2012 Finals Competition
Baltimore, MD • April 19-22
2012 NOSB® Sponsors

NOPP | NOAA | NSF | USGS

DOD | ONR | NASA | BOEM

Khaled bin Sultan Living Oceans Foundation | IEEE | OES | NATIONAL AQUARIUM

Sea Grant | THE UNIVERSITY OF NORTH CAROLINA at CHAPEL HILL | Duke | Nicholas School of the Environment DURANCE UNIVERSITY MARINE LAB

National Marine Educators Association | CALIFORNIA COMMUNITY COLLEGE | UNIV OF SOUTHERN MISSISSIPPI

NC STATE UNIVERSITY | marine technology society | DeepEarth Academy

Discovery DIING | PALEO QUEST | Liquid Robotics | UNIVERSITY OF CALIFORNIA PRESS

NOSB® is a program of the Consortium for Ocean Leadership
It is my pleasure to welcome you to the 15th Annual National Ocean Sciences Bowl (NOSB) Finals here in Baltimore, Maryland. This vibrant city on the water, home of the world-renowned Inner Harbor, is an ideal place to host a group of elite ocean scholars like you. On behalf of the 103 members of the Consortium for Ocean Leadership, I would like to congratulate you on all your efforts during this 2012 competition season.

You are here now, competing for the NOSB Title with 24 other regional champions, because of all that hard work, having studied everything related to the vast ocean for months. Over 350 high schools and approximately 2,000 students competed in this year’s NOSB regional competitions so you should feel extremely proud to be here.

For 15 years, the NOSB has strived to inspire tomorrow’s ocean leaders. Approximately 26,000 students and teachers have participated in this program since its inception in 1998. With many of the participating students having pursued a successful career in ocean science, education and policy, the program has established a track record for generating interest and excitement in science and the ocean. I trust that many of you here this weekend will continue this trend and become the next generation of ocean leaders in our country.

The 2012 NOSB competition theme is “A Sea of Change: Development and Evolution,” which you can see displayed on your t-shirts. I would like to thank Jim Toomey, author of the cartoon Sherman’s Lagoon, for donating his time and talent to create such a fun display of this year’s theme.

Year after year, the NOSB Finals competition is made possible through the funding from several federal agencies and corporate donors that recognize the importance of fostering the growth of ocean science education. We are truly grateful for the generosity from all of these sponsors and cannot thank them enough. I would also like to extend a special thank you to our venue, the Sheraton Baltimore City Center Hotel, as well as to all of our hard-working volunteers.

While you are here in Baltimore, I hope you take the time to explore the city and enjoy the largest seaport in the Mid-Atlantic U.S. while on your field trips. From the National Aquarium to the Maryland Science Center to Jug Bay Wetlands, you have some great places to see this weekend.

I am delighted to be here during this exciting competition year right in our Washington, D.C. backyard, and I could not be happier to be surrounded by so many bright, young minds. I look forward to meeting you!

Sincerely,

Robert B. Gagosian
President & CEO
Consortium for Ocean Leadership
CONTENTS

2012 Finals Schedule of Events .............................. 1
2012 NOSB Theme ........................................... 2
Thanks to our Regional Host ................................. 3
15 Years of NOSB! ............................................ 3
A Much Deserved Thank You ............................... 4
Field Trips ..................................................... 6
Thank You Jim Toomey ...................................... 8
NOSB Speed-Career Search ................................. 9
Scientific Expert Briefing ................................... 9
Prizes & Awards .............................................. 10
Game Summary ............................................. 11
Competition Room Assignments ......................... 12
Round Robin Divisions .................................. 14
Tournament Brackets ...................................... 16
Top Policy Briefing Teams .............................. 18
Additional Activities ..................................... 19
Team Bios ................................................... 20
Thanks to our Question Reviewers ..................... 45
Maps of Hotel and Baltimore ......................... 46
# 2012 Finals Schedule of Events

<table>
<thead>
<tr>
<th>Day</th>
<th>April 19</th>
<th>April 20</th>
<th>April 21</th>
<th>April 22</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thursday</strong></td>
<td>7:30pm-9:00pm</td>
<td>NOSB Speed-Career Search (Liberty Ballroom)</td>
<td>8:00am-9:00am</td>
<td>Coach/RC Meeting (Carroll)</td>
</tr>
<tr>
<td></td>
<td>9:00pm-10:30pm</td>
<td>Game Room Open</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Friday</strong></td>
<td>6:30am-8:00am</td>
<td>Breakfast (Liberty Ballroom)</td>
<td>7:30am-3:30pm</td>
<td>Field Trips: 7:30am departure – Jug Bay &amp; North Bay 8:00am departure – Arthur Sherwood 8:30am departure – Aquarium, Walking Tour, and Towson Laboratory</td>
</tr>
<tr>
<td></td>
<td>4:30pm-5:30pm</td>
<td>Opening Ceremony (International Ballroom)</td>
<td>5:30pm-9:30pm</td>
<td>Depart for the Aquarium – Dinner &amp; Tour (Tour must begin by 8pm)</td>
</tr>
<tr>
<td></td>
<td>8:00pm-10:30pm</td>
<td>Game Room Open</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Saturday</strong></td>
<td>7:00am-7:45am</td>
<td>Team Breakfast (Liberty Ballroom)</td>
<td>8:00am-8:50am</td>
<td>All Hands Meeting (International Ballroom)</td>
</tr>
<tr>
<td></td>
<td>11:15am-12:45pm</td>
<td>Team Lunch (Liberty Ballroom)</td>
<td>12:45pm-2:15pm</td>
<td>Round Robin Competitions, Rounds 4-5 Policy Briefing</td>
</tr>
<tr>
<td></td>
<td>12:45pm-2:15pm</td>
<td>Volunteer Lunch (Carroll)</td>
<td>2:20pm-2:50pm</td>
<td>All Hands Meeting &amp; Mock Competition (International Ballroom)</td>
</tr>
<tr>
<td></td>
<td>2:50pm-3:00pm</td>
<td>Scoring &amp; Seeding for Double Elimination</td>
<td>3:00pm-4:30pm</td>
<td>DE Competitions, Rounds 1-2</td>
</tr>
<tr>
<td></td>
<td>3:00pm-5:00pm</td>
<td>Fossil &amp; Core Activities (McKeldin &amp; Schaefer)</td>
<td>4:30pm-6:00pm</td>
<td>DE Competitions, Rounds 3-4</td>
</tr>
<tr>
<td></td>
<td>6:00pm-8:00pm</td>
<td>Teams on their own for dinner</td>
<td>8:00pm-10:30pm</td>
<td>Game Room Open</td>
</tr>
<tr>
<td><strong>Sunday</strong></td>
<td>7:00am-7:45am</td>
<td>Team Breakfast (Liberty Ballroom) – Checkout &amp; Luggage dropped off (Poe)</td>
<td>7:15am-7:45am</td>
<td>Volunteer Breakfast (Carroll)</td>
</tr>
<tr>
<td></td>
<td>8:00am-8:50am</td>
<td>All Hands Meeting (International Ballroom)</td>
<td>9:00am-10:30am</td>
<td>DE Competitions, Rounds 5-6 (Pratt A/B &amp; International Ballroom)</td>
</tr>
<tr>
<td></td>
<td>9:00am-10:45am</td>
<td>ROV Activities (McKeldin &amp; Pool)</td>
<td>10:45am-11:30am</td>
<td>DE Competition, Rounds 7 (International Ballroom) (determines 3rd Place)</td>
</tr>
<tr>
<td></td>
<td>10:45am-11:30am</td>
<td>Lunch (Liberty Ballroom)</td>
<td>11:30am-12:15pm</td>
<td>DE Competition, Rounds 8 (International Ballroom) (determines 1st &amp; 2nd Place)</td>
</tr>
<tr>
<td></td>
<td>11:30am-1:30pm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12:15pm-1:00pm</td>
<td>DE Competition, Round 9 (International Ballroom) (tie breaker- if necessary)</td>
<td>2:00pm-3:00pm</td>
<td>Awards Ceremony (International Ballroom)</td>
</tr>
<tr>
<td></td>
<td>2:00pm-3:00pm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3:00pm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the 154 years since Charles Darwin published *On the Origin of Species*, few concepts in science have played a more central or publicly contentious role than evolution. Because of its importance in marine science, and its relevance to larger issues, the National Ocean Sciences Bowl selected the 2012 competition theme to be “A Sea of Change: Development and Evolution.”

In Biology, evolution refers to the change in heritable characteristics (or alleles) within populations over generations. In this context it forms the cornerstone of our understanding of life on Earth, both its past history and present process. Through the fossil record and genetic tools, scientists have used ocean life to furnish evidence for the theory of evolution – from tetrapod vertebrates’ first excursions out of brackish Devonian swamps onto land, to the physiological changes in whales’ more terrestrial ancestors as they adapted to life in the sea.

But evolution has come to mean so much more in society’s vernacular. We speak of the evolution of scientific understanding: continental drift was initially just a hypothesis pioneered by Alfred Wegener, but studies of paleomagnetism and seafloor spreading developed and refined his ideas into widely-accepted theories. We refer to technologies evolving through history: ships travelling farther and faster, meteorological equipment better predicting hurricanes, and buoys designed to warn coasts of approaching tsunamis. We even acknowledge how our relationship with the world around us is evolving: humanity’s increased resource consumption contributing to climate change, ocean acidification and the bioaccumulation of toxins in marine life.

We hope that you will keep the concept of evolution—both its scientific definition and its broader metaphor for change and progress—in mind throughout this competition. As ocean stewards, we must expand our understanding of the history of life in the ocean, and increase awareness of our role in scripting its future. We must explore technologies for generating energy from ocean wind and waves, while weighing their benefits against their consequences. We need to develop solutions to stem the incessant outflow of plastics from land into ocean gyres. We have to find a balance between the conservation of marine life and the economic demand for seafood.

Above all, we must continue to research, explore and discover this amazing Sea of Change that surrounds us.
15 YEARS!

15 Years of Buzzing Enthusiasm

The National Ocean Sciences Bowl is celebrating 15 years of competition, excitement and stewardship. Although NOSB has seen many changes over the past 15 years, including the addition of Team Challenge Questions, the eOSB and, most recently, the Science Expert Briefing, the crux of the competition has remained the same for hundreds of students who boldly compete each year. NOSB was created to increase high school students’ knowledge about the ocean, enhance public understanding of the ocean’s importance and create ocean stewards within local communities. The Consortium for Ocean Leadership is excited about both the growing number of students interested in the ocean science field as a result of their NOSB participation, and the continual expansion and evolution of the NOSB program.

THANK YOU

Thanks to our Regional Host!

A special thank you goes out to Staci Lewis, Regional Coordinator of the Chesapeake Bay Bowl, for her time, effort and dedication in helping to make the 2012 NOSB Finals a success.

Staci Lewis has been actively involved with the Chesapeake Bay Bowl since 2007. She became the lead RC in August 2009, when she joined the Consortium for Ocean Leadership as the Policy Analyst. Since this is the second time the Chesapeake Bay Bowl has hosted the Finals Competition in recent years, it also means that this is Staci’s second time in only four years taking a lead role in coordinating the event. Thank you Staci for all your hard work!

Also, thank you to all of the Chesapeake Bay Bowl volunteers that are joining us at Finals this year! We appreciate you making the time and commitment to be a part of two bowls in 2012.
"THANK YOU"

A MUCH DESERVED

The NOSB regional and national competitions would not occur each year without the dedication of our Regional Coordinators, 1,500 volunteers, and the team coaches that contribute their time, energy and overall knowledge.

This year NOSB is celebrating its 15th anniversary and we would like to thank all of the individuals who have played a key role in making NOSB the success it is today. We would like to offer a special thank you to all the individuals who have not only been part of the NOSB community, but have made NOSB an intricate part of their lives – participating in the program for ten or more years. The list is extremely impressive, with the names of more than 200 individuals. It truly speaks to their passion for this program and to their commitment to our overall goal of encouraging students to find their love of science and math through the study of the ocean.

Thank you for your dedication to ocean science education and making NOSB a wonderful program!

15 Years!

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carla Curran</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>Cathy Darnell</td>
<td>Volunteer • Great Lakes Bowl</td>
</tr>
<tr>
<td>Bruce Davis</td>
<td>Volunteer • Great Lakes Bowl</td>
</tr>
<tr>
<td>Rick DeVoe</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>Jim Durando</td>
<td>Coach • Sea Lion Bowl</td>
</tr>
<tr>
<td>Tammy Frank</td>
<td>Volunteer • Manatee Bowl</td>
</tr>
<tr>
<td>Michael Griffin</td>
<td>Coach • Blue Lobster Bowl</td>
</tr>
<tr>
<td>Sandy Hunter</td>
<td>Coach • Sea Lion Bowl</td>
</tr>
<tr>
<td>Brent Lofgren</td>
<td>Volunteer • Great Lakes Bowl</td>
</tr>
<tr>
<td>Jack Lund</td>
<td>Coach • Trout Bowl</td>
</tr>
<tr>
<td>Judy McDonald</td>
<td>RC &amp; Volunteer • Tsunami Bowl</td>
</tr>
<tr>
<td>Hank Pennington</td>
<td>Volunteer • Tsunami Bowl</td>
</tr>
<tr>
<td>Paul Pennington</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>David Reid</td>
<td>Volunteer • Great Lakes Bowl</td>
</tr>
<tr>
<td>Tim Robbins</td>
<td>Volunteer • Quahog Bowl</td>
</tr>
<tr>
<td>Sarah Schoedingier</td>
<td>Director &amp; Volunteer • National Office</td>
</tr>
<tr>
<td>George Sedberry</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>Phyllis Shoemaker</td>
<td>RC &amp; Volunteer • Tsunami Bowl</td>
</tr>
<tr>
<td>David Smith</td>
<td>Volunteer • Quahog Bowl</td>
</tr>
<tr>
<td>Fritz Stahr</td>
<td>Volunteer • Orca Bowl</td>
</tr>
<tr>
<td>Joe Stanton</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>Lori Tsuruda</td>
<td>Volunteer • Blue Lobster Bowl</td>
</tr>
</tbody>
</table>

10-14 Years!

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary Anne Dykes</td>
<td>Volunteer • Hurricane Bowl</td>
</tr>
<tr>
<td>Margaret Lansing</td>
<td>Volunteer • Great Lakes Bowl</td>
</tr>
<tr>
<td>Carmen Aguilar-Diaz</td>
<td>Diversity Coordinator &amp; Volunteer • Lake Sturgeon Bowl</td>
</tr>
<tr>
<td>Vic Akemann</td>
<td>Volunteer • Lake Sturgeon Bowl</td>
</tr>
<tr>
<td>Isam Amin</td>
<td>Volunteer • Penguin Bowl</td>
</tr>
<tr>
<td>Alyssa Armstrong</td>
<td>Volunteer • Penguin Bowl</td>
</tr>
<tr>
<td>Felicia Armstrong</td>
<td>Volunteer • Penguin Bowl</td>
</tr>
<tr>
<td>Rob Armstrong</td>
<td>Volunteer • Bay Scallop Bowl</td>
</tr>
<tr>
<td>Mike Bates</td>
<td>Volunteer • Penguin Bowl</td>
</tr>
<tr>
<td>Crystal Beiersdorfer</td>
<td>Volunteer • Penguin Bowl</td>
</tr>
<tr>
<td>Rochelle Beiersdorfer</td>
<td>Volunteer • Penguin Bowl</td>
</tr>
<tr>
<td>Sueie Beiersdorfer</td>
<td>Volunteer • Penguin Bowl</td>
</tr>
<tr>
<td>Ray Beiersdorfer</td>
<td>Volunteer • Penguin Bowl</td>
</tr>
<tr>
<td>Terry Bennett</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>Margaret Bergin</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>Pete Bemhardt</td>
<td>Volunteer • Blue Crab Bowl</td>
</tr>
<tr>
<td>Karl Biedlingmaker</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>Barbara Boyd</td>
<td>Volunteer • Bay Scallop Bowl</td>
</tr>
<tr>
<td>Chris Bradshaw</td>
<td>Coach • Shore Bowl</td>
</tr>
<tr>
<td>Shannon Breland</td>
<td>Volunteer • Spoonbill Bowl</td>
</tr>
<tr>
<td></td>
<td>Volunteer • Hurricane Bowl</td>
</tr>
<tr>
<td>Melissa Brodland</td>
<td>Alum &amp; Volunteer • Orca Bowl</td>
</tr>
<tr>
<td>Julie Brown</td>
<td>Volunteer • LA Surf Bowl</td>
</tr>
<tr>
<td>Bruce Brownwell</td>
<td>Volunteer • Bay Scallop Bowl</td>
</tr>
<tr>
<td>Susan Buhr</td>
<td>Volunteer • Trout Bowl</td>
</tr>
<tr>
<td>Jeanne Burns</td>
<td>Volunteer • Quahog Bowl</td>
</tr>
<tr>
<td>Clay Campbell</td>
<td>Coach • Blue Heron Bowl</td>
</tr>
<tr>
<td>Michael Carvan</td>
<td>Volunteer • Lake Sturgeon Bowl</td>
</tr>
<tr>
<td>Dave Chapman</td>
<td>Coach • Great Lakes Bowl</td>
</tr>
<tr>
<td>David Chase</td>
<td>Coach • Bay Scallop Bowl</td>
</tr>
<tr>
<td>John Chubb</td>
<td>Coach • Blue Crab Bowl</td>
</tr>
<tr>
<td>Vicki Clark</td>
<td>Volunteer • Blue Crab Bowl</td>
</tr>
<tr>
<td>Katie Clegg</td>
<td>Alum, RC &amp; Volunteer • Nor’easter Bowl</td>
</tr>
<tr>
<td>Ann Cleveland</td>
<td>Volunteer • Nor’easter Bowl</td>
</tr>
<tr>
<td>Julie Cliff</td>
<td>Volunteer • Southern Stingray Bowl</td>
</tr>
<tr>
<td>Ann Close</td>
<td>RC • LA Surf Bowl</td>
</tr>
<tr>
<td>Ken Cloutier</td>
<td>Coach • Nor’easter Bowl</td>
</tr>
<tr>
<td>Jackie Collier</td>
<td>Volunteer • Bay Scallop Bowl</td>
</tr>
<tr>
<td>Cathy Cooper</td>
<td>Volunteer • Blue Lobster Bowl</td>
</tr>
<tr>
<td>Russel Cuhel</td>
<td>Volunteer • Lake Sturgeon Bowl</td>
</tr>
<tr>
<td>Greg Cutter</td>
<td>Volunteer • Blue Crab Bowl</td>
</tr>
<tr>
<td>Dennis Darby</td>
<td>Volunteer • Blue Crab Bowl</td>
</tr>
</tbody>
</table>
FIELD TRIPS

National Aquarium: Behind the Scenes Tour

Housing some 16,000 specimens and over 660 animal species, the National Aquarium is an incomparable place to see sea life up close. The field trip will begin with a walk to the Aquarium, conveniently located on the Inner Harbor just a few blocks from the hotel.

Participants will get a behind-the-scenes look at how the Aquarium works—from specimen care to habitat maintenance—meeting with exhibit curators and marine specialists. Additionally, the Aquarium staff will present on how they advance conservation through caring for the Chesapeake Bay and rehabilitating stranded animals. Another highlight will be the phylum laboratory, where students will try their hand at taxonomy, grouping various animal specimens into eight phyla. There will be opportunities to explore the Aquarium’s exciting exhibits. You will be walking most of the day so please wear comfortable shoes.

Towson Laboratory: Center Of Marine Biotechnology

Venture into the intersection between marine science, medicine and more at the University of Maryland’s Center of Marine Biotechnology. Participants on this field trip will tour this amazing facility and learn about the incredible ways marine sea life is contributing to environmental, medical and technological research. Check out experimental sustainable aquaculture systems that can recirculate the water for over a year, eliminating the risk of diseases spreading from captive fish into the wild. Learn about how COMB researchers are working with the Smithsonian to repopulate the Chesapeake Bay’s blue crab population. Gain first-hand insight on how bacteria are being used to eliminate toxins from watersheds and to develop new pharmaceutical compounds. Additionally, students on this field trip will take a crack at performing some of their own research in COMB’s student laboratory—show up with your thinking caps on! You will be in a laboratory so please wear closed-toe shoes.

Arthur Sherwood Center: Canoe on Black Walnut Creek

Ready to be out on the water? Paddle with the Chesapeake Bay Foundation on Walnut Creek at the Philip Merrill Environmental Center. While out on canoes and the research boat Marguerite, participants will measure ecosystem health using water quality tests and surveying the aquatic organisms present.

Through these tests, participants will learn about the complex food chain, sedimentation, fisheries and conservation of the estuary. Another highlight of this field trip is a tour of the Merrill Center Building, a model of sustainable architecture that has won a Platinum Award from the U.S. Green Building Council. Make sure to bring water-ready clothes and sunscreen!
Jug Bay Wetlands Sanctuary Field Trip

Get your hands dirty while learning about wetland and stream assessment at the Jug Bay Wetlands Sanctuary. An incredible natural resource consisting of over 1,600 acres, Jug Bay Wetlands Sanctuary sits along the Patuxent River and hosts an incredible diversity of habitats, ranging from tidal and freshwater wetlands to meadows and forests. Each of these habitats is an important stronghold for numerous species of invertebrates, fish, reptiles, amphibians, mammals, and plants. Jug Bay has been designated as a Nationally Important Bird Area by the National Audubon Society. However, this system is imperiled by ongoing developments upstream that bring eutrophication and other complications.

Help the Friends of Jug Bay and the Department of Recreation monitor the water quality, and learn about this important suite of ecosystems. Your day will include activities analyzing water chemistry, stream biology, and wetland soil. Make sure to wear clothes worthy of mud and science, and don’t forget your sunscreen!

Walking Tour of Baltimore

Learn about the Charm City’s fascinating history on a walking tour through Fell’s Point and the Heritage Walk. In the Fell’s Point neighborhood, participants will see buildings and monuments dating back to the Revolutionary War and the War of 1812, as well as walk the same streets as abolitionist Frederick Douglass and other important figures. The Heritage Walk will explore the Inner Harbor (and the historic ships docked there), Little Italy and Jonestown, with a special stop at the Star-Spangled Banner House and Museum. You will take a water taxi to and from Fell’s Point. Be sure to bring good walking shoes and sunscreen!

North Bay Adventure Center

Gear up and get outside at the North Bay Adventure Center! Participants on this field trip will be split into two groups. The first will engage in marine debris pollution research on North Bay’s pontoon boat, helping advance our understanding of how our trash is affecting the Chesapeake Bay.

The second group will be zipping into wet suits and jumping into Deer Creek to investigate the shad migration. Both groups will end the trip with outdoor adventure activities, including zip-lining and a ropes course. Be certain to bring swimsuit, sunscreen and clothes suitable for the outdoors.
THANK YOU
Jim Toomey!

Inspired by the ocean life he saw on a family trip to the Bahamas, a young Jim Toomey was instilled with a lifelong fascination of the sea. ‘Sherman,’ the star of Toomey’s syndicated comic strip, has been appearing on his sketchpad ever since.

A native of Alexandria, Virginia, and the son and grandson of engineers, Jim, in fact, earned a degree in mechanical engineering in 1983, and had every intention of following in his family’s footsteps. He drew daily political cartoons for his college’s newspaper and, after heeding the call of the ocean and transplanting to San Francisco, he began to develop a comic strip in his spare time.

His hobby became a career in 1991 when the Escondido Times-Advocate in California agreed to run his comic strip, “Sherman’s Lagoon.” From there, “Sherman’s Lagoon” began to appear in 17 newspapers, including the Honolulu Star-Bulletin and the Denver Post, gaining a loyal following. In 1991, Creators Syndicate signed Toomey to a seven year contract for national distribution, and Sherman became a national presence on the comics page. Sherman is more than just a comic hero, however; he is an ocean champion, introducing people everywhere to our underwater world, and educating readers on the important challenges facing our ocean today.

His comic characters and other illustrations appear in educational materials published by NOAA, the UN Environmental Programme, and a variety of non-profit organizations for the purpose of raising awareness of the ocean. Jim routinely speaks in front of audiences using live drawing and humor to convey the importance of protecting our ocean. He has given talks at a variety of venues, from the Royal Society in London, Harvard University, TED and the Monterey Bay Aquarium, to his children’s kindergarten class. Jim has been featured in many of his client newspapers, as well as Wired Magazine, National Public Radio, and Discovery Channel’s Shark Week.

Now distributed by King Features Syndicate, “Sherman’s Lagoon” currently appears in more than 200 newspapers…and is taking on the world, with appearances in publications in Europe, Canada, Hong Kong, Australia, and the Caribbean.

The National Ocean Sciences Bowl wants to thank Jim for his time and expertise. We truly appreciate him presenting at the 2012 NOSB Finals and for creating the artwork for this year’s t-shirt and event program. He impressed everyone with his artistic interpretation of the 2012 theme.
To kick-off the weekend of activities, students will meet with ocean science professionals and graduate students from around the Maryland/DC/Virginia region on Thursday evening to learn about the vast array of careers available to them after they finish their formal studies.

Introductory remarks will be provided before the students make their way through career tables in a fast-paced speed-dating style format. Students will have a set amount of time at each table to learn as much as they can about each of the professionals. It is highly recommended that the students listen closely, ask lots of questions and take careful notes. Prizes will be rewarded at the end of the evening to those that were most attentive.

**Scientific Expert Briefing**

In 2011, NOSB added a policy component to the Finals Competition to highlight the important relationship between science, policy and the public. The NOSB is proud to fully integrate a slightly modified version of this successful component into this year’s competition as the Science Expert Briefing (SEB). Like last year, students will represent stakeholders responding to current Federal legislation; however, to strengthen the emphasis on science this year, each student will represent a different type of scientist (physical oceanographer, marine biologist, etc.) from one of five stakeholder groups (federal government, state government, industry, academia or NGO). Their total SEB score, which includes assessment of a written report, verbal testimony and responses to the judges’ questions, will be combined with the team’s overall Round Robin score to determine which teams will advance to Double Elimination.

The 2012 SEB topic is Marine Renewable/Alternative Energy. Teams have been asked to respond to the Marine and Hydrokinetic Renewable Energy Promotion Act of 2011 (H.R.2994), a bill that addresses offshore wind and wave energy systems. Using research literature from their field of study, each science expert (student) will make recommendations on what scientific information Congress should consider when reviewing the bill from their stakeholder’s perspective. As a team representing multiple stakeholder groups, they will also need to come to consensus on specific recommendations for Congress that take into account each stakeholder’s view.
James D. Watkins Sportsmanship Award

This highly esteemed award is offered to the team that demonstrates the best sportsmanship throughout the NOSB Finals Competition. The selected team will receive a brand new buzzer system and the American Metrological Society’s Introduction to Oceanography textbook. The coach will also receive a $200 gift certificate and each team member will receive a $100 gift certificate to Amazon.com. These prizes are provided courtesy of the James D. Watkins Fund.

This year the top four national teams will have the opportunity to select from the following four award prizes, with the national champions having the honor of making the first selection. First through 8th place coaches will receive a one year membership to the Marine Technology Society!

Award Trip Option #1

During this weeklong adventure, the team will visit two of Hawai’i’s beautiful and diverse islands. The trip will start on Oahu with a visit to the Waikiki Aquarium, the University of Hawai’i at Manoa, and the Hanauma Bay Education Program. The team will then spend a day at the Hawai’i Institute of Marine Biology to be part of current marine science research. A quick flight will take the team to the Big Island, where they will swim with gliders and tour a volcano. There will be plenty of time to learn about the native culture and explore the unique environments and the inhabitants within the water surrounding our 50th state. This trip is provided courtesy of NOPP, the University of Hawai’i, and Liquid Robotics. (Trip dates: July 2012, exact dates TBD)

Award Trip Option #2

The team that earns this award trip will have the opportunity to spend a week at the University of Southern Mississippi’s Gulf Coast Research Lab learning all about sharks. The team will participate in a shark dissection, learn how to correctly identify different shark species, and will spend a day out on the ocean tagging sharks – actively contributing to current science research. The team’s discoveries, however, won’t just be limited to sharks as they will also participate in field programs with undergraduates learning about ichthyology and bottlenose dolphins. And no award trip is complete without a kayaking trip and a game of beach volleyball. This trip is provided courtesy of NOPP and the University of Southern Mississippi Gulf Coast Research Lab. (Trip Dates: July 2012, exact week TBD)

Award Trip Option #3

One team will have the opportunity to travel to the coast of North Carolina. During this 4-day adventure the team will tour research facilities at Duke University, North Carolina State University and University of North Carolina. The students will also experience SCUBA diving, explore the Shackleford Banks aboard R/V Susan Hudson, and learn about aquaculture. In addition, they will help to improve the local community by participating in beach seining and shoreline restoration. The trip is provided courtesy of NOPP, the University of North Carolina, Duke University, North Carolina State University, Discovery Diving, Co., Carteret Community College, and the University of North Carolina Institute of Marine Science. (Trip Dates: July 22-26, 2012)

Award Option #4

Team members and the coach that earns this prize will each receive an HP Mini 210 series Netbook. The team will enjoy the convenience of being able to prepare for NOSB, upload photos of their adventures and take notes for class anywhere they go. This prize is provided courtesy of NOPP.

5th-8th Place

Each team will receive a $500 gift certificate for scientific equipment from Fisher Scientific and a $450 gift certificate to Barnes & Noble for marine science textbooks. These prizes are provided through the generous support of the Oceanic Engineering Society and IEEE.

9th – 12th Place

Courtesy of the American Metrological Society, each of these teams will receive an Introduction to Oceanography textbook.
Game Summary

The NOSB Finals Competition is comprised of three elements: a Round Robin competition, a Scientific Expert Briefing, and a Double Elimination competition.

Round Robin:
The round robin competition involves all the participating teams. Each team is placed by random draw into a division of 5 teams. These teams compete against one another for the opportunity to proceed to the double elimination portion of the tournament. Each team will play each of the other teams in their division.

Scientific Expert Briefing (SEB):
The SEB involves all the participating teams and includes a written report due prior to the competition, and an oral presentation during the competition. In a closed session each team will present their abstracts and answer questions from one of two panels of judges during the round robin portion of the competition.

Scoring for Advancement:
The first, second and third place finishers in each group with the highest combined round robin (75%) and SEB (25%) scores are guaranteed a spot in the double elimination tournament. The best 4th place finisher among the 5 divisions will also advance into the double elimination tournament. All of the remaining teams are then eliminated.

Seeding for Double Elimination:
Seeding (for group rank in the round robin, seeding for the double elimination competition and final rank for the competition) is based on the following criteria, in order: game points [2 for a win, 1 for a tie, 0 for a loss (round robin only)]; head to head results; fewest number of losses; total number of points scored by a team; total points scored against a team; point differential, and finally, a coin toss.

Double Elimination:
The double elimination competition involves the first, second, and third place teams in each division plus the best fourth place finisher. These teams are seeded based on the results achieved in the round robin competition. No team is eliminated from the double elimination competition until they have lost two games. This means that the team in the final game, which has not been defeated, must lose twice in order to be eliminated. Ties in the double elimination competition will be resolved with a group of 5 toss-up questions (no bonus) to determine a winner. This procedure will be repeated until a winner is achieved.
## COMPETITION ROOM ASSIGNMENTS

**Competition Room Assignments**

<table>
<thead>
<tr>
<th>Round</th>
<th>9:00</th>
<th>9:45</th>
<th>10:30</th>
<th>11:15</th>
<th>12:45</th>
<th>1:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round 1</td>
<td>Dutch Fork &amp; MOA</td>
<td>Eastside &amp; MAST</td>
<td>Dexter &amp; Scripps Ranch</td>
<td>Langham Creek &amp; Long Beach</td>
<td>Raleigh Charter &amp; Lexington</td>
<td>Maui &amp; Loveland</td>
</tr>
<tr>
<td>Round 2</td>
<td>Lexington &amp; Santa Monica</td>
<td>Long Beach &amp; Ledyard</td>
<td>MOA &amp; Maui</td>
<td>Scripps Ranch &amp; Medina</td>
<td>MAST &amp; Contoocook Valley</td>
<td>The Bronx &amp; Governor’s School</td>
</tr>
<tr>
<td>Round 3</td>
<td>Dexter &amp; Medina</td>
<td>Dutch Fork &amp; Maui</td>
<td>Eastside &amp; Contoocook Valley</td>
<td>Raleigh Charter &amp; Santa Monica</td>
<td>Langham Creek &amp; Ledyard</td>
<td>Scripps Ranch &amp; State College</td>
</tr>
<tr>
<td>Lunch</td>
<td>11:15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Round 4**
- Treasure Valley & Langham Creek
- The Bronx & Raleigh Charter
- Marshfield & Dexter
- Juneau-Douglas & Eastside
- Loveland & Dutch Fork
- Albany & Ledyard
- Governor’s School & Santa Monica

**Round 5**
- Annapolis Christian & Eastside
- State College & Dexter
- Albany & Langham Creek
- Friday Harbor & Dutch Fork
- Governor’s School & Raleigh Charter
- MAST & Juneau-Douglas
- Marshfield & Scripps Ranch
<table>
<thead>
<tr>
<th>Preston</th>
<th>Calhoun</th>
<th>Dalensandro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medina &amp; Marshfield</td>
<td>Ledyard &amp; Treasure Valley</td>
<td>Santa Monica &amp; The Bronx</td>
</tr>
<tr>
<td>Loveland &amp; Friday Harbor</td>
<td>Marshfield &amp; State College</td>
<td>Juneau-Douglas &amp; Annapolis Christian</td>
</tr>
<tr>
<td>MAST &amp; Annapolis Christian</td>
<td>Lexington &amp; Governor’s School</td>
<td>Long Beach &amp; Albany</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy Briefing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Times</strong></td>
</tr>
<tr>
<td>9:00</td>
</tr>
<tr>
<td>9:45</td>
</tr>
<tr>
<td>10:30</td>
</tr>
<tr>
<td>11:15</td>
</tr>
<tr>
<td>11:55</td>
</tr>
<tr>
<td>12:15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bye</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:45</td>
</tr>
<tr>
<td>1:30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State College &amp; Medina</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annapolis Christian &amp; Contoocook Valley</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treasure Valley &amp; Long Beach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loveland &amp; MOA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governor’s School</td>
</tr>
<tr>
<td>Dexter</td>
</tr>
<tr>
<td>Treasure Valley</td>
</tr>
</tbody>
</table>

---

**Bye**
- Governor’s School
- Dexter
- Treasure Valley
- All Teams

**Round 4**
- Treasure Valley & Langham Creek
- The Bronx & Raleigh Charter
- Marshfield & Dexter
- Juneau-Douglas & Eastside
- Loveland & Dutch Fork
- Albany & Ledyard
- Governor’s School & Santa Monica
- State College & MAST
- Maui & Friday Harbor

**Round 5**
- Annapolis Christian & Eastside
- State College & Dexter
- Albany & Langham Creek
- Friday Harbor & Dutch Fork
- Governor’s School & Raleigh Charter
- MAST & Juneau-Douglas
- Marshfield & Scripps Ranch
- Treasure Valley & Long Beach
- Loveland & MOA
- The Bronx & Lexington

**End of Tournament**
- All Teams
- MAST
- Maui
### Division 1: Round Robin

<table>
<thead>
<tr>
<th>Team</th>
<th>Dutch Fork</th>
<th>MOA</th>
<th>Maui</th>
<th>Loveland</th>
<th>Friday Harbor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutch Fork</td>
<td>NOSB 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOA</td>
<td></td>
<td>NOSB 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maui</td>
<td></td>
<td></td>
<td>NOSB 2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loveland</td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday Harbor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
<td></td>
</tr>
</tbody>
</table>

### Division 2: Round Robin

<table>
<thead>
<tr>
<th>Team</th>
<th>Eastside</th>
<th>MAST</th>
<th>Contoocook Valley</th>
<th>Juneau-Douglas</th>
<th>Annapolis Christian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastside</td>
<td>NOSB 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAST</td>
<td></td>
<td>NOSB 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contoocook Valley</td>
<td></td>
<td></td>
<td>NOSB 2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juneau-Douglas</td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annapolis Christian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
<td></td>
</tr>
</tbody>
</table>
## Division 3: Round Robin

<table>
<thead>
<tr>
<th>Team</th>
<th>Dexter</th>
<th>Scripps Ranch</th>
<th>Medina</th>
<th>Marshfield</th>
<th>State College</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dexter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Scripps Ranch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Medina</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Marshfield</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>State College</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
</tbody>
</table>

## Division 4: Round Robin

<table>
<thead>
<tr>
<th>Team</th>
<th>Langham Creek</th>
<th>Long Beach</th>
<th>Ledyard</th>
<th>Treasure Valley</th>
<th>Albany</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Langham Creek</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Long Beach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Ledyard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Treasure Valley</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Albany</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
</tbody>
</table>

## Division 5: Round Robin

<table>
<thead>
<tr>
<th>Team</th>
<th>Raleigh Charter</th>
<th>Lexington</th>
<th>Santa Monica</th>
<th>The Bronx</th>
<th>Governor’s School</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raleigh Charter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Lexington</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Santa Monica</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>The Bronx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
<tr>
<td>Governor’s School</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOSB 2012</td>
</tr>
</tbody>
</table>
Double Elimination Tournament

**Round 1**
Saturday, 3:00 PM

T-1

T-16

T-8

T-9

T-5

T-12

T-4

T-13

**Round 2**
Saturday, 3:45 PM

Game 1
Pratt A

Game 2
Hopkins

**Round 3**
Saturday, 4:30 PM

Game 3
Washington

Game 4
Jefferson

**Round 4**
Saturday, 5:15 PM

Game 5
Adams

Game 6
Preston

Game 7
Peale

Game 8
W to G27 • L to G25

Game 9
W to G25

Game 10
L G1

Game 11
Pratt A

Game 12
Hopkins

Game 13
Pratt B

Game 14
L G2

Game 15
L G14

Game 16
L G13

Game 17
Peale

Game 18
L G1

Game 19
7th/8th Place
Pratt B

Game 20
W to G25

Game 21
L G13

Game 22
L G4

Game 23
L G3

Game 24
L G4

Game 25
L G1

Game 26
L G13

Game 27
L G2
Double Elimination Tournament

**Round 1**
Saturday, 3:00 PM

- T-6
- T-11
- T-3
- T-14
- T-7
- T-10
- T-2
- T-15

**Round 2**
Saturday, 3:45 PM

- Game 5
  - Pratt B
- Game 6
  - Peale
- Game 7
  - Adams
- Game 13
  - Jefferson

**Round 3**
Saturday, 4:30 PM

- Game 14
  - Washington
- Game 23
  - Hopkins

**Round 4**
Saturday, 5:15 PM

- Game 15
  - Pratt B
- Game 16
  - Peale
- Game 17
  - G27
- Game 18
  - G26

**17**
Double Elimination Tournament

Round 5
Sunday, 9:00 AM

W G21

Game 27
International Ballroom

W G23

L G21

Game 25
5th/6th Place
International Ballroom

W G22

L G23

Game 26
5th/6th Place
Pratt A/B

W G24

Round 6
Sunday, 9:45 AM

L G27

Game 28
4th Place
Pratt A/B

Round 7
Sunday, 10:45 AM

Game 29
3rd Place
International Ballroom

Round 8
Sunday, 11:30 AM

Game 30
1st/2nd Place
International Ballroom

(If Necessary) Game 31
International Ballroom

Round 9
Sunday, 12:15 PM

W G27 if they lost G30

2012 NOSB Top Policy Briefing Teams

1. ____________________________________________

2. ____________________________________________

3. ____________________________________________
Saturday – Evolution & Change

Fossils
Unleash your curiosity as Paleo Quest founders Jason Osborne and Aaron Alford use multimedia and the hands-on experience of real fossils to highlight current challenges and advances in the paleontology and stratigraphy of the Atlantic Coastal Plain. As professional-amateur paleontologists, they identify and address these challenges by any means necessary. This includes inventing new methods and tools, climbing, SCUBA diving in treacherous “blackwater” conditions, digging, collaborating and exploring. Their colorful and interactive approach makes use of stories, humor, video and a mobile museum of local fossils to demystify and personalize science. Participants will be encouraged to ask questions and explore the Paleo Quest fossil collection which includes fossils from a 60-million-year span. All questions, quandaries and musings are welcome!

Located in McKeldin from approximately 3:00-5:00pm

Cores and So Much More
Come explore samples from deep below the ocean floor to learn how microfossils, rocks, sediments, and more can tell us about Earth’s past, present, and future. Jennifer Collins from Deep Earth Academy, the education arm of the JOIDES Resolution, will have you using a variety of interactive tools – from microscopes and UV lights – to explore fascinating samples of our Earth’s crust as you discover the history of our planet. There will also be an opportunity to talk directly with scientists who work aboard the JR. So come prepared to take a step back in time, while simultaneously keeping your feet solidly planted in the modern world.

Located in Schaefer from approximately 3:00-5:00pm

Sunday – Developments in Technology

ROV
Aquabotz is a fun filled, hands-on opportunity that will challenge participants to design, build, and launch a remotely operated vehicle or “ROV”—using PVC pipe, bilge pump motors, speaker wires, and simple switches. This activity encourages participants to explore the basic principles of design as well as expand their ability to observe and ask questions about the underwater environment. Participants will add cameras to the ROVs to create working underwater observation systems which will allow them to address activity challenges and will introduce students to elements of habitat characterization and analysis. This will take place outside at the pool, so please come prepared to work out of doors.

Located in McKeldin & at the Pool from 9:00-10:45am
Coach

Edwin Ginoza is a retired science teacher. Although he works part-time as a resource teacher and financial advisor, he spends most of his time working with students and studying the sciences. Although he majored in chemistry, he has discovered that it is essential to approach science not as separate sciences, but how each of the sciences are related to each other. His favorite marine mammals are dolphins because of the adaptations that they have made to survive.

Team

Steven Okada was born and raised in Hawaii. Science has always been his primary interest and this was his first year participating in the National Ocean Science Bowl. As captain, Steven enjoys competing against other teams and his favorite NOSB moment was beating the reigning regional champion. His favorite marine organism is the sunfish because he thinks it looks funny and finds its lifestyle serene.

Ashley Ryan Vidad has always loved biology. Ryan aspires to be a biomedical researcher and explore the hidden wonders of nature that could potentially cure modern-day diseases. Through his love of biology, he discovered his love of whales. Ryan is touched by the camaraderie portrayed by these cetaceans when they transport injured whales to safer sanctuaries. If given the chance, he wants to unlock other marine behaviors that can both amuse and benefit mankind.

Christopher Kim is a freshman. He is familiarizing himself with all aspects of marine science. His interest in oceanography was sparked from his first-year participation in NOSB, and his favorite NOSB memory is defeating the previous regional winning school in the final round. He will continue his NOSB experience until he graduates high school. He hopes to pursue a possible career in science, law, or work in the UN.

Bryson Galapon is a 16-year old living in Kihei, Maui, Hawaii. He is a first time participant in the NOSB competition. Bryson enjoys frequent trips to the beach, and enjoys the scenery. Being surrounded by the ocean in all directions, Bryson’s interest in the oceanography was sparked by preparing for an alternate competition, called the Science Bowl.

Gabriel Salazar resides in Wailuku, Maui, Hawaii and has participated in NOSB for two years. Gabe enjoys using his spare time to bodyboard at the south shore on Maui. His brother, a former member of regional championship team, inspired Gabe. As a result, he has developed a passionate interest in oceanography. He’d like to specialize in marine biology, learning about the different organisms and how they are classified into taxons. He plans to pursue a career in oceanography in college.
Coach

Ed Wren has been the Coach for the Bronx High School of Science Oceanography Team for two years. His passion for the ocean was developed as a child growing up on the shores of Long Island, New York. Ed has a degree in Marine Science and has done graduate work in Antarctica and Maine, involving hormonal regulation of salt balance in fish. Ed believes that the magic on this planet is found in ocean water.

Team

Matias Tong is a senior at the Bronx High School of Science. Ever since his parents took him fishing, he has developed an obsession with learning about the ocean. By preparing for the Ocean Science Bowl, Matias has developed a broad understanding of oceanography and particularly favors the biological aspects from the giant blue whales to microscopic algae. Matias’ fondest memories are 3 years of working on team challenges with the coolest teammates.

Ezra Rodriguez is a senior at Bronx High School of Science. His curiosity in oceanography began as a result of his being awestruck by things like rolling waves, violent hurricanes, and puffy clouds. Ezra’s primary interests are physical processes, but he also plans to learn more about electronics. The marine organism that holds a special place in Ezra’s heart is the blobfish. Nothing is cooler than a fish that looks like a pile of mucus.

Parmeet Singh is a senior at the Bronx High School of Science. Parmeet’s curiosity in oceanographic phenomenon began as a child who experienced monsoons in India. In college, Parmeet plans to study Operations Research. He hopes to apply his mathematical understanding to economics, physics, and oceanography. In his free-time, Parmeet is a fanatic reader who enjoys reading mystery novels - particularly Sherlock Holmes.

Vivek Gupta is a senior at Bronx High School of Science. He became intrigued by the ocean after spending hours taking photographs at coastal beaches during summers with his family. Vivek’s favorite marine organism is the vampire squid because of its ability to produce disorienting flashes of light. While he is a competitive swimmer, in college Vivek hopes to study chemical engineering and pursue a career as a research scientist.

Daniel Thack is a freshman at the Bronx High School of Science. His interest in marine sciences was sparked during a program at the American Museum of Natural History where he learned about Earth’s complex systems. He developed his enthusiasm for marine organisms by visiting numerous aquariums in the U.S. Although Daniel has many favorite marine organisms, the hydrozoan Turritopsis nutricula is one of his favorites. In college, Daniel plans to study ocean sciences or astrophysics.
Coach
Sara Chaves Beam teaches Marine and Environmental Science at Chesapeake Bay Governor’s School. She earned her B.A. in Environmental Science at the University of Virginia and her M.S. in Biological Oceanography at the University of Maine Orono. She worked for many years for the Smithsonian Environmental Research Center in the Marine Invasions Lab studying marine invaders in ballast water of ships. She loves saltwater fishing, beachcombing and tidepooling with her husband and two boys.

Team
Emma Hepworth is a senior and lives in Gloucester, Virginia. She has participated in NOSB for two years along with Scholastic Bowl, robotics, and the Great Computer Challenge. Her interest in Marine Science started with her parents who studied Marine Science. She spent a summer in a lab at the Virginia Institute of Marine Science. Her favorite marine organism is the cuttlefish. In college she wants to study something involving chemistry, biology, and environmental science.

Grayson Johnson attends Chesapeake Bay Governor’s School and is a senior at Middlesex High School. He plays football in the fall, and has served as a coach/mentor for the Middlesex Elementary Odyssey of the Mind team. In 2010, Grayson won the Gold Medal for Presidential Community Service and has given more than 500 hours to his community. Grayson will be attending the University of Virginia in the fall and plans to study chemistry.

Hans Saunders attends Chesapeake Bay Governor’s School and is a junior at Mathews High School. He participates in football, wrestling and soccer. Hans also finds challenges like NOSB an exciting part of his high school career. He is very excited to be a part of the National NOSB competition this year! Marine Science incorporates many of the fields that Hans is interested in pursuing as a career and also offers him a creative challenge.

Alexys Gray attends Chesapeake Bay Governor’s School and is a junior at New Kent County High School. This is her first year attending the Blue Crab Bowl and NOSB Finals. Alexys enjoys running cross-country and playing softball and tennis. She also participates in Scholastic Bowl, earning a first team all-district award. She recently discovered marine science and would love to study coral reefs and tropical environments. She plans to double major in biology and chemistry.

Marissa Voight is a junior attending the Chesapeake Bay Governor’s School and also Central High School in her home county of King and Queen, Virginia. She grew up exploring a large pond near her home, which sparked her interest in science and aquatic life. She loves taking pictures out in the marine environment and follows in her brother’s footsteps participating in the Blue Crab Bowl/NOSB. She wants to study chemistry in college.
Coach

Having grown up in Michigan and living in Japan, Virginia, California, and now North Carolina, Whit Hames enjoys adventure. The National Ocean Science Bowl has been another adventure over the past 11 years. This is his third time coaching a team at Nationals. He also has coached Science Olympiad and Science Bowl for over 15 years each. He must like competition. His wife and three kids fill his days as they travel, play, study, and share.

Team

Originally from Baltimore, Maryland, Jonathan Tseng lives in Cary, North Carolina and has participated in NOSB for two years. Jonathan enjoys playing tennis, biking, running, and playing with his younger brother during his free time. His favorite marine organism is the pistol shrimp because of its ability to produce sonoluminescence to stun its prey. Excited to be at the national tournament for the first time, Jonathan hopes to make a splash at the competition.

Ben Hames lives in Raleigh, NC. He is a young entrepreneur who dabbles in Internet Marketing. He has traveled to 47 states and he has swum in the Pacific, Atlantic, Gulf of Mexico, and 3 Great Lakes. From tidal pooling in Oregon to crashing waves in Mississippi to clamming along the NC coast, he has always enjoyed the ocean. This is his second year in NOSB and he looks forward to the next two as well.

Ben Whitfield is a junior living in Holly Springs, NC. He has competed in the Ocean Science Bowl for three years. He enjoys playing basketball and fencing, as well as Quiz Bowl and Science Olympiad. Ben plans to study biology in college and eventually enter the field of oncology research. Ben’s favorite aspect of the oceans is the fact that super saline brine lakes can form on their floors, a phenomenon commonly referred to as Lake-ception.

Dan Qu was born in Wilmington, NC and currently lives in Apex. He enjoys eating, sleeping, and watching television, especially on weekends when he is not distracted by silly things like homework. His favorite food is sushi. Once he ate an entire raw Tuna steak for five dollars. He plays for his school Quiz Bowl and Science Olympiad teams to max out his nerdiness. Dan is excited to attend Nationals in Baltimore.

Jonathan Cookmeyer, a junior, has lived in North Carolina all his life. He has done NOSB for two years. Having grandparents who live on the beach, the ocean has interested him for most of his life. Jonathan is interested in all things science, but enjoys focusing on the chemistry or physics behind the science. During his free time, he enjoys playing piano and speedcubing. He is looking forward to an exciting time in Baltimore.
Coach
Sarah Damassa is thrilled to be back at the NOSB finals with the Lexington team! She has been an NOSB coach for nine years, and has taught Environmental Earth Science for fourteen years. As a micropaleontologist she studied fossil dinoflagellates from DSDP and ODP samples collected from sites in the North Atlantic Ocean. As a diver, she has had the chance to observe marine life at close range in many of the world’s oceans.

Team
Anubhav Jain is a senior at Lexington High School and has participated in NOSB for the past four years. Anubhav’s interest in the oceans started when he was young, traveling over the ocean when flying between India and the United States. His favorite NOSB memory is snorkeling at night in Catalina this past summer. In college, Anubhav plans to focus on engineering and computer science, with an interest in the field of marine technology.

Catherine Medlock lives in Lexington, Massachusetts with her parents and sister and has participated in NOSB for four years. She became interested in marine science despite being born in landlocked Illinois. Her mother is from Hawaii and her father is from Florida, so she has spent a lot of time on beaches. Her favorite marine organism is the dolphin fish because she likes the way it tastes. She enjoys meeting new people at the competition.

Hyunyung Boo joined NOSB with the intent of learning more about meteorology and ocean circulation because she found the global scale of these processes fascinating. Since then, she has learned more about oceanography and marine biology than she ever wanted to know. When she is not preoccupied with NOSB related matters, Hyunyung plays a lot of cello and tutors younger kids. Someday she hopes to meet a Mola mola in the wild.

Julia Leung is from Lexington, Massachusetts and has participated in NOSB for the whole of her high school career. Julia’s initial entrance into NOSB was the real jump-start to her fascination with marine sciences; now she can’t imagine a life without the oceanographic facts that she has enjoyed accumulating over the past four years. Her favorite part of NOSB is meeting other people who share a mutual love and concern for the oceans.

Matthew Shorter is a junior in high school with a strong interest in ocean science. Through three years with NOSB, he has developed knowledge of the oceans through studying and experiences in the field. He is also a SCUBA diver and recently spent a week on a sailboat off of Cape Cod. In college, he plans on studying physical science or engineering.
Coach

Nell Herrmann is a Learning Enrichment and Gifted Support Specialist at State High. Nell holds both Bachelor’s and Master’s degrees in Biological Basis of Behavior and Conservation Biology from the University of Pennsylvania and another Master’s degree in Wildlife and Fisheries Science from the Pennsylvania State University. This year Nell traveled to Palmer Station Antarctica as part of an NSF-funded teacher program called PolarTREC. While there, she assisted marine scientists on research about ocean acidification.

Team

Janine Mistrick has been a part of NOSB for the past four years. When not studying marine biology, she keeps busy with symphonic and marching band as well as technical crew for thespians. Her interest in the oceans and all marine life stems from her love for the outdoors and appreciation for all creatures, great and small. Janine plans to major in Ecology and Evolutionary Biology in college in hopes of spending more time up close and personal with wild critters.

Cathryn DeLong has rocked State College Area High School for four years; participating in NSOB all four. Last year in Galveston was the first time she saw the ocean, but it has always been exciting to her. Cathryn enjoys lacrosse, track, underclassmen, and not using her indoor voice. After graduation, Cathryn will attend the United States Naval Academy and major in Aerospace Engineering. She hopes to continue on and become a Marine Corps aviator.

Matthew Rahn has been fascinated with the marine environment after reading Jules Verne’s 20,000 Leagues Under the Sea at an early age. Despite living in the middle of the landlocked state of Pennsylvania, he has visited coastal areas on a few occasions. Matthew is interested in biology, and plans to major in biochemistry in college. When by the ocean, he enjoys walking along the coast in the morning and feeling refreshing sea breezes.

Diane Roher resides in Happy Valley, aka State College, Pennsylvania and has participated in NOSB for four years. Diane enjoys the outdoors, which influence her interests of snowboarding, lacrosse, and photography. Diane first grew fond of the ocean after the numerous seaside escapes with the family. Understanding the history and ecology of the ocean is very important to Diane. In college, she plans to study Environmental Engineering with hopes of utilizing her ocean sciences knowledge.

Alicia Lai, a sophomore at State College Area High School, has participated in NOSB for two years. She was drawn to the ocean by her interest in a wide range of subjects—mathematics, sciences (physics, biology, chemistry), history, and English; and by the scientific and aesthetic complexity behind the protean waters. In her spare time, Alicia loves to play the piano and violin, read everything from novels to textbooks, and is a nationally-recognized writer.
Coach
Mr. Kraemer is an Aquatic Science and AP environmental Science teacher in Houston, TX. This is his fourth year as an NOSB coach and third year going to National Finals. Mr. Kraemer loved fishing since a very young age. He would earn extra cash working in the catfish, baitfish, and crabbing industries on his hometown lake of Des Allemands in south Louisiana. Now you might find him on the beaches of Galveston searching for nudibranchs amongst the sargassum.

Team
Andrew Hu is a senior from Houston, Texas. This is his second year in NOSB. When he is not learning about the ocean, he enjoys doing calculus with friends. He cannot swim, so if you see him in the ocean, please save him. He is also interested in botany and plans to develop his own hydroponic system for growing his own produce. Andrew plans to study engineering at the University of Texas in Austin.

Syed Ali is a senior from Houston, Texas and this is his first year participating in NOSB. Syed enjoys playing the Wii, learning calculus, and playing table tennis. Syed’s favorite aspect of marine science is learning the complex interactions of diverse species. He plans to major in bioengineering or biochemistry at Rice University. He ultimately plans on becoming a doctor.

Madison Selldin is a sophomore who lives in Houston, Texas and has competed in NOSB the past two years. Madison has always been interested in the ocean. Her favorite marine organism is the shark because so little is understood about them. She discovered her love for sharks in kindergarten when she received a book for Christmas. Madison plans to major in Marine Biology at Texas A&M, specializing in ichthyology. Lifelong Aggie Born.

Christina Tremel is a senior living in Houston, Texas and this is her first year to participate in NOSB. Christina enjoys playing the guitar, fishing, and meeting new people. Christina’s favorite aspect of marine science is learning about the continuous changes happening to our planet’s oceans. She plans to major in either oceanography or geology at the University of Texas in Austin. She is also a YouTube regular with her singing.

Sydney Denman is from Houston, Texas and this is her first year participating in NOSB. She likes the visual and interactive aspects of marine science, like the beach. She became interested in marine science because she visits Galveston a lot and loves the marine environment. In college, Sydney will be majoring in Education. Her favorite marine organisms are dolphins and seahorses and her favorite NOSB memory is the whole Dolphin Challenge weekend.
**Coach**

Cheryl V. Wells has taught Science in the Dexter School Community Schools for 37 years. She is the Science department chairperson and currently teaches accelerated and advanced chemistry, oceanography, and anatomy and physiology. She is also the adviser for the Dreadnaught National Science Bowl team, the Women in Science and Technology Club, and the National Honor Society. Her hobbies include gardening, traveling, reading, and spending time with her family at Mullet Lake watching the sunsets.

**Team**

Jorgen Powell is a senior at Dexter High School. He has participated in NOSB for the past two years. He joined because his older brothers participated as well. He plans on studying Spanish at Michigan State University. His favorite marine animal is the coelacanth. He enjoys being dual enrolled at Washtenaw Community College and being Mrs. Well’s lab technician.

Angelina Cicchella is a senior at Dexter High School. She has participated in NOSB for the past two years. She joined due to her interest in science and the oceans. She plans to study cello performance and East Asian Languages at the University of Puget Sound. She enjoys scuba diving, snorkeling, and helping Mrs. Wells. Her favorite marine animal is the cuttlefish.

Sho Harvey is a senior at Dexter High School. This is his first year participating in Ocean Science Bowl. He joined the Ocean Bowl team because his friends and because of his love for science and marine processes. He plans to study biochemistry at Case Western University. In his free time he enjoys playing violin. His favorite marine organism is kelp.

Angie Bach is a senior at Dexter High School. She has participated in NOSB for the past four years. She joined because her older brother was also involved. Besides Ocean Bowl, Angie is a member of the Symphonic Band and the National Honors Society. She plans to study psychology in college. In her free time she enjoys going to the movies, hanging out with friends and running errands for Mrs. Wells. Angie’s favorite marine organism is the Portuguese man-of-war.

Aman-Vir Mandair is a junior at Dexter High School, and became interested in NOSB in his freshman year after learning about it from a friend. He joined due to his interest in science, especially biology and anatomy. In his free time, Aman also enjoys playing on the tennis team, playing drums and the Dilruba, and participating in community service events. Aman plans to expand his philanthropy as he continues his studies beyond high school and attends an in-state university. His favorite marine organism is the Orca.
Coach

After an 18-year career in research, Patty Fowler decided to go into teaching prawn-to. She feels this is one of the best decisions of her life. She teaches biology, loves to hike and spend time with her family, which includes 20 pets. If you visit her class you would see the ‘Joke of the Day’ and it might just read, “Hear about the new sushi bar that caters exclusively to lawyers? It’s called, Sosumi.”

Team

Born to a moderately Asian family, Billy Nguyen had been immersed in science since his inception. He resides in San Diego and although he lives only twenty minutes from the beach, he has only visited this elusive destination eight times in his entire life for fear of getting a sunburn, ‘Miso’ hot. As a child, Billy was intently interested in science, following the Asian protocol. He plans to study medicine and minor in marine biology.

Jose Cuevas, from San Diego, is an ‘armchair’ marine biologist. He is well known for proposing the name Vrijenhoekia colbertii. Visitors to the Birch Aquarium know him as a long-winded man wearing a captain’s hat, ranting to himself about various species Cetacea and Echinodermata. He plans on pursuing a degree in Marine Science, and hopes to be commissioned into the Navy afterwards. He is hard to ‘ig-nore’ because he’s secretly the Blue Power Ranger.

Betwixt the seaweed of coastal San Diego you will find Rene Bell scouring the ocean floor for anemones to prod with a finger or for ‘uni-que’ sand dollars nestled in the sand. She finds comfort in the smell of ocean air and wishes to pursue some medical discipline in the future. Her favorite NOSB moment was the spontaneous creation of the Taylor Swift Trench.

Residing in San Diego, Wenhao Liao has always been self conscious of his vertical challenge. Smuggled out of the deep jungles of China, he has become a beloved member of the NOSB team. He is frequently found ‘bento-ver’ by the beach, emulating the high tides as they reach for the moon, hoping someday he too will be tall. Wenhao aspires to study business in college, where he will hopefully be right at home.

Brian Hie is a senior from San Diego and has been in NOSB for two years. Symptoms of Brian’s interest in physical oceanography include spending long periods of time staring at maps and surfing Wikipedia. He enjoys the bountiful diversity of the sea and the wonderful delicacies it provides; he once consumed an entire three-pound lobster by himself—‘soy, soy’ full. Brian plans on majoring in engineering in college.

…and that’s just how we roll!
Coach

Hale Switzer has taught Marine Science since 1999 and coached NOSB for ten years. This is his fifth trip to Nationals. He got a degree in marine biology with dreams of being the next Jacques Cousteau, but realized he just enjoyed talking about the ocean to a live audience… bam, a teacher was born. In his spare time he likes to fish, SCUBA dive and spend time with his wife and six year old son (named Wallace after Alfred Russell.) His favorite marine animal is the belted sandfish.

Team

Alex Hem is a senior in his third year of NOSB competition. He plays varsity tennis and basketball and is involved with student council, Mu Alpha Theta, NHS, and a variety of other clubs. He looks forward to competing in Baltimore. Alex is the middle child of three NOSB participants and this is his second trip to Nationals (his older brother only made it once!). He began marine science with the hope of becoming Captain Planet, but he hasn’t yet transcended to that level. His favorite marine organisms are scaphopods.

Darren (aka D.J.) Koenenn’s parents trained him, hoping that he would go the Olympics. He has already made it to Nationals once and hopes that winning this year will be close enough. D.J. is an All American wrestler, D1 recruit for cross country and track, and a Junior Olympic triathlete. He is also wanna-be marine scientist, and his participation on the marine science team has advanced that interest. His favorite marine organism is a seiche.

Zach Thomas is in his third year of marine science and is a senior. Zach rounds out the trio that was able to go to Nationals last year. He participates in Student Council, basketball, tennis, National Honor Society, and other clubs. He started participating in Marine Science out of hopes to become Jacques Cousteau, but realized he would have to stand in line behind his coach. Zach’s favorite marine organism is the coelacanth.

Rachael Fouasnon is a senior and this is her second year participating in NOSB. She runs cross country and track and field, and is involved with Mu Alpha Theta, Student Council, National Honor Society and has many other extracurricular activities. Rachael spends her free time sunbathing to better prepare her for her top secret mission of becoming a leopard seal. Her favorite marine organism is a penguin.

Melissa Bierschenk is a senior in her second year of NOSB. She plays soccer and tennis, and participates in Mu Alpha Theta, National Honor Society, and several other clubs. She joined the Marine Science team so that she might be able to help find Nemo. Her favorite marine animal is the green sea turtle.
Marshfield High School

Coach
Paul Herder is Nationally Board Certified and taught Earth Sciences at Marshfield High School for twenty-six years. He also coaches the DOE Science Bowl team – the reigning three-time state champions. Paul currently works for Aquila Resources, a base and precious metals exploration company; and he and his wife own and operate the science curriculum supply business Leave Only Bubbles. Paul is grateful that such smart students make him look good, and for the shared camaraderie and the professionally rejuvenating experiences of this classic event.

Team
Michael Josephson was born in landlocked Marshfield, Wisconsin. His favorite marine organisms are tiny copepods. Michael is grateful for all the opportunities the National Ocean Sciences Bowl has given him; his favorite memory is of snorkeling in the coral reefs of Bocas del Toro. Next year, Michael hopes to pursue a major in biochemistry with plans of entering medical school following college. He will also continue his studies of the marine environment.

Laura Josephson is a junior at Marshfield High School. She is an avid ocean enthusiast and is excited for her first year competing in the NOSB. Laura is also involved in the Science Bowl and Health Occupations Students of America. She volunteers at the hospital, as well as at the YMCA. She plays the violin and piano and is captain of the high school swim team. Laura plans to continue to study the ocean after high school.

Rahul Pathak is a three-time NOSBer at Marshfield High School (unfortunately far away from any ocean, but it does have meese). He developed an interest in marine science after obtaining a pet stuffed killer whale; to this day, the Orcinus orca remains his favorite animal. Rahul’s best NOSB memory remains sprinting into the Gulf of Mexico in Galveston while wearing his dress clothes. He hopes to study biology in college, perhaps becoming a marine biologist.

Jack Gellerman has always displayed an intense interest in the natural world, specifically the biological aspects of ocean science. He enjoys playing his piano and bass guitar, viewing films, and listening to his favorite music. When not bearing these incredible burdens and tests of will power, he can be found swimming at the local pool in order to live longer. At this time, his future is difficult to predict.

Christine Tyler’s interest in the ocean stems from visits to the Chesapeake Bay when she was younger. Currently a senior in high school, her love of marine science persists even though she resides in Wisconsin, a thousand miles away from the Atlantic.
Coach
Sarah Borchardt has coached oceanography teams from fifth grade through high school for six years. She is a member of the Annapolis Christian Academy School Board in Corpus Christi, Texas, and has worked in child and adolescent psychiatric nursing. She loves living by the Gulf of Mexico and believes that oceanography can truly educate students, from developing them intellectually to deepening their sense of gratitude and wonder about the life and processes of the seas.

Team
Emily Borchardt has grown up along the seashore and enjoyed all the Gulf Coast has to offer. Since first grade, sea camps and contests offered by the Texas State Aquarium have deepened her appreciation of the oceans. She has been captain of her school's NOSB team for the past two years. Her emphasis is physical oceanography. She plays volleyball, loves art, and hopes to someday work in science.

Andrew Hanks, ninth grade, lives on the Texas Gulf Coast in Corpus Christi. His interest in marine science began by collecting specimens for his family's saltwater aquarium. This is his first year participating in the NOSB, but he has been competing in events sponsored by the Texas State Aquarium since fifth grade. He enjoys studying biology. When not in school, he is on the football field or working out to prepare for the upcoming season.

Austin Jones is a sophomore from Corpus Christi, Texas. She has been involved in ocean science competitions since the fifth grade. Her team won the Oceans in Jeopardy challenge in 2007 and the Oceanography Challenge in 2010. This is her second year competing in NOSB. Her main focus is geology. Austin plans on attending Texas A&M University in College Station, Texas with an interest in studying geophysics. She also enjoys playing volleyball.

Colton Garrett lives in Corpus Christi, Texas. This is his first year competing in NOSB, and he's very excited about going to nationals. Colton enjoys studying Marine Policy and environmental effects from pollution. Colton is currently in the ninth grade, and is the running back for the varsity team. Hoping to attend college at the University of Florida, Colton plans on expanding upon his love for sports by entering the field of physical therapy.

Rylee Ann Williams lives in Corpus Christi, Texas, and attends Annapolis Christian Academy. She is in the ninth grade. This is her first year participating in the NOSB. Rylee plays volleyball and shows livestock with the local 4H club. She enjoys attending youth group at her church and would like to study animal sciences at Texas A&M University in College Station.
Coach

Coach Ingo Gaida is a graduate of UCLA thrice over. Although he specialized in the biology and genetics of the Pacific angel shark, he is more enthralled by the mysteries of his favorite animal, Mitsukurina owstoni. He hopes to one day do battle with this mystical creature, or the kraken, whichever he may encounter first. He still enjoys spending time hiking and fishing, but these days he is primarily occupied with wrangling the band of misfits described below.

Team

Christopher Karba was discovered in the Karwendel mountain range of Austria. A child of the wilderness, Chris is searching for adventure on land and sea. He is notoriously good with his hands during his monthly expeditions: he ignites fires with a quick flick of the wrist and can erect tenting poles in less than 2 minutes. Chris is lauded for his superior listening and repeating skills, which qualify him as Captain of the Team Santa Monica.

David Shabsovich is the descendant of a Russian Prince. After his family’s still-mysterious exile from the Homeland, he immigrated to the States. He does not remember much from the old days. A finalist in the 2011 Biology Olympiad, he is an expert on vertebrate and invertebrate anatomy. His interests are not limited to biology, however. David is enthralled by the formation of salt-fingers and domes in the waters of the Mediterranean and Gulf of Mexico, respectively.

From a young age, the seemingly infinite width and depth of the Pacific Ocean intrigued Dana Ritchie. The mind of this Santa Monica native and feisty Scorpio was soon melodiously intertwined with the great body; she often feels the power of Poseidon coursing through her veins. Today, she spends her time studying intruding dike swarms and pinpointing Nature’s hotspots. Dana is planning an Arctic pilgrimage to consecrate the grave of her beloved idol, Alfred Wegner.

Upon moving to Santa Monica, Zane Dufour became enchanted with marine ambience; he strolled the frothy beach, observing enormous tidal bulges and worshipping the Moon for its elicitation of dome-like grandeur from the Earth’s fluids. Zane often scours the Web for mythical oceanic creatures to domesticate. When his studies subside, he immerses himself in the ocean, reveling in the hypersaline solution soaking his skin, and the currents cradling his 6’1” frame like a mother and her child.

Marissa Kudo has reached the tender age of seventeen on a diet of raw T-bone steak. She enjoys fine food truck dining and long bike rides to the horizon. Marissa is the proud owner of an ancient magical unicorn horn that has been passed down to her from noble fishermen ancestors. In seventy years she hopes to entrust the precious heirloom to her grandson, granddaughter, or pet cat “Narwhal”, named for her favorite marine mammal.
Coach

Scott Hurley is the team coach of the Fort Pierce Westwood MOA Team B and he has participated in NOSB for three years as a coach. Scott grew up away from the ocean in Wisconsin but became interested in marine environment by vacationing at Florida’s beaches. Before he started teaching at MOA, he was a research diver for HBOI conducting reef surveys for macroalgal cover. He plans on continuing to coach future ocean bowl teams.

Team

Danielle Gordon lives in Port St. Lucie, Florida and has participated in NOSB for three years. Danielle goes to the Marine Oceanographic Academy, which is associated with Harbor Branch. Her interest in marine science began when she was very young and her passion grew stronger throughout the years. She plans on going to college at UCF and intends to study biology with a concentration in marine biology in hopes of becoming a marine mammal specialist.

Shelby Busenbark was born in Wyandotte, Michigan, but now resides in Port Saint Lucie, FL. This is her first year participating in NOSB. She has always been very educated in marine science and has longed to become a marine mammal trainer although she plans to attend UCF where she will earn a Forensic Science degree and become a Medical Examiner. Her favorite part about the ocean is all of the interesting organisms that inhabit it.

Brooke Gaylord was born in Port Saint Lucie, Florida and is a senior at the Marine and Oceanographic Academy. She has participated in NOSB for the last two years in high school. Brooke intends to study Medicine at the University of South Florida. Her freshman Marine Science teacher, Scott McMillen, sparked her interest in Marine Sciences. She hopes that one day squirrels will evolve to live in the ocean to combine her two favorite things.

Jeremy Johnson is fifteen years old and lives in Port St. Lucie, FL. He is a sophomore in Fort Peirce Westwood Marine and Oceanographic Academy. This is his second year participating in NOSB. His interest in marine science sprouts from his proximity to the ocean and his marine science courses. His favorite marine organisms include diatoms and sponges, but most of his interests lie in physical oceanography. He plans to study marine engineering in college.

Samantha Oxley is a senior at Fort Pierce Westwood High School’s Marine Oceanographic Academy. As a middle school student she made the decision to study marine biology and has been for the past three and a half years. She loves going to the beach and identifying marine algae and animals. Her favorite NOSB memory is winning. In the fall of 2012, Samantha will be attending the Rochester Institute of Technology. Marine mammals are totally sweet.
Coach

Ken Cloutier has been with NOSB since 2003 when he was asked to drive the van to the Nor’Easter Bowl and then coerced into coaching the C team. His love of biology and quiz shows got him hooked. His favorite sea creature is Littorina littorea and watching them in the tide pools has fascinated him since childhood. His favorite NOSB memories are the field trips. He coaches ConVal with his wife Pati.

Team

Jacob MacKay lives in Francestown, New Hampshire and has been a member of ConVal’s NOSB team for four years, competing at both the 2010 and the 2011 Finals Competitions. His favorite aspect of marine science is biology, the study of which he hopes to continue in college. Jacob’s favorite marine organism is Limulus polyphemus. He has a plethora of NOSB memories, most of which either relate to field trips or his lifetime hero, Dr. Sylvia Earle.

Ian MacKay lives in Francestown, New Hampshire, and has participated in NOSB for four years. In college, he plans to study international business and foreign language. His favorite NOSB memories include the various car trips the team takes, during which Svalbard, elves, renewable energy, and the ghost towns of Maine culminate in hysteria and regrettable decisions in Monopoly.

Gwyn Welch lives in Hancock, New Hampshire, and has enjoyed participating in NOSB for all of her three years in high school. In college, she plans to study neuroscience and pathology. Her favorite NOSB memory is the team’s stay at the Darling Marine Center, with the elves of Svalbard coming in at a close second. Her favorite marine organism is the hagfish, the slimiest thing on Earth.

Megan Jones joined Ocean Bowl when she saw how cool everyone on the team is and she’s never looked back since. She is junior this year on the school’s Ocean Bowl team; her older sister Mara was part of ConVal A for four years. Arianna became interested in ocean sciences through her family’s travels to the ocean. The devastating pollution caused by the 2010 BP Deepwater Horizon tragedy sparked her keen interest in ocean stewardship. Arianna’s favorite marine organism is the whale shark. Her favorite NOSB memories so far are the team’s virtual visit to Svalbard and being called slime during an especially intense game of monopoly.

Arianna Zrzavy is a sophomore at ConVal High School in Peterborough, NH. This is her second year on the school’s Ocean Bowl team; her older sister Mara was part of ConVal A for four years. Arianna became interested in ocean sciences through her family’s travels to the ocean. The devastating pollution caused by the 2010 BP Deepwater Horizon tragedy sparked her keen interest in ocean stewardship. Arianna’s favorite marine organism is the sea turtle.
Coach

Nick Frazee is a Physics and Chemistry teacher at Friday Harbor High. He has happily cashed in on the wits and hard work of his NOSB students for the last three all-expenses-paid trips to Nationals. Next year he is jumping ship for warmer waters and heading to Tortola in the BVI.

Team

Audrey Olshefsky has lived on San Juan Island her whole life. She has inherently grown up to love the ocean, especially sailing on it and learning about it. This is Audrey’s fourth year competing in NOSB and sadly her last. Last summer Audrey interned in Dr. Sebens’ subtidal community ecology lab. Suitably, biology is her favorite aspect of marine science. Next year, Audrey plans to begin working towards a degree in either bioengineering or an oceanography-related field.

Stewart Bell is a senior at Friday Harbor High School. He has lived on San Juan Island for almost seven years. This is his fourth year on the team. He first became interested in oceanography through his parents, who are both marine biologists at University of Washington. His most favorite aspect in oceanography is biology. Stewart’s hobbies are soccer, hiking, skiing, and music. Stewart is planning to study music and philosophy at Western Washington University.

Gavin Guard is a junior at Friday Harbor High School and has been living in Friday Harbor, Washington his whole life. This is his third year in NOSB. Gavin enjoys the great fishing the island has to offer. His hobbies include baseball, horses, and martial arts. Gavin began to become interested in marine science with field trips down to the beach and tide pools. In college, Gavin plans to study medicine, with the goal of becoming a sports doctor.

Michael Barsamian is a junior at Friday Harbor High School and has lived on San Juan Island for almost his entire life. Michael developed an interest in the ocean by exploring local beaches and searching for different types of marine life. This is his first year participating in NOSB. Michael’s hobbies include soccer and music. Biology is his favorite aspect of marine science. Michael plans to pursue a degree in Mechanical Engineering, with a minor in either journalism or oceanography.

Libby Snow lives on San Juan Island and is a sophomore at Friday Harbor High School. This is Libby’s second year participating in NOSB. Encouraged by her older sister, a UW Oceanography student, Libby has grown to appreciate learning about the marine environment. The local orca whales of San Juan Island have held a special place in her heart since she was little. Libby’s hobbies include skiing, soccer, hiking and loving life on the island.
Coach
Jessica Niemantsverdriet teaches biology and AP Biology. In her tenth year with Penguin Bowl, she is honored to coach this incredible student team. Outside the classroom, she has fun with her husband and daughters, Sarah (4) and Megan (1). Manatees are her favorite marine organism (she swam with them in Florida). Mrs. Niemo thanks the NOSB, our regional coordinators Margie Marks and Dr. Ray Beiersdorfer, the amazing students, and all the volunteers for making this event possible.

Team
Scott Gerlica is a senior at Medina High School and has been on its NOSB team for four years. Even though he has never touched saltwater (not by choice), he’s always had an interest in oceanography, especially marine biology. His favorite marine organism is definitely the sponge and favorite NOSB memory is sleeping under the polar bear tank at the Pittsburgh Zoo. He hopes to major in either history or biology in college.

Thomas Joseph lives in Medina, Ohio. He has been part of NOSB for one year. He became interested in NOSB after a lot of convincing to join from his AP Biology teacher. Ever since he joined, Thomas has loved every minute of NOSB. Thomas plans on majoring in Chemistry in college. With his degree in Chemistry, he would like to become a pharmacist.

Carolyn Piombo is a senior at Medina High School. She is a member of Penguin Bowl, Girls Leadership Club, Spanish Club, Key Club, and Medina High School’s tennis team. She plans on attending Kent State University in the fall to major in Hospitality Management. Carolyn enjoys spending time doing community service around Medina: volunteering at a local nursing home, teaching three-year-old Sunday School at her church, and helping with various school events.

Sarah Smith is a senior at Medina High School. She participates in the Girl’s Leadership Club, Symphony Orchestra, Marching Band, Symphony Band, Penguin Bowl, and National Honors Society. She works as a hostess and volunteers with Medina General Hospital, Medina Food Pantry, and Habitat for Humanity. In her spare time she enjoys reading and playing the flute. Sarah will attend Ohio Northern University and major in chemistry. She aspires to become a surgeon.

Cori Komm is a senior at Medina High School. She has been a critical member of the Penguin Bowl team and is currently in Brazil as an exchange student. Cori’s dedication to the team and sense of humor have meant so much to all of us. We will miss her during the national competition.
Ledyard High School

Coach

David Bednarz has taught Biology and Marine Science in Ledyard for 20 years, currently teaching UCONN ECE Marine Science, and Advanced Placement Biology. His love of all things marine began in junior high at Project Oceanology. As a college student, he deckhanded aboard their research vessel and later was a part time instructor. In his spare time, Dave enjoys boating and fishing on Long Island Sound as well as camping with his wife and daughter.

Team

Ronnie Tardiff is a senior at Ledyard High School. He has a passion for marine science that he focuses his entire life around. He has spent each summer since seventh grade studying marine science at Project Oceanology in Groton, Connecticut. Ronnie is a 2011 University of Connecticut Marine Scholar. He is also an editor for the school newspaper. He wants to major in Marine Sciences and use writing to communicate scientific issues.

Jenna Farquhar has lived in Ledyard, Connecticut for six years. Jenna first began to take an interest in the ocean after moving to the coast, but did not participate with NOSB until this past year as a senior while taking the University of Connecticut Marine Science course. While Jenna is most interested in tides and waves, she plans on double majoring in biology and history in college to pursue a career in medical law.

Qiuyin Ren lives in Gales Ferry, Connecticut and has participated in NOSB for two years. She grew up in coastal areas and has always loved the oceans, especially as a swimmer. Though her interest in marine science is fairly new, she has been accepted into the UConn Marine Scholars program and intends to explore the field in more depth. Her love for all things “wet” grows daily.

Lucy Zhang began her interest in marine sciences after taking AP Biology, which heightened her curiosity in many fields including medicine, microbiology, and marine sciences. She was introduced to NOSB through her friends and AP Biology teacher, Mr. Bednarz. In college, Lucy plans to study one of the above, although she is leaning towards medicine. Then, she hopes to use her knowledge on an international level by working for organizations similar to the United Nations.

Bryauna Phillips lives in Norwich, Connecticut and has competed in NOSB for two years. Bryauna volunteers at Mystic Aquarium in three different departments. She aspires to major in Marine Biology and Secondary Education, and possibly minor in Aquarium Sciences, Aquaculture, and Spanish. In the long run, she wants to teach high school biology and marine biology. But not without Project Oceanology and being introduced to a handful of invertebrates such as sea stars, horseshoe crabs, and more!
Coach
Tony Baca has been assistant coach and/or coach of the Treasure Valley Math and Science Center (TVMSC) team for the last six years. He holds a BS and MS in electrical engineering with a minor in physics and math, and a JD in law with a focus on intellectual property law. 2012 will be the first year that a team from Idaho will compete in the NOSB.

Team
Kevin Brown is a senior from Boise, Idaho, but has spent a great deal of time on the Gulf Coast of Mississippi, sparking a great interest in ocean ecosystems and management. This is his first year in the NOSB, and he is very excited about Nationals. Although the ocean is fascinating, he has found the endless expanse of space more so. Kevin plans to major in Astrophysics.

Sam Chandler is from Boise, Idaho and is participating in the NOSB for the first time this year. Sam enjoys reading fantasy novels and playing video games with the other members of the TVMSC team. His interest in the ocean stems from watching documentaries on ocean life as a child. Sam currently plans to major in Chemistry, with the hope of becoming a scientific researcher in Biochemistry.

Alex Baca is a senior born and raised in Boise, Idaho. This is his first year participating in NOSB. Alex has developed a strong interest in the social sciences and public policy and has served as a page for the Idaho legislature. Alex has also worked in the Boise State Geosciences Department studying soils. Alex is currently deciding on his college major with history or civil engineering being the leading contenders.

Eddie Smith is a junior from Boise, Idaho and a newcomer to NOSB. He is a strong advocate of history and the sciences. Eddie is a fan of comic books, video games, and the realm of fantasy. Although the specifics are unknown at this time, he will definitely be attending college, likely studying physics or computer science. He does not have any particular affinity for marine sciences, but the future is definitely malleable.
Coach

Competing on Science and Math Teams as a teenager inspired AP Chemistry instructor Peggy Carlock to coach. She’s the recipient of the American Chemical Society’s California Section Teacher of the Year and studied at the University of California, Berkeley (B.S., M.S., Ph.D), where she was an NSF Fellow. Her passion is dance. Until a recent accident, she taught dance on weekends. Marine Science and the graceful dancers in the sea are her hobby. She envies regenerative capabilities of Echinoderms.

Team

Team Captain Juneyoung Jeong is the owner of the team’s all-important and divine travel pillow. He is involved with a plethora of activities, but among his favorites are robotics, Model UN, cross-country, and, of course, the Science Bowls! As a soon-departing senior, he is glad that his three-year Science Bowl career will end with a splash! As a lover of puns and ocean science, Juneyoung looks forward to trolling with his team in the near future.

As an ocean science enthusiast, Amy Xie sometimes wishes that she were a member of the family octopodidae so that she could experience benthic communities up close and personal. Her favorite organism is the Hourglass dolphin. Amy’s interest in the oceans started in her childhood near the Pacific coast and mushroomed as she had the opportunity to participate in NOSB. In her free time, Amy also enjoys rock climbing, snorkeling, and listening to classical music.

This is Kevin Sun’s first year participating in NOSB. He is a junior at Albany High School. Having grown up by the sea in New York, Kevin became interested in the marine environment close to him. Kevin’s favorite marine organisms include basking sharks and ocean sunfish. Due to his lack of sleep, he especially idolizes the nautilus, whose capability to sleep for two months at a time is something he yearns for.

Morgan Chen, a junior, can exhibit both natural inattentiveness and a desire to learn. Consequently, he tends to fluctuate between periods of remarkable, extremely rash or thoughtless behavior and exquisite brilliance; his mental state at any one point in time can be calculated given the time of day, season, declination of the sun, and local air pressure. Morgan also suffers from a strange condition that can sometimes cause nearby food to inexplicably vanish.

Tony Wang is the loudest and the tallest person on his team. He is a food enthusiast, and often times eats the food meant for two people. Tony tends to stick to his lazy side, and can doze off at will, traits he shares with the manatee and the ocean sunfish. Because of his family, Tony has been interested in science he was a child, and he looks forward to competing in Baltimore.
Marine Academy of Science and Technology

Coach
Clare Ng teaches Marine Biology and Environmental Science and is also an adjunct professor at Brookdale Community College. Clare was a fisheries biologist studying estuarine habitat use of striped bass using acoustic telemetry before becoming a teacher. She owes much of the team’s success to her predecessor, Barbara Boyd, and Assistant Coach Liza Baskin, who teaches Marine Chemistry and spent a summer aboard a NOAA vessel at the wellhead of the oil spill in the Gulf of Mexico.

Team
Emily Jankowski lives in Manalapan, New Jersey. This is her second year participating in NOSB at both the regional and national level. Emily has lived in five different states and has maintained a love of the ocean throughout. MAST has been great for expanding her ocean knowledge and developing scientific skills through research. As a senior, Emily is looking forward to attending Swarthmore College and studying biology and plans to pursue a career in research.

Alex Creed lives in Cliffwood Beach, New Jersey. He enjoys surfing and SCUBA diving. Alex has been participating in NOSB for three years. Alex is a senior and plans to attend Eckerd College to study marine biology.

Ryan Badum grew up in Morganville New Jersey only a short distance from the Jersey shore. Growing up on the shore Ryan developed a great love for the ocean, which compelled him to attend the Marine Academy of Science and Technology. His sign is Virgo, and he also loves pottery and long walks on the beach.

Matthew Purcell lives in Tinton Falls, New Jersey, and has participated in NOSB for three years. He has been on teams that have won third and first place at the regional Shore Bowl competition. Living on the coast, he goes to the beach often, and enjoys fishing and bodyboarding with his friends. This has encouraged a love of the ocean that has led him to pursue a career in marine biology at Stockton College.

Chandler Shaeffer lives in Fair Haven, New Jersey. This is her first year competing in NOSB. The ocean has fascinated Chandler from a young age, as she spent most of her summers snorkeling, SCUBA diving, and sailing. Living so near New York Harbor has sparked an interest in the human impact on biodiversity in marine ecosystems. Chandler plans on obtaining a dual degree in marine science and biology, hoping to some day study marine mollusks.
Coach
Carl Tilson has coached the Ocean Science Team for three years at DFHS. He earned a Bachelor of Science in Biology from The University of South Carolina and a Master of Science in Biological Science from Clemson University. Carl is a National Board Certified Teacher in secondary science who teaches Biology, Anatomy and Physiology and Forensic science. In addition, Carl coaches Science Team and serves on the STEM committee at Dutch Fork High School.

Team
Shannon Roberson has been on ocean science team for two years and splits her time between student counsel and tutoring after school. Shannon loves Indian style dancing and often dances at parties for the entertainment of the other attendees. Her friends say she is a bit crazy and a lot of fun! Her favorite sea animal is the puffer fish.

Madeline Kowalski is just too smart. Her friends say she is the reason that there is no curve in AP Bio! She plays hip hop and rock and roll on the harp to the amazement of everyone who says “what’s a harp?” Again, Mattie is just too smart! Her favorite ocean animal is the sponge.

Nicholas Kowalski has been on Ocean Science Team for two years now and will graduate in May. Nick is obsessed with cleaning lab equipment and is said to be the smartest person in Irmo. His friends call him Mr. 1600 because of his SAT score. His favorite sea animal is the Blue Footed Boobie.

Ivana Chen has been on Ocean Science Team for two years and Science Team for three years. She eats only fresh fruit, veggies and almond butter, and has been seen picking the salt off of her pretzels. She is the sweetest person on Ocean Science Team and her favorite ocean animal is a sea cucumber because it is named for a vegetable.

Seong-Soo Lee is new to Ocean Science Team and was discovered lost in deep thought outside the Chemistry lab a few weeks before the competition. He is known to sleep in AP class and make A’s consistently. His favorite ocean animal is a gold fish because they taste cheesy. Actually he changed his mind to jellyfish since they just go with the flow!
Eastside High School

Coach
Anne S. West-Valle has been coaching Team Harpoon for four years and has enjoyed almost every minute of it. She is amazed how far the team has come from that first year when they did not even know about zooxanthellae. Anne will miss coaching this bright, fun, interesting group of kids, when four of them head off to college next year.

Team
Emiliano Valle wanted to compete in the NOSB ever since he saw his first competition in 1998. As a room runner, he was introduced to the greatness that is NOSB and went on to form a team during his freshman year of high school. Emiliano, along with Nick and James, was a part of the district champion and regional finalist soccer team. He loves DA OSHUN. Emiliano will attend either Harvard or Yale.

Alvaro Valle has been exposed to the ocean for all 15 years of his life. Whether it be from his oceanographer parents or a trip to the beach, he absorbs all oceanographic information like a sponge. His favorite science is chemistry, and a career in materials engineering beckons. His favorite NOSB memory was standing in as Captain for half a round in regionals. Alvaro really enjoys soccer, reading, eating steak, and using his self-built computer.

How much does a polar bear weigh? Enough to break the ice… or on average, slightly more than a ton. James Davis is a senior, and this is his first year on Eastside’s A team. He runs cross country and track, plays soccer, and enjoys playing the piano. He thanks his teammates and coaches for the lessons they have taught him, both in oceanography and in life. He is planning on attending Georgetown University.

Rachel Keen is a senior. She has been lucky enough to experience the diversity of the world’s oceans firsthand as an avid traveler. Outside of school, she spends her time competitively swimming and volunteering. She would like to thank the handsome oceanographers on her team, as well as Anne and Arnoldo for making the past four years so fantastic. She will attend Grinnell College next year, and plans to double major in Political Science and Religious Studies.

Nick Vander Meer wants to let everyone know that he’s chill. This is his 4th year on the team, and he would like to thank his teammates and especially his coaches for all the effort and time put in to making this possible. Nick plays for the Chicago Bears in his free time and has had multiple cameos on Modern Family and Lost. He will attend the University of Florida in the fall.
Coach
Darlene Halvorsen has been teaching Environmental Science, AP Environmental Science, and Earth Science for 13 years at Loveland High School. She has been coaching Ocean Bowl for about 9 years and loves the fact that her students take such an interest in the oceans even though they are in a land-locked state. It is vital to promote interest in our oceans because they are such an important part of our planet.

Team
Dalton Meyer is a junior from Loveland High School who is extremely excited to be able to participate in the national competition. Dalton has been competing in NOSB since he was a freshman, and this will be his first time competing on the national level. He plans to attend Montana State University in pursuit of a career in paleontology, particularly the study of Theropod Dinosaurs, and Mesozoic marine reptiles.

This isn’t Solomon Kunselman’s first experience with NOSB, and he hopes to stay involved for a long time, despite the fact that he has never seen the ocean. He has also never been as far away from home as Baltimore, and is super thankful for the opportunity to compete at the national level. His hobbies include video games (a lot of them) and music production, especially electronica.

Nabeel Moin has almost drowned, on numerous occasions. It was through a cosmic irony, then, that he acquired an interest in ocean sciences during his last year at Loveland High School. His strengths include mathematics, chemistry, and physics. Nabeel plans on going to college for engineering, either at Massachusetts Institute of Technology or Colorado State University. He lives in Fort Collins, Colorado with his parents and four siblings.

Kayla Kruit is a junior from Loveland High School and this is her first year in NOSB. Due to her interest in marine biology, she felt it would be fun and beneficial to participate in order to extend her knowledge of marine sciences to better prepare herself for her intended major of marine life conservation. Marine life has always fascinated her and she hopes to enjoy herself with her newfound friends doing what she loves.

Bridget Hyde is a freshman from Loveland High School, and is completely astounded she can actually to go to nationals in something. She has been to state in the Thompson school district spelling bee, but no farther. This is her first year competing in NOSB and she enjoys it immensely. She would like to attend CSU and become a veterinarian, but is keeping her options open. Her interests include reading, bouldering, and being with friends.
Juneau-Douglas High School

Coach
Ben Carney abandoned his career in Wildlife Biology at age 30 to pursue teaching Science. The application of Science particularly interests Ben. Thus Oceanography and NOSB are a natural extension of his interests. Ben enjoys hunting, fishing, boating, building (home) and the company of his wife and two children and friends when not teaching. In particular, he enjoys a good picnic outside by a fire.

Team
Seth Brickey is a 17 year old Senior. Times spent on the beaches and docks of Juneau sparked his interest in oceanography. He specifically likes the marine policy aspects of the sciences. He feels that NOSB, particularly the required Tsunami Bowl research paper, has given him invaluable skills that could not be attained anywhere else. He plans to go to a Western Washington and major in political science or to enroll into a pre-med program

Martina Miller is a 17 year-old Senior at Juneau-Douglas High School. She has been fascinated with the ocean all her life and she plans to study biology in college. She is grateful to be going to Nationals for a third time and she would like to thank her parents and her team for supporting her. She would also like to thank her coach, Ben Carney, for everything he does for the team.

Ethan Roemeling lives in Juneau, Alaska and has participated in NOSB for two years. He enjoys skiing, hiking, camping, and hanging out with friends. Being a senior at Juneau-Douglas High School, Ethan plans on attending Washington State University next year where he will study engineering.

Tatsu Monkman is an 18-year-old senior attending Juneau-Douglas High School. This is his second year participating in NOSB, and he is baffled and excited that he gets to travel to Baltimore for a school activity. Next year Tatsu will attend Pomona College, where he intends to study astronomy, ocean science, pre-med, or something equally impressive, and lie in the sun.
NOSB would like to give a BIG THANK YOU to all of our question reviewers for their time, effort, hard work and expertise.

Susan Baker – National Oceanic and Atmospheric Administration
Hoyt Battery – U.S. Department of Energy
Christy Bradburn – James Madison University
Mimi Bres – Prince George’s Community College
Ben Chicoski – Energetics Incorporated
Natasha Dimova – United States Geological Survey
John Fornshell – National Museum of Natural History
Amy Hirons – Nova Southeastern University
Katharine Horst – Consortium for Ocean Leadership
Deborah Glickson – National Academy of the Sciences
David Griffith – Massachusetts Institute of Technology
Jane Guentzel – Coastal Carolina University
James Holte – University of California San Diego
Staci Lewis – Consortium for Ocean Leadership / George Mason University
Catherine Marzin – National Oceanographic and Atmospheric Administration
Charna Meth – Consortium for Ocean Leadership
Jay Muza – Broward College
Rick Rigazio – U.S. Coast Guard
George Sharman – National Oceanographic and Atmospheric Administration
Eric Siegel – NortekUSA
Henry Snyder – Gallaudet University
Wayne Sternberger – Johns Hopkins University, Applied Physics Laboratory
Eugene Williamson – Williamson Consulting
Bill Wise – Stonybrook University
James Wood – Hawaiian Institute of Marine Biology
Kimberley Zeeh – Bermuda Institute of Ocean Sciences
The Consortium for Ocean Leadership is a Washington, DC-based nonprofit organization that represents 103 of the leading public and private ocean research education institutions, aquaria and industry with the mission to advance research, education and sound ocean policy. The organization also manages ocean research and education programs in areas of scientific ocean drilling, ocean observing, ocean exploration, and ocean partnerships.

**Ocean Leadership’s Mission**
Ocean Leadership shapes the future of ocean science and technology through discovery, understanding and action. We provide expertise in managing, coordinating, and facilitating scientific programs and partnerships; influencing sound ocean policy; and educating the next generation of ocean leaders.

**Ocean Leadership’s Vision**
Our vision is a global society that views its own well-being as intimately connected to the ocean.

[www.oceanleadership.org](http://www.oceanleadership.org)

---

Inspiring Tomorrow’s Ocean Leaders. The mission of the National Ocean Sciences Bowl® (NOSB) is to prepare the next generation of students for careers in ocean science by providing an educational forum for students to excel in math and science, as well as receive national recognition for their diligence and talents. NOSB has proven that it can generate student interest and excitement about science and the ocean, giving young people a chance to examine the marine sciences as an in-depth area of study and as a possible career.

**Science • Competition • Stewardship**

[www.nosb.org](http://www.nosb.org)