Expedition Akumal

Coral Reef Restoration

Summary Report 2016 by Jenny Mallon

Expedition Akumal

This year I celebrated my second year coordinating the Expedition Akumal Coral Restoration Program. I am hopeful for the future of the reefs of Akumal and will continue to contribute to the project as it grows. Our project is an example of what can be achieved when a local business invests in conservation. One of the joys of compiling this report was reflecting upon the advances that we have made this year, and being grateful for all that was accomplished. I hope that you enjoy reading it!"

Jenny Mallon, Coordinator, Expedition Akumal

Coral Nurseries

Back in August 2014, Expedition Akumal installed the first line nurseries in Akumal, with some 35 fragments of opportunity found on the sea bed. Through 2 years of careful maintenance we have seen them flourish, and are pleased to share our recent developments:

- We installed new line nurseries at our sites and propagated 250 new fragments. The second and third generation fragments are healthy and strong.
- Early observations suggest that the fish population has been helping us out with keeping the nursery lines clean from algal build up. We are slowing our cleaning regime down from weekly to monthly cleaning dives.
- Through experimenting with different techniques we found that cable ties are still the strongest competitors when it comes to holding bigger fragments to the line nurseries, whilst using monofilament to attach smaller fragments allows for more corals to be attached to the nursery.
- Our trials show that clipping the nursery fragments did not cause any mortality when at least approx. 30% is of the original fragment is left intact.

Outreach and Training

2016 has been a year of building bridges and working with other researchers and the local and international community to share the work of Expedition Akumal with a global network of coral reef projects.

Developing knowledge in this young science improves our understanding and efficiency.

We work with local businesses and dive professionals to raise awareness of conservation issues.

Transplanting Corals onto the Reef

Working closely with Oceanus A.C, we were authorized to begin out-planting our coral colonies from the nurseries onto the reef. Comparing methodologies is the first stage in this process, as we have a unique set of environmental conditions and donor populations here in Akumal. Working with Staghorn coral at depths of 12 – 18m makes our project different from many others, and adds to our potential to make some interesting discoveries about this species and it's recovery on the Caribbean reefs.

Last month our team assisted Oceanus to trim the nursery lines and transplant 75 coral fragments onto the reef crest of Akumal. We also employed their cement bases for 45 transplants at nursery site 2 and installed a light / temperature sensor next to the fragments.

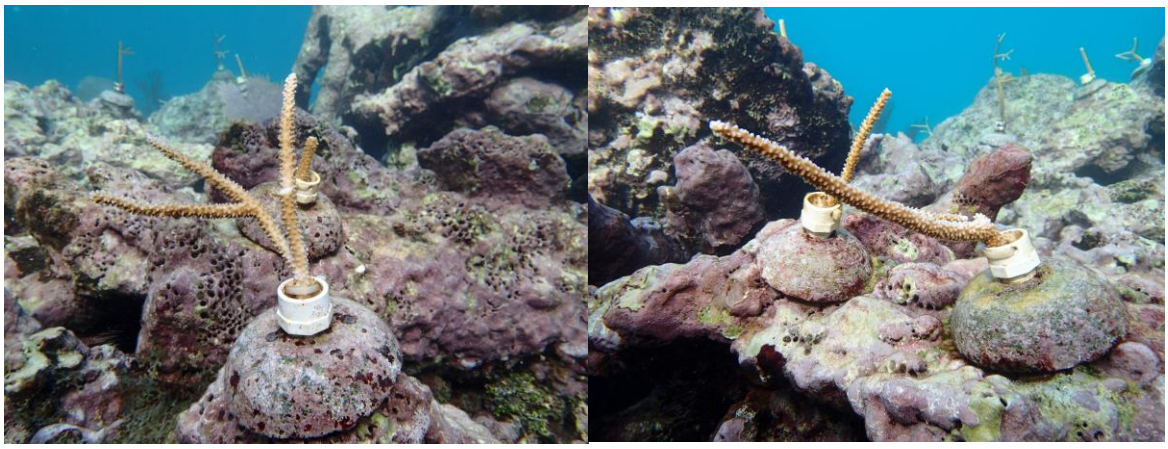

Photo 1: Colonies from nursery site 2 transplanted onto the reef crest.
Photo credit: Leona Kustra

Experimenting with Novel Techniques

Trying out different methodologies, we attached 45 nursery-reared colonies to the reef substrate at site 1, and 15 clusters at site 2. These fragments fused to the reef over the first few weeks of attachment. From these preliminary studies, we observed that there is variability in the time it takes for fragments to attach to the reef, and we are setting up experiments to test out which factors (e.g light, substrate condition, fragment size) are having the most effect on our coral transplants.

In autumn of 2016 we were given permits to proceed with upscaling the project, thanks to the support of Oceanus A.C and CONANP who included our work in Akumal in their nation-wide reef restoration plan, and now we are able to begin testing our theories on where and how to transplant our corals. We want to maximize efficiency, survival and health of the coral community, whilst maintaining the ecological and scientific integrity of our work.

For the moment, we are collecting data on our initial out-plants, and the results look good so far. We will keep up with our photo database and rigorous data collection of our transplanted corals, with results expected mid-2017.

Communications

During 2016 we have developed our capacity to share our work:

- Maintaining the Expedition Akumal Youtube channel, by publishing weekly videos of our underwater work. Thomas Vogt, our underwater videographer, documents our work in his videos and assists with data collection using both video and photo.
- By publishing photos, research updates, and sharing relevant articles on Facebook, we doubled our number of page followers.
- Through networking online and in person, we gained international recognition for our work
- This year we began our newsletter mailing list
- Updated the website regularly
- Wrote blog posts and featured guest writers
- Presented our work at the Lol-Ha restaurant in Akumal and to groups of university, high school students, researchers, the Rotary Club, the University of Mexico, and visitors to the Hotel Akumal Caribe.

Training

In November 2016 the Expedition Akumal team completed module 1 of the Oceanus A.C coral restoration training workshop, hosted by the Hotel Akumal Caribe. Our volunteers learnt about coral biology and reproduction, the work of Oceanus in other areas of Mexico, and completed the practical exercises of out-planting using Oceanus' protocol.

Back in August, I took some time off of Expedition Akumal to take part in training with Secore International, who are world leaders in using coral sexual reproductions to improve resilience on coral reefs. The workshop taught me about their ground-breaking research on coral restoration and how to incorporate this into the reef restoration of Akumal.

In May 2016, the Healthy Reefs Initiative organized a training program with the Centro Ecologico Akumal for marine conservation leaders in the mesoamerican reef area. They kindly allowed me to join the program, which has helped me to develop my skills for monitoring our sites.

Throughout 2016 I developed and delivered coral reef ecology and species identification training sessions for volunteers who will help with data collection. This will improve our accuracy and efficiency of monitoring the transplanted corals and surrounding reef area in the coming years.

Volunteer Program

Expedition Akumal is a non-profit initiative which depends on volunteers for the underwater nursery installation, maintenance and data collection. Volunteers give their time, and in return are able to learn about coral restoration and benefit from free dives and training. The skills learnt here can be transferred to other marine conservation programs worldwide. Expanding our volunteering program to include snorkelers and full-time interns has been my personal highlight of the year, as it is very rewarding to teach and share knowledge with enthusiastic early-career scientists. This year we had 2 full-time interns, one of whom completed her Dive Master course with us. We also had some new volunteers join the team. We still miss Matt, our photographer of 2 years, who moved to the UK with his wife and young family.

Staff at the Akumal Dive Center are getting involved in the underwater work when they have time, building upon our community outreach and raising awareness. We are especially thankful for the continual support of their wonderful captains getting us safely to and from our sites.

Snorkeling in the bay to check on our reef crest out-plants is a new activity on our volunteer program, which allows for non-divers to get involved too. Check out our latest blog post to find out more about the snorkel program.

Volunteers of 2016

A special thank you to our volunteer team, who donate their free time to the conservation and restoration of Akumals' reefs:

Allyson, Analie, Betsy, Ivan, Jamar, Jim, Juan Carlos, Natalie, Laura, Leona, Lupita, Maddie, Martha, Matt, Michelle, Owen, Sara, Sev, Shaleh, Suzanne, Thomas

We are always interested in taking on new volunteers who can commit to regular time slots, especially those with marine biology background or relevant experience in areas such as communication of science. If you would like more information, please email your CV to expedition.akumal@gmail.com

Donations

This year we received some wonderful donations from our volunteers and sponsors:

- Scuba equipment,
- Hard drive,
- Underwater camera,
- Underwater slates,
- Materials for cleaning the nurseries
- Mesh bags for our divers' equipment
- Temperature sensor
- Water quality testing kit
- Clippers for coral, cement bases
- Species Identification books

How to Get Involved

If getting involved with Expedition Akumal is on your resolutions list for 2017, the first step is to get to know our work and get in touch.

You can do this by replying to the newsletter, via our contact us form on the website, www.reef4akumal.org subscribe to our YouTube channel, Like our Facebook Page, Send an email to expedition.akumal@gmail.com, or make an appointment to visit the Science Office in the Hotel Akumal Caribe.

Looking forward to 2017

During the first few months of 2017 we will be conducting pilot studies to strategically plan the upscaling of our coral restoration project. We will test hypothesis on the best areas to transplants corals to, the specific objectives of our work, and the most successful techniques for long-term recovery of Akumal's reefs.

Using these findings, we will then have the background information to plan the upscaling of the reef restoration work here in Akumal.

Our aim is to complete our first large-scale out-planting before the hot weather and storms arrive, and so that the corals have the best chance of survival possible. Our results will be published online, but in the meantime, you can keep up to date on our progress on social media, our blog, and by signing up for our newsletter.

Thank you for reading, and a Happy New Year to all of Expedition Akumals' volunteer team and supporters.

Thank You to our Sponsors

PROGRAMA DE RESTAURACIÓN DE ARRECIFES by oceanus,a.c.

Hotel Akumal Caribe

AKUMAL DIVE CENTER

CENTRO ECOLÓGICO AKUMAL