

## **The Great Barrier Reef**

By Harika Ruby Blackstone

Earlier this summer, I had a wonderful opportunity to take a trip to Australia with a few of my schoolmates from Shenandoah University, under the leadership of Dr. R.T. Good. Our objective for the trip was to study eco-tourism and the environment. I was very excited to go on this trip, especially to witness one of the “Seven Wonders of the World” - The Great Barrier Reef (GBR). What caught my attention was how beautiful and colorful the fish and coral might be (as seen on television and in travel magazines) and how many different species I could point out. Overwhelmed with joy, I took appreciation in the fact that I was going to experience an up-close and personal view of the largest reef in the world. Never in my life have I thought of such an opportunity to see a great site like that.

After a very long flight, we arrived in Australia on May 15th and stayed until May 22nd. During the first week, we were assigned in teams of 2 students each, to stay with host families in the city of Cairns, near the coast of Australia in the tropics. My host family, Jan and Kevin, lived at the bottom of a mountain in a beautiful house that was rebuilt from their designs. They were very warm, welcoming hosts to us and made us feel like a family. Jan and Kevin have two older children, a son and a daughter. Their daughter, Melanie, lived nearby and visited often to spend time with us. The next day, we traveled to central Cairns to meet up at the Banora International Group headquarters and went through our agenda for rest of the week. We were very busy during the whole week. What caught stood out for me during our trip was when we went to the Great Barrier Reef and when we met John McIntyre, with the company and tourist group called, “Eye-to-Eye Marine Encounters.” The Great Barrier Reef is 2,000 kilometers long and 250 kilometers wide [approximately 1,242 miles long and 155 miles wide]. There are over 3,000 reefs and over 900 islands in its surroundings, and it is the world’s largest marine protected area. It has one third of the world’s soft coral, 54% of the world’s mangroves, 7 species of marine turtles, and 800 species of starfish. Mr. McIntyre explained to us that there are many conflicts arising with the GBR - for example: Six species of turtles are threatened and the southern population of Dugong (a mammal, similar to a manatee) has declined 50%, 30% of species are vulnerable.

The six main issues facing the Great Barrier Reef are:

- Climate Change
- Fisheries
- Water Quality and Coastal Development
- Tourism and Recreation
- Conservation
- Biodiversity and World Heritage, and
- Coastal Urban and Rural Development.

The question I proposed is how the world's best marine park got into the situation of dying from agricultural run-off. The situation remains to be addressed. The Great Barrier Reef is a huge attraction especially to world travelers and adventure seekers. One of the wonders of the reef is that it contains very rare species of coral and fish. The most fascinating fact is that you are able to find the dwarf minke whale. These whales were recognized in the 1980s and they attract attention within the northern part of the barrier reef.

The GBR has many challenges facing it, particularly with the interactions between humans and whales and how this interaction must be managed so that it is ecologically sustainable for the environment. The agricultural run-off issues are a major impact on the reef because 75% of the reef is dying. The reef is dying from the coast on out, with 20-40% of living coral in view of the reef where tourists are allowed to go. When we visited the GBR, I was very excited to see what wonderful, colorful coral reefs I could see and also what gorgeous fish I would encounter – taking in the experience of being in a wonderful place such as this was phenomenal. Everyone on the boat watched the introductory film explaining what we were all about to encounter and I was overwhelmed by my feelings about what I expected to see, but when we arrived at the GBR, to my amazement, I was not very impressed.

I wondered why the reef looked the way it did – bleached out and deteriorated with mold everywhere. My curiosity piqued, I wandered around the boat observing the expressions of other people's faces to confirm that they saw the same things I did and felt the same way I did about what they were seeing. What we observed was beautiful greenish-blue water surrounded by forest green seaweed and coral that seemed to be rotting. When I went snorkeling, I only saw what looked like normal fish you would see in such a place as a river or a stream. There seemed to be limited diversity in the fish and within the coral. Returning to the boat, I questioned whether the trip to the reef was actually worth my while or whether it was just something on our agenda to see. Why was the reef in such shape as it was, and why aren't tourists informed about the deterioration of the reef and causes of it, and what can we – as people who are interested in the environment – do to prevent any more destruction to the reef?

Based on research, climate change has had the biggest impact on the reef. Green house gases in the atmosphere are a relatively rapid source of climate change. Due to the increase of carbon dioxide in the atmosphere the oceans are absorbing carbon dioxide and becoming more acidic, with the major impact on reefs being coral bleaching. Coral bleaching happens when the water's temperature is too hot for too long. The coral polyps can be damaged as a result of heat stress. Bleaching can have a long-term effect and can reduce growth and reproduction of the coral. Warmer global temperatures will have a dramatic effect on current global climate patterns. This includes changes in ocean circulation patterns and rising sea levels due to expansion of warm oceanic water and ice. Up to 60% of all coral reefs have been affected within the GBR, and the cause for these bleaching events has been elevated sea temperatures that are increasing at rates which are 100 times faster than any over the past 740,000 years.

I learned a lot about the environment and eco-tourism from this trip and I am planning to take environmental sciences for my next semester. There is so much we can do to protect our planet for ourselves and for generations to come. Global warming has had a tremendous impact on the reef and it caused the threat of coral bleaching. We must all take action to adjust our behavior to improve our environment and our health.