

## Conserving What We Love

*With a heavy stride off the boat ladder, I plunge into the crystalline waters of the Florida Keys. My regulator hisses reassuringly as I begin the descent below the gentle wavelets and through the sun-warmed turquoise haze. Around me sways a surreal garden of coral candelabras and sea plumes, where blue chromis and bicolor damselfish dart among coral heads. A pair of tarpon cruises through the open water, while a parade of blue tangs grazes on the coral sand. To this reef, a fragile paradise, I am a visiting explorer with a lifelong mission: to understand and to protect.*

The conservationist Baba Dioum once wrote, “In the end, we will conserve only what we love, we will love only what we understand, we will understand only what we are taught.” I hope to protect the oceans because I love their intrinsic beauty and mystery; I cherish both their aesthetic value and their immense scientific potential. With every SCUBA dive and investigation under the microscope, my curiosity and amazement are renewed, for I have grown up in wonder of the myriad living things of the sea. I am an advocate for the oceans because I have been taught how crucial they are to every aspect of our lives. Marine ecosystems are at once eternal and fragile, and the seas and humanity are intricately interdependent. In the wake of ecological pioneers like Rachel Carson and Jacques Cousteau, I hope to make a difference by first, understanding the oceans through scientific research, and second, sharing my passion through education.

Equipped with a doctorate in marine biology, I hope to increase humanity’s knowledge of the oceans, especially their potential benefits for medicine, technology, and biodiversity. Ecology, in particular, has always been fascinating to me, whether in an eastern estuary or a Caribbean coral reef.

In 2004, I was privileged to witness reef research firsthand by visiting NOAA’s *Aquarius*, the world’s only underwater research station. Located on Conch Reef off Key Largo, *Aquarius* aquanauts use saturation diving to conduct experiments for weeks at a time. As an “Honorary Aquanaut,” I joined the researchers for 45 precious minutes inside the compressed-air habitat, 60 feet underwater. They described their investigation of nitrogen cycling in sponges and performed specialized water testing, while the technicians explained the incredible engineering that made *Aquarius* safe and possible. The *Aquarius* dive only intensified my lifelong interest in underwater exploration, and I hope that I will return to conduct my own research there one day.

Although Conch Reef is protected by a sanctuary, other parts of the Keys are less fortunate and in desperate need of further research and monitoring. Overfishing of key species, such as snappers and other predators, disturbs the equilibrium of the reef community, while the loss of grazers such as the queen conch can overrun the reef with algae. Also, coral bleaching has rendered many reefs sterile and may be exacerbated by global climate change. I hope to lead ecological monitoring studies such as REEF to evaluate which species are threatened, how they can be protected, and how their populations are recovering. Without this crucial first step of comprehensive data collection, resolving the ocean’s problems is impossible.

Additionally, I would join scientists in mapping and identifying key habitats that could be designated Sanctuary Preservation Areas (SPAs) or “no-take” zones. These areas, which prohibit fishermen but allow snorkelers and divers, are important refuges for overexploited

species, including groupers and spiny lobsters. By studying these creatures' life histories and habitat needs, I hope to balance human economic interest with the survival of marine life.

This summer, a mentorship program at the Virginia Institute of Marine Science (VIMS) convinced me that I want to pursue marine research as a career. Under the guidance of a VIMS professor, I conducted an independent research project; I was fascinated by the practical problem solving and expert colleagues, and I enjoyed composing a professional scientific paper. My experiment evaluated the value of *Gracilaria* sp., a red alga, as a nursery habitat for juvenile blue crabs, which are critically overfished in my home area, the Chesapeake Bay. Although plentiful, *Gracilaria* has not been extensively studied, and it may be an alternative to the dwindling seagrass beds. Unfortunately, my experiment showed that the alga was not an effective shelter, leaving the newly hatched crabs more vulnerable to predation when a seagrass blight struck the lower Chesapeake this September. I hope that by continuing such research, I can contribute to the ecological and economic recovery of the Chesapeake Bay.

Transforming scientific knowledge into action, however, requires skillful communication to the general public. As I have learned from professionals at my county's first Community Watershed Forum, not every policymaker has a science background; in order to make sound decisions, our leaders need researchers to provide facts and explain the complex environmental issues at stake. We must teach before we can ask others to understand, love, and conserve.

Ultimately, I hope to be a voice for the oceans through writing and education. I already edit a local environmental newsletter, *Fairfax Watershed Watch*, and I became the only high school contributor to a larger publication, *Conservation Currents*. Perhaps as the editor of a national periodical or a science author, I will help make the wonder and complexity of ocean life more accessible to the average person. Similarly, at community fairs such as Great Falls Discovery Day, I taught elementary school children about the impact of polluted runoff using the hands-on EnviroScape model, which traces model pollutants on a plastic landscape. I believe that outreach efforts using these simple but effective methods will encourage environmental awareness in our future generations, and once the public recognizes the invaluable importance of our oceans, perhaps they will receive the funding, support, and protection they deserve. With the help of this award, I hope that through my twofold passions of research and education, I will inspire others to understand, love and conserve the reef as well.