

Junior Park Warden Reef Discovery Site



Reef Ball Restoration Project 2012

Sponsored by:



Submitted By:
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For 5 days in June 2012, Marsha Pardee and John Walch, members of the coral division of the Reef Ball Foundation, and with the generous support the New Jersey based company Absolutely Fish Inc., executed a coral rescue operation on two popular tourist reefs located within the Bight and Grace Bay Princess Alexandra National Park on the island of Providenciales, Turks and Caicos Islands.



More than 40 imperiled coral colonies were rescued from certain death off the seafloor, including one extra-large (over 5 feet tall) sea plume. The smaller salvaged corals were re-stabilized directly back on the natural reef while some of the larger colonies were fragmented into smaller pieces forming over 300 new colonies. These replica segments off the parent colony were then planted onto man-made reef structures called Reef Balls.

A coral propagation nursery was also established to maintain some of the coral fragments for transplanting on the new Reef Balls that were recently constructed as part of the Junior Park Warden summer camp program. The nursery will also serve as a demonstration site for future projects.

The barrier reef bordering the coast of the TCI is the third largest in the world, and in addition to protecting the islands from storm surges, the reefs are also a popular tourist attraction. Equally as popular among the non-SCUBA diving group is the number of near shore patch reefs that dot the coast line. One location that is gaining in popularity is The Junior Park Warden reef just off shore from the Bight Park beach area.



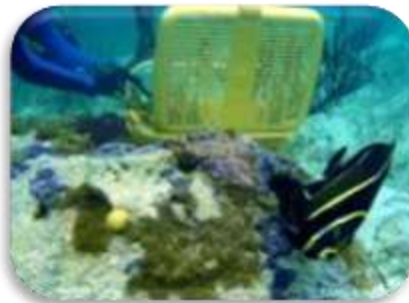
Soft corals make up an important portion of a coral reef ecosystem contributing to the overall complexity and providing essential habitat. This is especially true in near shore reefs where the temperatures can be higher and water movement less than preferred by many of the hard reef building coral species.

The majority of the imperiled corals rescued at the Junior Park Warden patch reefs were soft corals (gorgonians). Soft corals, like most coral species, can easily become broken off from their attachment point on the reef during storm surges or by human contact such as anchors or accidental fin kicks by snorkelers and divers. Once they are no longer stable they will be impacted by the elements like abrasion from sand, chemical warfare between other corals they may be touching or lack of water circulation. If the corals are not rescued and re-stabilized, they will succumb to the elements and die, reducing the habitat and impacting the balance of the ecosystem.



Imperiled soft coral on seafloor ----- Dead soft coral on seafloor ----- Imperiled soft coral on seafloor

A photo essay of Marsha harvesting imperiled soft corals at the JPW reef. These corals were re-stabilized on to Reef Ball modules as well as natural reefs.





Another example of a rescued coral restabilized back on the reef.



In some cases the rescued coral colony was fragmented, and the cuttings were either planted directly onto the Reef Ball modules or natural reef using putty to secure them. However, in many cases the coral colony was segmented, and these smaller sections were inserted into cement to form a “coral plug.” A coral propagation nursery was established to receive the “coral plugs.” The concrete trays were fabricated with “plug holes” to hold the coral plugs until they are ready for transplanting on the new Reef Balls when they are deployed within the upcoming month.



Note: The last 4 ft. long rebar was pounded in after the photo was taken to illustrate the length the bar needs to be to maintain stability of the cement trays during possible storm surges.



Because of the small volume of coral plugs that were made during this coral rescue, a low-tech small scale floating coral table was used. Special fast drying cement is mixed and poured into small plastic cups on top of a small amount of beach sand placed in the bottom of the cup. Before the cement sets up completely, the cup is put in the water and the coral fragments are inserted. Once the cement is hard, the coral plug is popped out of the cup and ready for planting or put into a propagation farm to mature before it is placed on Reef Balls or on a natural reef.





A portion of this large sea plume that had broken off the reef during a recent summer storm was fragmented to start new coral colonies (the process is depicted in the photos). The large remaining portion was reestablished within a cluster of Reef Balls enhancing the complexity and adding visual impact to the man-made reef.



Prepare the coral

Prepare the spot on the reef Mix the putty



Plant the coral

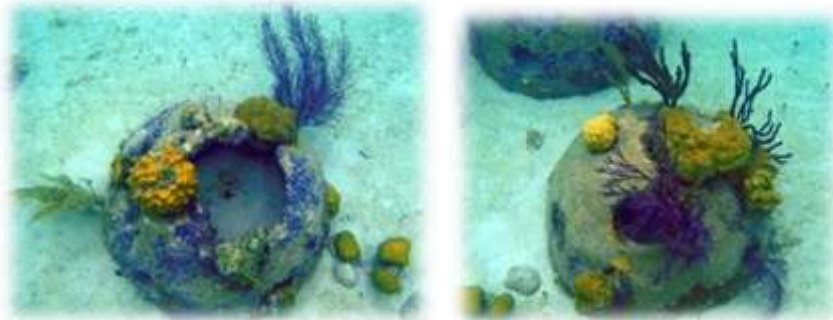


Before and after photos of a cluster of Reef Ball modules before coral transplants were added. Attaching rescued imperiled coral colonies not only save the life of the coral but also jump starts the new artificial reef.

Under the watchful eye of the ever present yellow head wrasse, Marsha cleaned the surface area on the Reef Ball before the coral colony was attached so the putty would stick. The new coral met with a final inspection and approval by Mr. Wrasse.



After a helping hand from the coral team



Rescued soft and stony corals restabilized on man-made Reef Ball modules



Smith's Reef is also a popular near shore reef within the national park and the second location the Reef Ball team performed their coral rescue.

Approximately an equal number of both hard and soft corals were rescued at this location, including a colony of *Eusmilia fastigiata* (Smooth Flower Coral) which is the only Caryophyllid in the Western Atlantic Ocean and an important reef-building coral.



Porites (finger coral) is also an important reef building coral forming large mounds. Damage or injury to a few corals within the mound can often result in the death of the entire mound. But elevating a few colonies out of the sand and off the seafloor increases the possibility of this colony creating a new mound.



A dead coral mound of what used to be finger coral (*Porites spp.*)

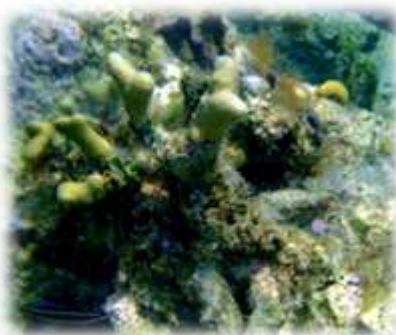


Small new colony on seafloor



Large healthy mound

Finger coral (*Porites spp.*) is one of the more common hard coral species, and it is also one of the more fragile species, which means it can easily be broken off of the reef. For this reason there are usually a number of colonies that can be found on almost every dive that could use a helping hand. The photo essay below shows John rescuing two different finger coral colonies, both of which were reattached to the natural reef and out of harm's way.





The Reef Ball team also picked up trash that can smother corals and cause other damage to the reef. Plastic is especially bad because it resembles jelly fish, one of the favorite foods of sea turtles, but plastic causes harm or even death if turtles eat them.



Photo Gallery





Absolutely Fish - a true reef Angel!

A huge thank you to Absolutely Fish for making this coral rescue possible!

And Now for Part 2 of the Project...

The second Phase of the Absolutely Fish project included an educational component that involved a hands-on learning experience for the Junior Park Warden (JPW) Summer Program 2012 participants. The JPW Reef Discovery Site was initiated in the year 2000, with the first Reef Ball pods being made and deployed by the youngsters involved that year, with more Reef Ball pods put in during the following years. A whopping total of 27 kids between the ages of 13 and 17 were enrolled this year and eager to follow the path of their predecessors in learning about the reef environment, the rules of reef etiquette and to claim their own contributions to this living, growing reef.



Junior Park Wardens of 2012

With so many kids, the process was undertaken over a two day period (July 17-18) splitting the large group in half for manageability. On the first day, the group aided in the set-up of the molds and pouring of the balls, with the second day gang doing the breakdown (hatching) and clean-up portion of the project. Both groups withstood a classroom seminar and Q&A session “All About Reefs” before getting to the messy part of the day. The hands-on portion of the program is always the highlight with shrieks and laughter as the kids get down and dirty mixing and pouring cement, using mallets and hammers to put things together or break them apart. Once the tasks were completed, each group got a tour of the natural and artificial reef areas to finish off their day.



Reef Innovations volunteer Robby Duke showing the girls how to help.



Boys at the ready with tether balls in hand.

MerAngel Ecological Services Marsha Pardee giving a heads up on the what, why and how to...



Queing up to get the buckets of concrete.

Now it is finally time to pour!



The breakdown team on Day 2 after dismantling the molds, washing down and cleaning up.

The boys going over the rules of reef etiquette before heading out for their snorkel tour.





The JPW Reef Discovery Site Statue Mount adorned with Reef Balls and Junior Park Wardens.

And a good time was had by all...



Once the JPW Program Reef Ball adventure was completed, the balls were left to cure on land for the next couple months while the handmade underwater tile marker was being created. Local artist Pamela Leach teamed up with graphic artist Barbara Young to devise a method of making these original underwater markers when the Underwater Snorkel Trail project was initiated in 1997. A total of 24 different artworks depicting various facets of reef ecology were designed for the trails, complete with interpretive information, including the rules of reef etiquette. Highlighting two of the most popular nearshore snorkel reefs, the trails were designed to steer snorkelers on a safe path around the coral reefs, while educating them about reefs and how they could help protect them.



The graphics chosen for the Absolutely Fish marker show the reef ball and marker mount with a queen triggerfish checking herself out on the tile. This marker is the first underwater signage that has been installed on the JPW reef site, but hopefully more will follow for future programs.

Once the tile was completed, the team geared up to deploy the balls and do the final installation. A hand truck was used to move each ball from the parking area to the water's edge (no easy feat even with 4 adults). The next involved reinserting the internal bladders for flotation, rolling them in the water and swimming them out.



Reef Innovations Robby Duke swimming out with a Reef Ball.

The next step: release the plug and let her sink to the bottom.



The four Reef Balls made during this program were all pre-drilled for receiving markers if funding comes available in subsequent years. Each ball was placed near a different pod to serve as the marker tile for that cluster. Eventually we hope to create a complete trail of balls that link the 7 pods (of 6-10 balls each) now in place, with interpretive information on a trail marker at each pod site.



Marsha Pardee installs the first underwater trail marker on the JPW Reef Discovery Site.

All nuts and bolts are now in place and secured with a little non-toxic marine putty added for extra holding umph. The first tile marker and mount have been placed at the first pod of balls that one encounters when entering the site. This first pod was deployed in the year 2000 with the first group of Junior Park Wardens involved in creating the JPW reef. A fitting site for yet another first in the evolution of the Junior Park Warden Reef Discovery Site, thanks to Absolutely Fish Inc. sponsors of 2012 Reef Ball Restoration Project.



Marsha signals the AOK that the project is now complete!

Once again, we would like to extend a huge

THANK YOU!

To



for sponsoring the

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