Poor water quality in the Gulf of Mexico

In 2019 scientists recorded that two different types of algae blooms continue to attack the Gulf of Mexico and across the Caribbean. Although scientists are still uncertain of some of the causes and long-term effects of these blooms, one thing is for certain, they are both EXTREMLY harmful to coral reefs.

The first algae bloom is more commonly referred to as the Gulf of Mexico Dead Zone. This is an area of water where the oxygen content has become so low (hypoxic) that it can no longer sustain life. The initial forecast for the 2019 Dead Zone was that it would cover an area in the Gulf of about 7,829 square miles. This would be roughly the same size as the state of Massachusetts. The largest Gulf dead zone was in 2017, about 8,766 square miles, or roughly the size of the state of New Jersey[1].

These blooms are made up of certain types of phytoplankton that feed off nitrogen and phosphorus that is washed down the Mississippi from farm run off and pollution. Watersheds within the Mississippi River Basin drain off much of the United States, from Montana to Pennsylvania and extending southward along the Mississippi River. Most of the nitrogen input comes from major farming states in the Mississippi River Valle, including Minnesota, Iowa, Illinois, Wisconsin, Missouri, Tennessee, Arkansas, Mississippi, and Louisiana. Nitrogen and phosphorous enter the river through upstream runoff of fertilizers, soil erosion, animal wastes, and sewage[2]. When these massive algae blooms die, the decomposition process consumes the oxygen in the water, creating the dead zone

These blooms are devastating to the reefs in multiple ways. First the lack of oxygen in the water drives fish away that are needed to help sustain the reefs. They block out the sun which kills the healthy plankton (Zooxanthellae) that live within the reef. This healthy plankton provides the coral with the nutrients they need to grow and reproduce. All of this contributes to poor water quality in our oceans, which If that isn't enough to kill the coral, it is certainly enough to weaken and stress the coral which leads to Stoney Coral Tissue Loss Disease, which will kill the coral.

It is due to the threat and impact of SCTLD and the poor water quality issues in and around the marine park that are leading the Marine Park Authority to CLOSE the Palancar and Columbia Reefs to divers.

What can be done?

Reducing our dependents on nitrogen and phosphorus rich fertilizers and pesticides will go a long way in helping to reduce or eliminate this problem. Preventing farm run off and other pollutants from entering our rivers will also help to greatly reduce these problems.

Sargassum Algae

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[1] This is according a June 2019 study by the National Oceanic and Atmosphere Administration (NOAA)

[2] https://serc.carleton.edu/microbelife/topics/deadzone/index.html

A different type of algae bloom that is continuing to grow, and be a bigger problem in the Caribbean is Sargassum algae. This year's bloom stretches nearly 5,500 miles and is made up of some 20 million metric tons of Sargassum algae. That's more weight than 200 fully loaded aircraft carriers[3]. Sargassum algae is more often referred to as seaweed.

This type of seaweed is often found washing up on the beaches of Cozumel and the Riviera Mia. Scientists believe that this type of bloom, which first started catching people's attention in 2011 is attributed to deforestation, run off, and fertilizers in Brazil and along the Amazon River.

Unlike the types of algae blooms that are causing dead zones, scientists are still not sure what the long terms effects for the oceans might be from Sargassum blooms. However, it is clear that these blooms are also having a devasting effect on the coral reefs. Unlike the decay of the phytoplankton which depletes the ocean of Oxygen, Sargassum actually helps to put oxygen back into the ocean. These massive floating blooms also provide sanctuary and food for different marine species. The negative effects are felt as the Sargassum nears the shore.

Like the other types of algae blooms these too can block out the sun causing stress and damage to the reefs. As they die and sink to the bottom they can cover the reef, choking it off. As this stuff washes ashore it clogs the beaches and can prevent turtles from nesting. And let's not forget the smell. That rotten egg smell is the due to the hydrogen sulphide released as Sargassum decays.

What can be done?

Scientist are unsure exactly what can be done right now. Some large resorts and other areas have tried deploying floating booms to keep the Sargassum from getting too close to shore. In other places where it does wash ashore removal efforts take place. One thing is clear, this problem is not going away any time soon.

As divers we need to be vigilant about our buoyancy. Stay up off the bottom, keep a safe distance from the walls and most of all CONTROL YOUR FINNING. Know what is behind you before you kick, avoid using a large scissor kick (flutter kick) motion and instead use a shorter kick or frog kick. Reduce or eliminate the products that you use that introduce harmful chemicals into our water systems. Talk to your local dive shop and dive buddies about these problems. We all want beautiful healthy reefs to dive on. One person can help make difference.

[3] https://www.sciencealert.com/scientists-discover-the-largest-seaweed-bloom-in-the-world-and-it-s-still-growing