, we will create a high strength, abrasion resistant concrete, (without iron rebar in the modules), that will have an engineering life of hundreds of years.

Uniqueness & Beauty

Reef Balls come in a variety of sizes, and shapes....each designed to be natural looking and highly functional reefs. With coral transplant programs, you can get an beautiful coral reef in just a few years, without transplants your reef will still bloom into a coral reefs in 5-10 years. Here are some pictures of projects close to or in Cozumel and the type of growth you can expect.



15 Months of growth of a propagated Acropora (staghorn coral) in Curacao.



7 years growth in Cozumel.





Reef Ball Sculpture in Cozumel. (7 years old)



Oyster Ball, transplanted 15 months old.



Curocao...a few months old.

The next photos is a Reef Ball in Mustique in 30 feet of water and transplanted with corals.



The Mustique pictures were taken during the installation of corals in November 2000 by Mustique Water Sports. Over a 3-year period, these Reef Balls will turn into a natural coral reef.
Photos Courtesy of Mustique Water Sports

Right: A small sized Reef Ball (3 feet x 2 feet). This Bay Ball sized Reef Ball was deployed in Cancun, Mexico. This picture was taken 3 years later and shows only natural growth (no coral transplants were added to this Reef Ball).

The Reef Balls in Mustique will look similar to this photograph with much larger corals in 3 years.



Proposed Project

We propose a 3 phased project:

Purchase and installation of a mixture of larger sized “turnkey” Pallet, Reef, Ultra, Super and Layercake styles from Martenter.

Phase I:

At each of the three hotels, we recommend from 30-100 large units be installed by our Reef Ball Authorized Contractor. Each site would require an approximate budget of \$15,000-50,000 depending upon the number, mix of sizes and overall budget.

Phase II:

Purchase of a set of molds to be shared by the three properties. We recommend 1 Oyster, 1 Lo Pro, 1 Mini-Bay Ball, and 1 Bay Ball mold system as an initial start (you can always order more molds later if the project becomes more ambitious). All these molds, extra parts, tool kits and supplies to make the first batch of Reef Balls could be budgeted at less than \$10,000 including a week of construction training.

Phase III:

Get a week to ten days of coral propagation and transplant training to start you own in house coral transplant projects with guests/divers/staff. All the tools and training for this phase should cost less than \$5000.

During the training periods, we would work with you to help develop a customized program for your hotel and dive operations depending upon individual hotel commitments and desired guest experiences.

Next Steps

Once an overall budget is developed, we can put you in touch with Martenter for an exact quote on the installed modules. We can also get you a proforma invoice for the molds, tools, training and other aspects desired for phases II and III.

In exchange for monitoring, we may also be able to get the program accepted into the Reefs Around the World Grant Program saving you as much as 40% on mold purchases and up to 1/3rd off of training fees.

Thank you for your hospitality when we were in Cozumel and for the pleasure of allowing me to write you this initial pre-proposal with some of our thoughts. I sincerely apologize for the length of time it has taken me to get this letter to you....we have been doing non-stop projects since I stopped by in one of Reef Ball's busiest year ever. This year we are preparing for our ten year anniversary in July....we hope we can have you on-line producing Reef Balls to be apart of the celebration.

Please do not hesitate to contact me if I can be of further assistance. I travel to Cancun often, so a trip over again is always possible if needed to present this proposal to any of the hotel operators.

Thanks,

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