

Becoming a Steward of the through the National Ocean Sciences Bowl

by Nate Marshall

Although I had visited the seas a few times, I was an Idahoan: a mountain biker, skier, and cross country runner, familiar only with a semiarid climate and my native ocean of sagebrush and cheatgrass. I carried no oceanic knowledge into my freshman year of high school. If someone had told me that I would fall in love with ocean science, I would have only chuckled: I wasn't even interested in the oceans.

It was my Quiz Bowl coach, Tony Baca, who introduced me to the National Ocean Sciences Bowl (NOSB) in January 2013, as a freshman. My school had won the regional tournament the previous year, but that team was composed entirely of seniors, necessitating new recruits. I had enjoyed participating in academic competitions, so I was glad to give NOSB a try. In this annual competition, teams of four to five students are tested on their knowledge of ocean science through quick-answer buzzer questions and more complex team challenge questions. The winning team from each of 20 or so regional competitions advances to the national finals, held in a different location each year. At the national level, the competition becomes theme-based.

The topics—which I initially found overwhelming—include marine policy, technology, geography, geology, biology, and chemistry. For me, the real allure of the competition was not my passion for the seas but rather the upcoming trip to Corvallis, Oregon, to compete in the regional tournament. Nonetheless, our four-member team logged hours of study as we familiarized ourselves with starfish anatomy, longshore drift, and the Marine Mammal Protection Act.

As the regional competition at Oregon State University approached, our expectations were modest, but our confidence was growing. Despite our inexperience, we advanced through the tournament and overcame seasoned teams. Before we knew it, we were competing in the finals match. In a tight contest, we finally lost in extra time. While disappointed at the defeat, we were surprised at how effective our studying had been. I was hooked.

An Increasing Awareness

In my sophomore year, we set the lofty goal of winning nationals. This ambitious objective motivated us: throughout the year, we

created practice questions and presentations for one another, consumed textbooks, and watched videos, deepening our understanding of such topics as Langmuir circulation and the Lomonosov current. We were competitive with each other and self-motivated, studying as much as possible inside and outside of team practices. And simultaneously, our awareness of the ocean increased. We realized that our actions, although 400 miles away from the coast, ultimately affect the ocean. In particular, we developed a strong interest in the dire threat posed by ocean acidification, the theme of the 2014 NOSB.

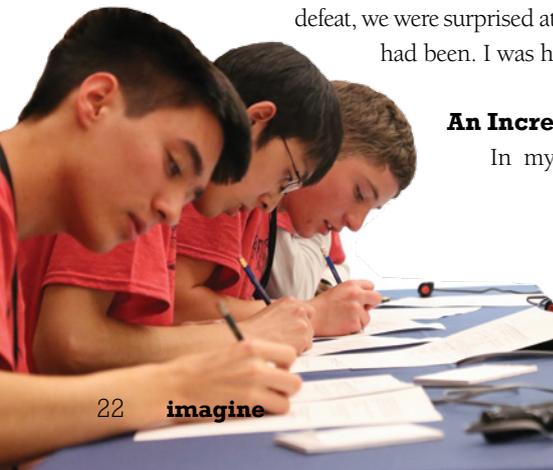
As we learned, ocean acidification is the imbalance of the ocean's chemistry as a result of its absorption of carbon dioxide, which is produced by humans through the burning of fossil fuels. These changes threaten all species that rely on a calcium carbonate shell, including corals, oysters, mussels, and several key phytoplankton species that serve as food sources for countless organisms higher in the food web.

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The First Step

Returning to Corvallis, we were eager to take the first step toward our goal: qualifying for nationals. Following an early defeat in the round robin competition, we fought back to make it to the finals match where, on a four-point toss-up question in the final second, we lost by one point. Disappointed, we headed home.

Then, just before spring break, Mr. Baca received an email inviting us to compete at nationals. The winning regional team was unable to attend,



the Seas

and our aspirations were reignited. Unfortunately, this left little time to prepare, especially since we were required to submit a time-consuming Scientific Expert Briefing (SEB) weeks before the actual tournament. This involved reading a piece of legislation concerning ocean acidification and recommending improvements. Despite delays due to an orchestra tour and one teammate suffering a collapsed lung, we completed our SEB and resumed studying for the competition.

An Arduous Journey

On May 1, we flew to Seattle for the national competition, hosted by the University of Washington. There, we would compete against 21 other regional winners from across the country. The first day we had the opportunity to talk to several oceanography professionals about their careers. The following day we boarded a research vessel for a cruise to Puget Sound, where we tested water quality, deployed a sediment grabber, towed plankton nets, and analyzed our samples. After months of learning about temperature, solute, and density patterns within the water column, it was exciting to obtain our own data.

The next morning, the two-day competition began. In our first match, we found ourselves in a 38-point hole early on. While frustrated, we conjured up our tenacity and finished the match, answering our final bonus question as time expired to gain the advantage. However, this was only the first phase of an arduous journey. After losing our second match to the defending champions, we managed to win the final two round robin rounds. Then, much to our surprise, we dominated in our first two double-elimination rounds. In the third adrenaline-packed round, we overcame a 20-point deficit in the final two minutes to eke out a five-point win.

The following day, we were ecstatic to learn that we had placed second on the SEB, having missed first by one point. Our excitement was short lived, however, as we were again defeated by the defending champions in the semifinal, putting us on the verge of elimination. In the challengers' bracket, we faced off on such questions as what type of dance was often performed by British sailors. (The answer was the hornpipe, but neither team knew this.) The most exciting moment came when we heard a



NOSB

At Shoals Marine Lab on Appledore Island, Nate Marshall and teammates listen to Mark Wiley, Assistant Director of Marine Education at UNH.

question about atmospheric rivers, which we had just studied. Only a few words into the question, we'd heard enough to identify the specific river as the Pineapple Express.

In the second half of that game, we held a one-point lead for an agonizingly long stretch before pulling ahead for a third chance against the defending champions. The questions were challenging and tensions high, but in the end we won the title 37-27!

Hands-on, Gritty, and Practical

As the winning team, we received a six-day trip to New Hampshire and Maine. The trip gave us the opportunity to experience oceanography for what it truly is: a hands-on, gritty, practical science. While the knowledge we'd accumulated over the year was itself rewarding, the trip gave us the chance to apply it. We toured a marine mapping facility at the University of New Hampshire's Chase Ocean Engineering Laboratory, collected samples in the intertidal zone at Shoals Marine Laboratory, and toured the aquaculture facility at the University of Maine's Darling Marine Center.

The NOSB experience awakened me to the promise of marine science. We are already busy preparing for this year's NOSB, and while my future plans are uncertain, I am seriously considering pursuing marine science or policy in college. ■



Nate Marshall is a junior at Boise High School in Idaho. In addition to the NOSB, he participates in the National Academic Quiz Tournament, History Bowl, National Science Bowl, policy debate ("The nationwide topic this year is ocean exploration and development!"), cross country, track, and chamber orchestra, in which he plays the viola.

Learn more about the National Ocean Sciences Bowl at <http://nosb.org>.