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# Profiles in Activism: Tackling Climate One Person at a Time

Environmental Reporting Class at Emerson College, Fall 2019



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## Divers—Our Eyes into Underwater Damage

**By Cassandre Coyer**

Joy Marzolf slowly kicks her fins. Gliding in the sea off Cape Cod, she notices a balloon. Through her mask, she peers at the letters. "*Congratulations Class of*". Further away, another one appears. Then another one.

After three hours of diving, she breaks her record. She picked up 75 balloons. *Congratulations.*

What she sees is alarming, but not surprising.

"You let it go in the air and you don't think about where it comes down," Marzolf said in a phone interview. "And if we took that balloon and popped it and threw it on the ground, we could get fined for littering, but not if you let it go and it ends up in the ocean. It's just, 'oh it just went away'.

"No, no it didn't go away. Now it's out there where a turtle might eat it or it might entangle other wildlife."



Loggerhead sea turtle – Picture by Joy Marzolf

Marzolf started diving almost by accident. When she went to college in Minnesota, she had to fulfill an AP requirement. She wasn't the most athletic and didn't want to have to do soccer or softball. Her college offered scuba-diving as one of the options. Marzolf was always interested in marine life and what she calls the underwater world—it felt like a natural fit.

After getting certified in 40 degree-water, Marzolf was a diver. Since college, Marzolf managed to dive all around the world—the Maldives, Belize, the Bahamas, Australia, New Zealand and others.

Today, she is back in cold waters in Massachusetts. During the day, Marzolf works as an education coordinator at Mass Audubon. She is also a program director at the New England Aquarium Dive Club.

From an AP requirement to a vacation pastime, diving became a tool for Marzolf and other divers at the New England Aquarium Dive Club to educate people and bring awareness to the changes happening under water.

“If you’re not underwater you don’t see if things look healthy or not,” Marzolf said. “You have to get underwater first, which is why we love bringing in new divers and trying to encourage people to keep diving.”

The dive club, which started in 1975, has about 300 members including sport divers, marine scientists, SCUBA instructors and dive medicine experts. They all have one thing in common—their love for the ocean and their desire to protect it.

The divers meet once a month at the Aquarium. On Oct. 16, a dozen divers filled a small room where the picture windows offered a nice view of the harbor. Marzolf zipped her blue vest up and set up some equipment. She was giving a talk that night.

Uma Mirani, the president of the club, asked the divers about their latest excursions. Dan Sprague, a member and the shore dive coordinator for the club, described his trip to the Bahamas following Hurricane Dorian.

“Was there any damage under water?” Marzolf asked.



Divers with shark – Picture by Joy Marzolf

Over the years, most divers of the club have noticed the damage underwater, most of it resulting from human pollution and climate change.

“People are seeing changes,” Marzolf said later. “If they have been one place more than once, they might see changes over time. And we are certainly seeing changes here in the northeast if we continue to dive in the same places again and again.

“But it’s more difficult, if you go someplace like the Great Barrier Reef, you might not see all the damage that has been caused by climate change, or even pesticide and fertilizer type damage, you might not see all that damage because the tour operators are going to take you to less damaged areas. You know they try to avoid the places that look terrible, of course.”

During a dinner with Mirani, Sprague and Brooks MacArthur, the dive boat coordinator for the club, the three divers talked passionately in between quick bites about the recent observations made on their dives. When asked if they had noticed the impact of humans underwater, the three divers immediately all nodded at once.



In some diving spots where the corals were once bright and colorful, they were now white and lifeless.

“There are areas where all you can see is white coral,” Mirani said. “I’ve seen it first hand and it’s really sad.”



Bleached Coral – Public domain picture

Daniela Arellano, an assistant scientist in the biology department at Woods Hole Oceanographic Institution said this “coral bleaching” recently has become more frequent and more intense. According to Arellano, this process occurs when water temperatures become too high for the corals.

When the temperatures get too high, algae are evicted from the coral tissue, Arellano said. This is why this phenomenon is called bleaching, because a lot of the

photosynthetic pigments associated with the algae, meaning the colors, leave the corals which makes them look white.

“Corals can come back from bleaching events, but it’s devastating to the reefs, because then the corals aren’t living and thriving as they normally are,” Arellano said. “That has cascading effects throughout the reefs ecosystem and when you have a bunch of dead coral, then the basis for that ecosystem is kind of decimated.”

With no exception, Marzolf also noticed coral bleaching during several trips in tropical areas.

“It’s really sad to see that because you know that that was caused by human impact in maybe one or more ways, but certainly the pesticides and fertilizers—that’s human impact,” Marzolf said in an interview. “There’s only so much that the corals can take. So we know that that damage has been influenced by humans one way or the other, and you’re seeing the death of a reef, and it’s tragic.”

A basketball game played in the background during dinner, but the three divers were preoccupied by the seas.

“The ocean is a carbon-sink,” Sprague said. It can reach a point where it can’t do it anymore.

“Saturating!” Mirani added.

After a brief, quiet moment, Sprague broke the silence. “There’s a lot of stuff going on in this world,” he said. “It can make your head spin.”

MacArthur, who had been looking at his phone, showed the viral picture of a dead reef observed from space. It’s all creating oxygen for us, he told them. “So, kill that...” He paused for a moment and shook his head.

The divers say that seeing the footprint of human pollution underwater can be overwhelming. Between balloons, plastic bottles and bottle caps, during each dive divers find evidence of human presence.



During a dive in Crabbing Point Boiling Hole in Grand Bahama, Sprague and other divers noticed the bottom of the ocean was covered with bottles. Picture by Dan Sprague

For a decade now, Sprague has been organizing beach clean ups in the spring with the club. He usually takes people to Cape Cod. About six years ago, Sprague started noticing little disks made of plastic popping up in the sand.

After some research, he learned that after a storm, a sewage plant overflowed in the Merrimack River. The disks were filters for bacteria in the plant. "We're still finding these today," he said. "I have some in the trunk."

Some divers go to sites where garbage has been dumped in the sea to find old objects, Sprague said. Weirdly enough, he added, it created a niche for diving.

"But, of course," he said, "no one is looking for that plastic Joy bottle."



“Plastic trash is very prominent throughout the ocean,” Arellano said. “In fact, some of the research that I’m doing is analyzing seafloor photographs from the Arctic deep sea. And, in those photos, we see plastic trash in the Arctic deep sea, in a place that should not have any human impacts, but nevertheless it is carried by the currents and ends up there.”

For Marzolf, once divers take off their fins and dive suits, they need to spread awareness about the things they witnessed underwater and walk the talk themselves. She said she brings a reusable water bottle everywhere. She also makes sure to use reef-safe sunscreen.

“That’s a way that groups like ours and I, as an educator, have tried to spread the word like, ‘hey here’s something you can do. By using reef-safe sunscreen you can actually, now, help and not hurt the corals that you’re so excited to see,’” she said.

Mirani explained they all want to continue to enjoy these things, not for their own benefit but for the oceans intrinsic value.

Why should someone in the Midwest care about what’s in the ocean, Mirani asked? It’s important to make sure that people aren’t throwing things in local waters because it will end up in the ocean. There is a need to talk to people who aren’t divers and educate them, she said. Divers already care.

Our job, she explained, is to educate our friends and colleagues.

When the group goes to dinner together, they will boycott restaurants serving shark fin soup or offering plastic straws. Marzolf said they also often talk to managers of these businesses to encourage them to make a positive change.

“I can do something in my everyday life,” Mirani said.

“Spread the word,” Marzolf said. “One person can’t do it by themselves. But you know [...] every person can play a role. It might not be the same role, but every person can play a role and have a positive impact.”

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