

Hi Walt,

We are looking into engineered environments for coral. In your opinion, what is a more important threat to coral - temperature or acidity of water?

We are interested in your opinion

Thanks.

Hi (name withheld)

The answer to your question, both (acidification and global warming) pretty much have the same result and at about the same rate.

Acidification and global warming seem to be increasing threats running on about the same time clock. However, global warming (if you will) does have unique immediate hot spots that can cause temporary bleaching events in a localized area or zone but seem to disappear as the "season" changes and the ocean returns to a normal temperature range. These events are isolated and temporary but can cause almost total reef die off that (in most cases) does recover over a period of several years as ocean temperature remains stable once again. Some scientist refer to these events as "forest fires". The hot spots are unpredictable and can move around from year to year while science continues to try and understand the sporadic cause.

So taking that aside from the general issue we do know that:

- Global warming is real and it will (eventually) have an overall effect on ocean temperatures worldwide which will cause a currently unknown amount of damage or retard the regeneration of the coral reef.
- Ocean acidification is real cause by increased release of co2 gases making the PH levels drop to an unsustainable level over a predictable period of time (opinion varies) if certain current industrial and individual practices do not change soon.
- Both threats seem to have the same parents which relate to human impact on the environment, over use of fossil fuel, deforestation just to name a few.

Since both threats are real and are on a similar timescale it is hard to point the finger at which is “worse” ... death by strangulation or fire.

I am interested to know what you have in mind by an “engineered environment for coral”. In my opinion there are several approaches that can be symbiotic to our desired result. On land we need to address the issue of our own human impact which in turn has an effect on the ocean environment. While addressing and correcting these issues immediately it is possible to predict a recovery but we are still unsure if it will be timely.

In the ocean we can address the issue of finding ways to make corals more resilient to change through genetics and recent discoveries relating to evolution and adaptation.

I believe that both approaches are necessary and pioneering efforts must be encouraged and supported in order to make a difference. I do not believe it is possible to change or correct the water chemistry of the ocean artificially simply because of its mass.

We must correct the cause while we continue to study and invest in ways to secure the result. We need to enlarge the breeding potential, pioneer evolution and be diligent in our observations and recording of it, create safe zones (ark’s if you will) for posterity and develop a working model that can be carried out in every nation that host a coral reef. This work worldwide is still at the infant stage but we have the opportunity, based on what we already know, to take the success of our results in Fiji to a global level.

I hope that you can share the vision of how significant this working model can become in contributing to our coral reefs ability to evolve and respond to the challenge of change. We have the chance to

participate in a wide scale project that will produce a platform of information that, so far, has not been achieved on this scale.

You may be interested to know that we are successful in our approach to creating more MPA and LMMA in Fiji and I have a paper I am currently working on that will better illustrate the realities of utilizing this sort of area in our program. I am eager to share this with you once it is complete by the end of this week.

I hope we can continue this stimulating dialog and I look forward to your comments.

Kindest regards,

Walt