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I sat in the back of the 2006 Large Marine Ecosystem (LME) conference like a sponge, absorbing the comments made by the delegation of international marine scientists and managers. Facilitated by University of Rhode Island's Coastal Resource Center, the LME conference brought together 29 international delegates, representing 20 different coastal countries around the world. The goal of the conference was to examine alternative governance structures for managing LMEs and to lay the initial foundation for implementing new management regimes. After working in 37 coastal countries around the world and observing marine management at the most micro-level, I was excited to participate in this macro-level workshop with marine managers from around the globe.

LMEs are made up of coastal waters, including rivers, estuaries and ocean waters out to the boundaries of continental shelves. These coastal ecosystems don't obey political borders, but instead are delineated by geomorphic phenomena such as coastal currents (Guinea Current LME), shallow seas (Caribbean LME) or large gulfs (Bay of Bengal LME). As such, each LME is managed by a regional entity with representatives from each of the bordering countries. The 64 official LMEs account for 95-percent of the global fish catch and are the site of the ocean's most degraded habitat and worst pollution. With coastal regions currently supporting 50-percent of the world's population, and that number expected to swell to 75-percent by 2050, progressive management of the world's marine ecosystems is paramount for both ecological and economic sustainability.

My fascination with the marine world began in coastal Maine, and what I learned was the Northeast Continental Shelf LME. As a kid, I spent the summers poring over the beaches and rocky outcroppings of coastal Maine. I would follow the ebbing tide out to explore tide pools and caves, look for crabs, watch sea stars, dissect seaweed and inevitably get stuck as the tide came back in. Before I was old enough to get a job, I volunteered at the Mount Desert Island Biological Laboratories. I helped with odd jobs and menial tasks, but it was exhilarating as I made my minor contributions to unraveling the mysteries of the ocean. On other days, I hung out at the dock at the bottom of the hill and peppered the lobstermen with endless questions. *All this in the same ocean?* I wondered. *Cool.*

I fell in love with sailing during my first offshore passage when I was 16. I spent my time off watch trying to catch sargassum floating by, and I spent my time on watch marveling at the vastness of the ocean, the complex life within, and our incredible ability to use canvas and wood to move through it. The end of that passage held another first for me. In Bermuda, I went snorkeling for the first time and was completely amazed at this portal into the underwater world. That portal was opened even wider when I learned to SCUBA dive. To experience the ocean from the deck of a sailboat and then don dive gear to explore it from below stretched my brain. *How can the ocean be this rich and complex on so many dimensions?* *Cool.*

Since that first passage to Bermuda, I have logged over 40,000 miles at sea and explored 14 different LMEs from above and below, I am still amazed by the complexity of the ocean, the living systems it supports, the food it provides and the means of travel it

enables. While my wide-eyed awe is undiminished, it has been joined by an alarming realization that the ocean is in crisis. And as delegates from different LMEs illustrated, a crisis in the ocean means a crisis for the whole world that depends on it.

In a break between LME presentations, I spoke with Dr. Ir. Ning Purnomohadi from Indonesia about the unique challenges faced by her nation as it tries to balance the long-term sustainability of its marine resources with the immediate needs of tsunami-stricken areas. Indonesia is an archipelago of 17,508 islands, and 737 spoken languages, making coordination, regulation and monitoring inherently difficult. Dr. Ning explained the overarching economic, geographic and cultural barriers to coordination between the central government in Jakarta and local governments on the 6,000 different inhabited islands.

Ning's comments were manifest in my own observations from visiting four of Indonesia's main islands in 2002. My penultimate Indonesian port-of-call was Kumai, Kalimantan, on the island of Borneo. In Kumai, Andi, a Dayak Indian and entrepreneur in the burgeoning eco-tourism industry, guided us up a tributary to observe the work at Camp Leaky where orangutans are rehabilitated and returned to the wild. I saw first-hand the results of conflicts among conservation groups, loggers, miners, fishermen and eco-tourism professionals. Four-foot-wide trunks floated down the river to wooden cargo ships waiting in Kumai. Some are logged legally, but many are poached, and there is little means to monitor or enforce logging restrictions. In addition to the logging, mercury in the water from gold mining upriver threatens orangutans and the nascent eco-tourism industry that has developed around them. The mercury is then flushed out to sea where it is absorbed by the fish that form the main protein-source for the coastal population.

I went to Indonesia as captain of *Makulu II* and expedition leader of Reach the World's Voyage of Makulu. Reach the World is an educational non-profit organization that brings the environments and cultures of the world to under-resourced classrooms by producing online curricular content based on the global circumnavigation of *Makulu II*. In addition to my responsibilities as captain, I managed the curricular theme we dubbed, "how does where you live affect how you live?" Through interviews with fishermen, management officials and other local stakeholders, I learned about the local perspectives on declining fisheries, pollution, and the pressures on marine ecosystems. I coupled their perspectives with my own data gathered through numerous dives and sampling of coastal ecosystems. I observed the methods by which different communities throughout the globe manage their coastal resources and handle the ever-changing stresses on their economies, environments and ways of life. From the New England fishing communities where I grew up to coastal villages in Indonesia, ecosystems are suffering, reefs are dying, and many coastal communities around the world lack sustainable resource management plans.

The comments from delegates at the LME conference echoed my own conclusions. As two of the delegates from Mexico repeatedly emphasized, all the research indicates that marine ecosystems are declining due to human activity, but there is still no change in governance or behavior towards these resources. There is a general consensus from scientists to local stakeholders that marine ecosystems are in crisis. The world needs to

divorce itself from the perennial call for more research that simply delays action. While further studies should continue, immediate action is needed to ameliorate current rate of degradation of marine ecosystems amidst the further studies.

Currently, there is a gulf between research and implementation. This gulf will be bridged by individuals who have a foot in science, a foot in governance, and a handle on local reliance on the ocean for immediate survival; people who speak the languages of ecosystem degradation, policy analysis and empty fish traps; people who understand the timelines of environmental restoration, election cycles and empty food shelves; people who are passionate about the ocean. As I turn towards graduate school, I plan to leverage my experiences with studies in coastal resource management and use this knowledge and training to effect implementation.