Welcome to the 17th Annual National Ocean Sciences Bowl (NOSB) Finals!

It is my pleasure to welcome you to Seattle, Washington, a city with such an iconic connection to the ocean, from its majestic orcas to its maritime climate. The 2014 competition theme of Ocean Acidification is very appropriate for Seattle and the Pacific Northwest where changing ocean chemistry is already impacting sea life, such as oysters, and threatens many other important organisms. This is the perfect setting to expand your knowledge of this critical environmental issue, and we’re sure you will do this through the speakers, field trips, competitions, and the Science Expert Briefing organized for you this weekend.

After many months of preparation, you now find yourselves competing for the NOSB National Title with 21 other regional champions. Your hard work, dedication, and commitment have surely paid off, and you are already all winners. With well over 300 teams and 1,600 students competing in this year’s NOSB regional competitions, you should feel extremely proud to be here in Seattle. On behalf of the 90 members of the Consortium for Ocean Leadership, I would like to congratulate you on all your efforts during this 2014 competition season and encourage you to consider taking your passion for ocean science into your undergraduate careers and beyond.

I would like to thank everyone involved in making this NOSB Finals competition possible. This past year has been challenging for the NOSB. At last year’s Finals in Milwaukee, we announced the unfortunate news that due to funding cutbacks NOAA could no longer provide the core support for the program. We were not sure the 2014 NOSB competitions would take place, and we are truly grateful for the generosity of ocean advocates Wendy and Eric Schmidt who made it possible for you to be here. We are also grateful to the many federal agencies and private organizations that recognize the importance of fostering the growth of ocean science education and have supported this program for so long. I would also like to extend a special thank you to our Finals hosts, Washington Sea Grant and the University of Washington College of the Environment, as well as to all of our hard-working volunteers. Year after year, this competition would not happen without their dedication. Please join me in thanking them throughout the weekend.

The NOSB has been operating since 1998, which makes you part of its long history of success in exposing students to ocean science as a field of study and a possible career path. But your important role in the program does not end here. For this program to continue to support students like yourselves, we need your stories; we need to hear how NOSB impacted you as a high school student and, later, how it helped you prepare for your undergraduate career and beyond. After you graduate from NOSB, please stay in touch with your Regional Coordinators and the National NOSB office, and please participate in our ongoing longitudinal study. It is so important for the program and the legacy that you will leave for future NOSB schools!

The NOSB Finals are a highlight of the year for me. I am very excited to be here with you and wish all of you the best of luck. You never cease to amaze me with your broad and deep knowledge of ocean science, and especially your passion and enthusiasm.

Sincerely,

Robert B. Gagosian
President & CEO
Consortium for Ocean Leadership
For the 2014 Finals Competition Event Program, the NOSB decided to “go green” by reducing the number of pages in the program and hiring a printer that uses environmentally friendly sources of ink and paper. The event program is printed on Forest Stewardship Council (FSC)-certified paper, meaning the end product must pass through FSC-certified forests, paper manufacturers, merchants and printers. The certification also ensures that the civil rights of the native people are respected and that after harvesting, the forests are reforested, becoming a sustainable source for wood production.
Schedule of Events

Thursday, May 1

7:30p – 9:00p  NOSB Speed-Career Event (Hotel Deca, Grand Ballroom)
8:00p – 9:00p  Coach/Regional Coordinator Meeting (Hotel Deca, President’s Room)

Friday, May 2

7:30a – 8:30a  Breakfast (Hotel Deca, Governor’s Room)
8:30a – 4:00p  Field Trips
5:30p – 9:00p  Opening Ceremony at Seattle Aquarium

Saturday, May 3

7:00a – 7:45a  Team Breakfast (Hotel Deca, Governor’s Room)
7:00a – 7:45a  Volunteer Breakfast and Meeting (SCC 316)
8:00a – 9:00a  All Hands Meeting (SCC 316)
9:00a – 11:15a Round Robin Competitions, Rounds 1-3
9:00a – 11:15a Round Robin Competitions, Rounds 4-5
11:15a – 12:45p Team & Volunteer Lunch (SAFS Lobby)
12:20p – 12:45p Volunteer Meeting (SAFS 102)
12:45p – 2:15p  Round Robin Competitions, Rounds 4-5
2:20p – 2:50p  All Hands Presentation/Activity (SAFS 102)
2:20p – 3:00p  Scoring & Seeding for Double Elimination
3:00p – 4:30p  DE Competitions, Rounds 1-2
3:00p – 5:00p  Activities for non-competing teams
4:30p – 6:00p  DE Competitions, Rounds 3-4
6:15p – 7:15p  Science Expert Briefing Discussion with Judges (SAFS 102)
7:15p – 10:30p Teams on own for dinner

Sunday, May 4

7:00a – 8:00a  Team Breakfast (Hotel Deca, Governor’s Room)
7:15a – 8:15a  Volunteer Breakfast and Meeting (SCC 316)
8:15a – 8:50a  All Hands Meeting (SCC 316)
9:00a – 10:45a DE Competitions, Rounds 5-6 (SCC 316, 303)
9:00a – 10:45a Activities for non-competing teams
10:45a – 11:30a DE Competition, Round 7 (SCC 316) (determines 3rd Place)
11:30a – 12:15p DE Competition, Round 8 (SCC 316) (determines 1st & 2nd Place)
12:15p – 1:00p  DE Competition, Round 9 (if needed)
11:30a – 1:30p  Lunch (SCC Lobby)
2:00p – 3:00p  Awards Ceremony (SCC 316)
3:30p

Teams depart for airport from hotel
Eric and I are philanthropists seeking transformational change. When we better understand the living systems we are part of and depend upon, humans across the planet can make wiser, regenerative use of energy and natural resources including water and food. Developing a fuller understanding of our oceans – unlocking the mysteries of the oceans as well as learning about what we’re doing to harm them – is critically important to that mission. It is the founding principle of the Schmidt Ocean Institute (SOI), and why we are committed to working with and helping to fund the work of the ocean science community.

In 2012, SOI launched R/V FALKOR, a state-of-the-art ship being deployed across the world for a broad set of studies of the oceans by some of the country’s most distinguished scientists. This year, on three separate expeditions aboard FALKOR, select student groups will gain invaluable skills and experience at sea while working with some of the world’s most advanced oceanographic technologies and tools, available on the ship. Students and professors from the University of Hawaii will conduct hands-on research that will not only produce valuable data and knowledge, but could also inspire participating students to commit to careers in ocean science.

Eric and I are especially excited about the promise of our next-generation of ocean scientists, and the important work that the National Ocean Sciences Bowl (NOSB) is doing to lead that effort. NOSB has been instrumental in developing the math and science skills students need to excel in college and confidently pursue degrees in marine science.

As teams gather in Seattle for the finals competition and the accompanying activities, Eric and I wish each of you the best of luck. It is our great pleasure to support and encourage your efforts to make a difference in the world of ocean science. May this be a weekend filled with learning, great fun and memories that last a lifetime.

SPECIAL THANKS TO
ERIC & WENDY SCHMIDT
FOR THEIR GENEROUS DONATION, MAKING THE 2014 NATIONAL OCEAN SCIENCES BOWL POSSIBLE.
The global impacts of ocean acidification are numerous and widespread from biological, physiological and ecological impacts on marine life to economic impacts on commercial fisheries and tourism to cultural impacts on indigenous people. The U.S. Pacific Northwest is already seeing the direct effects, especially on its shellfish industry. Ocean acidification in Washington state appeared decades sooner than expected, and regional factors, such as coastal upwelling and land run-off, are only exacerbating the amount of acidification.

Therefore, it was easy to decide upon the theme for the 2014 National Ocean Sciences Bowl Finals Competition, hosted by Washington Sea Grant at the University of Washington (UW). UW stepped up to the challenge and became an example for the nation in coordinating research and monitoring of ocean acidification and its effects on local oysters, clams and fish.

Our ocean acidification theme encourages increased awareness of the impacts of excessive carbon dioxide on our changing ocean and enhanced understanding of the carbon dioxide cycle, human actions that increase carbon dioxide, and the effects on marine ecosystems. There are ways for you, as our next generation of ocean scientists and stewards, to help explain the impacts and raise awareness in your communities: explain how the carbon cycle and land-sea interactions work; share success stories from regions, such as the Pacific Northwest, which are currently facing the issue and searching for solutions; explain the need for increased research and monitoring; and remind others to do their part in reducing local sources of pollution, preserving local marine communities and promoting leadership in others.
Thank You to our Regional Host!

A special thank you goes out to our 2014 NOSB Finals Competition host – Washington Sea Grant and University of Washington, College of the Environment. Special thanks goes to the University of Washington, School of Aquatic and Fishery Science (SAFS) – for donating space for the competition.

Washington Sea Grant is also the host of the NOSB’s regional Orca Bowl. The Regional Coordinator of the Orca Bowl, Maile Sullivan, deserves a huge thank you for all the time and effort she put in to planning a wonderful, West Coast National Finals Competition! The Orca Bowl was established in 1998 as one of the original 16 NOSB regions. We hope students attending Finals enjoyed learning about the Pacific Northwest while preparing for this year’s theme of Ocean Acidification, an issue of particular concern to the region. While ocean acidification is a global problem, Puget Sound is particularly susceptible to damaging changes in ocean pH. There are many opportunities to continue learning more about ocean acidification and the Pacific Northwest marine environments while competing and visiting the sites of Seattle.

We sincerely appreciate the commitment and dedication that staff members from Washington Sea Grant – including Penny Dalton, Chelsea Kahn, Nancy Reichley, and Julie Hahn – have made in hosting the 2014 National Ocean Sciences Bowl Finals Competition. We also thank all the Orca Bowl volunteers that are joining us at Finals this year. The competition could not happen without each and every one of you and your continued dedication to the NOSB participants! We are especially excited that the students attending the National Finals Competition get to witness one of the Orca Bowl’s unique qualities - the competition officials wear ocean inspired costumes and compete for student votes! Thank you Orca Bowl volunteers for putting in the extra time to expand ocean education through creativity and humor.
We would like to thank Brian Baird for kicking off the weekend and speaking at our opening ceremony at the Seattle Aquarium!

The Honorable Brian Baird, PhD, began his presidency at Antioch University Seattle in July 2013. During his 12 years of service in the United States House of Representatives, prior to arriving at Antioch, he was known and respected for taking principled stands, careful study of issues, and building bipartisan relationships. Before his election to Congress, Dr. Baird’s background, skills, and his PhD in Clinical Psychology provided him the opportunity to spend two decades working in clinical settings with specializations in neuropsychology and medical applications of psychology. Dr. Baird has also taught at the Jackson School of International Studies at the University of Washington, Pierce Community College and chaired the Department of Psychology at Pacific Lutheran University for 12 years.

Dr. Baird provided continuing education in communication and ethics via the Professional Education Group, was Senior Vice President of Government Affairs for Vigor Industrial, and was appointed by Governor Christine Gregoire to the Washington Student Achievement Council where he directed the council in policy guidance and analysis for all higher education in the state of Washington.

Matthew Huelsenbeck

Matthew Huelsenbeck is the Team Relations Manager for the Wendy Schmidt Ocean Health XPRIZE. Prior to joining XPRIZE, Mr. Huelsenbeck worked as a marine scientist at the conservation group Oceana, based in Washington, D.C., where he advocated for policies to promote clean energy, and communicated the threats to marine life from ocean acidification. Mr. Huelsenbeck holds a Bachelor’s degree in Environmental Studies from Miami University, and a Master’s in Marine Biodiversity and Conservation from the Scripps Institution of Oceanography at the University of California San Diego.

Hannah Dean

Hannah works on ocean observation policy at the national and international scales at the Consortium for Ocean Leadership. In her free time, Hannah has worked to bridge the gap between art and policy making, creating murals in response to Congressional political divides, and developing graphic designs for ocean research campaigns. In addition, she enjoys fiddle, mandolin, swimming, and biking.

The NOSB wants to thank Hannah for her time and artistic inspiration of this year’s theme. We truly appreciate her creation for the 2014 National Finals Competition t-shirt and event program artwork.
Field Trips

Ocean Inquiry Project
Cruise on Puget Sound

Hop on board the M/V P.S. with the Ocean Inquiry Project and explore the oceanic properties of Puget Sound. Start the day by traveling from Lake Union through the Hiram M. Chittenden Locks into the Sound. Once cruising on the salt-water, participants will have an opportunity to sample water quality, deploy a CTD, tow for plankton and view marine wildlife along the coastline of the Emerald City.

Mercer Slough Wetland Walk & Zip Line Experience

Head “upstream” and just east of Seattle to Bellevue, WA (home of Microsoft). Spend time zip lining through an amazing maple and Douglas-Fir forest with Bellevue Zip Tours. Zip lines are up to 600 feet long and as high as 80 feet above the ground! View Mt. Baker and Glacier Peak from inside the branches of a big leaf maple tree!

After viewing things from above, explore local wetlands by foot at Mercer Slough Nature Park. Tour a LEED-Gold environmental education center designed and built to have minimal impact on the environment. Check out green roofs, special gutters, porous concrete, and catchment ponds that slow and filter water runoff before you head out see where that water goes next and to explore a 320-acre wetland in the heart of the city.

Boat Patrol the Duwamish River with Puget Sound Keeper Alliance

Help prevent pollution in Puget Sound by participating in Puget Soundkeeper Alliance’s weekly boat patrol. While on patrol, participants will look out for and document pollution in the water and along the shorelines (eg. spills, abnormal discharges from storm water pipes) and may remove marine debris from the water. Along the way, participants will learn the history of Seattle’s industrial development, and how businesses, government, community groups, and individuals are working together now to protect and preserve the waters of Puget Sound.
NOAA Western Regional Center Lab Tours and Lake Washington Kayak

Seattle is home to the largest NOAA campus outside of the agency’s headquarters in Silver Spring, MD. Visit NOAA’s Western Regional Center, which occupies 100 acres along the shoreline of Lake Washington and is home to many divisions within NOAA such as National Weather Service, NOAA Fisheries, the Pacific Marine Environmental Laboratory. Engage with NOAA scientists and tour some of their labs, including a hands-on tour of the National Marine Mammal Lab’s Scientific Bone Collection (killer whale skulls, gray whale bone, seal pelts). Then, enjoy an afternoon on the water by kayak and explore the coastline along Lake Washington.

NOAA Fisheries Manchester Lab Tours & Low-Tide Beach Walk

Start the day crossing Puget Sound on one of Washington’s iconic State ferries. Join research scientists for a tour of NOAA Fisheries’ Manchester Research Station, which specializes in culture, genetics, marking and tagging of salmon and other marine fish, and is home to a conservation hatchery for recovering endangered fish stocks. Unique features of this facility include a large floating marine net-pen complex and specialized rearing systems for fish studies; and an artificial stream channel with an underwater viewing chamber. Participants might get a sneak peek of a brand new native oyster restoration hatchery that will open in May 2014. After lunch, become better acquainted with Washington’s intertidal plants and animals during a guided low-tide beach walk. Learn about coastal habitats, water quality and beach etiquette before heading back to the ferry for the return trip and some awesome views of the Seattle skyline.

Ride the Ducks of Seattle

View the city from a full 360 degrees – by land, water and the sky! Explore the highlights of Seattle on board an amphibious landing craft, the Duck. Enthusiastic, Coast Guard-certified maritime captains will guide you on a tour of Seattle while narrating historical information and local folklore on both land and water. The adventure continues as you finish the tour at Seattle’s iconic Space Needle where elevators will propel you up 520 feet for a view of the Emerald City.
Prizes & Awards

This year the top three national teams will have the opportunity to select from the following three award prizes, with the national champions having the honor of making the first selection.

**Award Trip Option #1**
Mid-Atlantic region. Spend an exciting week on the Chesapeake Bay. Team members will spend one behind-the-scenes day at the Natural History Museum and National Zoo. They will tour science labs at the Smithsonian Environmental Research Center and kayak the Chesapeake. The team will also visit Sandy Point and tour some of the naval and nautical highlights Annapolis has to offer. This prize is provided courtesy of the Oceanic Engineering Society and IEEE, Smithsonian’s National Museum of Natural History, National Zoo, and Smithsonian Environmental Research Center. *(Trip Date: end of July-early August 2014, exact dates TBD)*

**Award Trip Option #2**
Maine/Northern New England. Team members will spend time on Maine’s unique rocky shores and in laboratories at the region’s premier marine research and academic facilities. They will also explore marine environments by boat, including a first-hand lobster boat experience. This prize is provided courtesy of the Oceanic Engineering Society and IEEE, Bigelow Laboratory for Ocean Sciences, and Gulf of Maine Research Institute. *(Trip Date: July 2014, exact dates TBD)*

**Award Option #3**
Team members and the coach that select this prize will each receive a GoPro video camera. The team will enjoy capturing and sharing their explorations of the natural world with this versatile camera. This prize is provided courtesy of the Oceanic Engineering Society and IEEE.

**4th – 8th Place**
Each team will receive a gift certificate to Amazon.com for marine science textbooks. The 4th place team will receive $875; 5th place will receive $750; 6th place will receive $625; and 7th and 8th place will each receive $500. These prizes are provided through the generous support by the Oceanic Engineering Society and IEEE. Each team will also receive a copy of *Life in the World’s Oceans*, courtesy of The Consortium for Ocean Leadership.

**9th – 13th Place**
Each team will receive a signed copy of *The Shark Whisperer (Tristan Hunt and the Sea Guardians)*, courtesy of author Ellen Prager.

James D. Watkins Sportmanship 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. The team will also receive a $500 gift certificate to Amazon.com. These prizes are provided courtesy of the James D. Watkins Fund.
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. With twenty-two teams competing, teams are not playing in divisions. Each team is placed by blind draw into a randomized schedule. Each team will play four other teams during the round robins for the opportunity to proceed to the double elimination portion of the tournament.

Scientific Expert Briefing (SEB):
The SEB involves all the participating teams and involves 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 to and answer questions from one of two panels of judges during the round robin portion of the competition.

Scoring for Advancement:
The top sixteen teams with the highest combined round robin (75%) and SEB (25%) scores are guaranteed a spot in 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 (if applicable); fewest number of losses; total number of points scored by a team; point differential, and finally, a coin toss.

Double Elimination:
The double elimination competition involves the top sixteen teams. 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.
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- **Round 1**: 9:00
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  - Raleigh Charter
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  - Bishop Sullivan
  - Langham Creek

- **Round 2**: 9:45
  - Juneau-Douglas & Princeton
  - Westwood & Coginchaug
  - Bishop Sullivan
  - Scripps Ranch
  - Eastside
  - St. Ann’s

- **Round 3**: 10:30
  - Juneau-Douglas
  - Raleigh Charter
  - Falmouth
  - Dexter
  - Bishop Sullivan
  - Langham Creek

- **Round 4**: 12:45
  - Juneau-Douglas
  - Falmouth
  - Bishop Sullivan
  - Scripps Ranch
  - Westwood
  - Langham Creek

- **Round 5**: 1:30
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  - Bishop Sullivan
  - Coginchaug
  - Westwood
  - Langham Creek

**Lunch**: 11:15

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Get In The Game!
Double Elimination Brackets

Round 1
Saturday, 3:00 PM

T-1
- Game 1
  SAFS 102

T-16

T-8
- Game 2
  SAFS 108

T-9

T-5
- Game 3
  SAFS 105

T-12

T-4
- Game 4
  FTR 106

T-13

Round 2
Saturday, 3:45 PM

Game 9
MSB 168

Round 3
Saturday, 4:30 PM

Round 4
Saturday, 5:15 PM

Game 21
SAFS 109
W to G27 • L to G25

Game 22
7th/8th Place
SAFS 107
W to G25

Game 17
SAFS 102

Game 18
SAFS 108

Game 19
SAFS 109

Game 20
SAFS 107

Game 21
SAFS 109
W to G27 • L to G25

Game 22
7th/8th Place
SAFS 107
W to G25
Double Elimination Brackets

Round 5
Sunday, 9:00 AM

Round 6
Sunday, 9:45 AM

Round 7
Sunday, 10:45 AM

Round 8
Sunday, 11:30 AM

Round 9
Sunday, 12:15 PM

W G21

Game 27
SCC 316

W G23

Game 25
5th/6th Place
SCC 316

LG21

W G22

LG27

Game 28
4th Place
SCC 303

Game 26
5th/6th Place
SCC 303

LG23

W G24

Game 29
3rd Place
SCC 316

Game 30
1st/2nd Place
SCC 316

(If Necessary)

Game 31
SCC 316

W G27 if they lost G30

2014 NOSB Top Science Expert Briefing Teams

1. 

2. 

3.
Bay Scallop Bowl
Stony Brook University
Regional Coordinators: Mr. William Wise, Mrs. Kim Knoll

Saint Ann’s School
Sarah Richards has taught science at Saint Ann’s School for 27 years, and has coached an NOSB team for all thirteen years of the Bay Scallop Bowl. Over the years, the team has placed second (once), third (twice), fourth (three times)... but never first. This was the year to do it! Team captain Ethan Skelskie has been on the team all four years and is delighted that the team is finally going to nationals. Senior Rosamund Berdann’s interest in marine science sparked when she attended Coastal Studies for Girls in Freeport, Maine. She especially loves marine mammals; her favorite is the humpback whale, Megaptera novaengilae. Senior Nathaniel Kavaler, a member of the team for 3 years, particularly enjoys studying physical oceanography. Sophomore Thomas Richards has been attending the Bay Scallop Bowl every year since age 6. Being the coach’s son, he always has had a passion for science, especially biology. Seamus Whoriskey is also a sophomore. He specializes in bony fish, sharks, and weather.

Blue Crab Bowl
Old Dominion University
Regional Coordinators: Dr. Victoria Hill, Dr. Carol Hopper Brill

Bishop Sullivan Catholic High School
Bill Dunn commanded ships at sea but finds coaching high school students a rewarding challenge. Along with assistant coach Carol Stapanowich, he enjoys preparing students for the NOSB competitions. Seniors Anna Chang, Will Harris and Cameron Springer (Captain) anchor the team while sophomores John Craig and Patrick West provide spark. Cameron will study engineering at MIT, UVA or Princeton, is an all-conference runner and credits his can of Sprite for his success. Will plans to study Naval Architecture at Webb Institute and is a varsity wrestler well known for his questionable music choices. Anna is currently choosing between Notre Dame, UVA, and Cornell. She enjoys biology and astronomy, and is a crew team coxswain. Patrick enjoys competing in NOSB as well as cross-country and piano. When not preparing for the NOSB, John is working on his golf game hoping he can buzz in from the Netherlands for next year’s matches.
Blue Heron Bowl
North Carolina State University
Regional Coordinator: Dr. Janelle Fleming

Raleigh Charter High School
The champions of the 2014 Blue Heron Bowl hail from Raleigh Charter High School, where Phoenix fly high overhead looking for water. Coached by Whit Hames, the team plans to take the competition by storm. The leaders are Ben Hames and Risigan Logendran, known as Fire and Ice after the NC State basketball combo; Ben with his speed and Risigan with his calm pair to make a powerful duo as they lead the RCHS team. They are joined by Priyansh Patel, Jay Rao, and Shayne Jacobs; with the acronym PJS as they plan on putting the competition to sleep with their ocean wave sounds and their love of reciting acronyms. They look forward to the scuba certification they won at regionals as underwater may be their most comfortable place. This is the fifth time for RCHS to attend the Nationals, but only Ben has attended from this team. Four seniors and a captain who is a junior will make this last plunge before spreading out across this land to college.

Blue Lobster Bowl
Massachusetts Institute of Technology
Regional Coordinators: Ms. Judith Pederson, Ms. Gayle Sherman, Ms. Kathryn Shroyer, Ms. Lori Tsuruda

Lexington High School
The oceans are all around us, without them we couldn’t live. / You wish you could learn about them, go down to the sand and sieve. / Been flying so long to get here, to land in Seattle-town. / With so many sights to see here! We glad to be on the ground! / NOSB—NOSB / Darling it’s better, here where it’s wetter, close to the sea. / Back in their home in Lexington, practicing with the buzzer system. / Where they devotin’ time to the ocean: NOSB! / The animals make them happy: the narwhal and the blob fish. / The red snapper, shrimp and tuna won’t end up upon our dish. / To come back again to Nationals, they’re feeling the thrill once more! / All ready to renew friendships, discover a Western shore. / NOSB—NOSB / Darling it’s sweeter, when coach Damassa bakes those brownies. Caroline B. and Mayukha, Roshan, Sneha, and Afareen. They love devotin’ time to the ocean: NOSB!
**Chesapeake Bay Bowl**
University of Delaware
Regional Coordinator: Mr. Chris Petrone

**Thomas Jefferson High School for Science and Technology**

When not proclaiming the merits of square-topped buzzers over round ones, the team enjoys participating in several activities. Chris keeps his aquarium tank carrying capacity at zero inhabitants, “Big Mama” Rachel professes sailing while avoiding most aquatic creatures, and Jared is literally a fish in the water as an acclaimed swimmer. J.C attempts to keep out of the water while golfing and Comfort has been living at the Baltimore Aquarium since she was half a fathom tall.

Sophomore “Baby” Jared will sorely miss his senior teammates next year. They are heading off to college where they will study engineering (x3), development economics, and advanced mantis shrimp imitation. Memorable moments from the last four years include heart-attack worthy comebacks, rib-crushing celebratory hugs, and the vanquishing of many formidable sea monsters.

**Dolphin Challenge**
Texas Sea Grant / Texas A&M University
Regional Coordinator: Ms. Terrie Looney

**Langham Creek High School**

The Langham Creek Ocean Science Bowl team is comprised of highly devoted students that are passionate about marine science because of the mysteries that lie beneath the ocean’s surface. The team is coached by Amanda Sebesta who has taught Aquatic Science for 7 years and shares her students’ fascination with the oceans. Veteran team members Madison Selldin, Amanda Fontenot, Jaffar Syed, Aleeya Ali and Malek Williams revel in the intensity of the NOSB competition and enjoy getting to meet students with a shared love for the oceans. Winning the 2014 Dolphin Challenge will forever be remembered by Langham Creek because the tie breakers, buzzer winning questions and difficult team challenge questions really intensified the competition. The team members have all decided on different paths for their future ranging from Computer Science to Marine Biology. Wherever their path may lead them, the vast oceans will always captivate their hearts and minds.
Great Lakes Bowl
University of Michigan, School of Natural Resources and Environment
Regional Coordinator: Ms. Whitney Conard

Dexter High School
Cheryl Wells has coached the DHS Ocean Science Bowl team since 1996. Team members: Senior Graham Northrup (Captain) has many passions including improving troupe Off-Q. He will be attending the University of Chicago in the fall to study applied mathematics. Graham’s favorite ocean creature is the blue bottle. Junior Alec Smerage participates in cross-country, plays violin in his school and the MYSO orchestra. He intends to study engineering in college. His favorite marine critter is the kingfish. Noah Knoerl-Morrill participates in debate, drama, and several choirs. He hopes to study genetics, classics, and music. His favorite ocean-dwelling organism is the sea slug. Will Wendorf enjoys band and Quiz Bowl. His favorite ocean creature is the emperor penguin. Ryan McGinnis is in band, cross-country, beekeeping, and plant growing. He hopes to be an environmental lawyer to serve the oceans he loves. His favorite marine organism? The bluntnose six-gill shark.

Grunion Bowl
Birch Aquarium at Scripps, Scripps Institution of Oceanography
Regional Coordinator: Ms. Kristin Evans

Scripps Ranch High School
Get ready to meet one whale of a team! Team Captain Jake, a budding astrophysicist, is joined by Tyler, who likes computer science, Edwin, a future professional gaming coach, Wenhao, a future CEO, and Michael—who wants to be rich. Of course, we all love whales. We’re excited to explore ocean acidification (it’s not a basic topic!). Favorite NOSB memories include stroking sea cucumbers and poking anemones. We’d like to give a shout out to two amazing people, Mrs. Fowler and Sean Walstead, for their help and support. Having now put our best flippers forward, we can’t wait to “sea” you at the national competition.
**Hurricane Bowl**
University of Southern Mississippi, Gulf Coast Research Lab, Marine Education Center
Regional Coordinator: Ms. Elizabeth Jones

**Poplarville High School**
Poplarville High School’s NOSB team, the Fish Fighters, first appeared at nationals in Charleston, SC dressed as the Village People, or as they called themselves, the Poplarville People. In the years since the Poplarville People, they have appeared as pirates, ninjas and last year as characters from Star Wars. In over ten years of coaching the Fish Fighters, Coach Mel Hall has led the team to six wins in the regional Hurricane Bowl. The Fish Fighters include Captain Stephen Mitchell, Rob Merrell, and Austin Stampley, all of whom are seniors along with sophomore Ben Jones and freshman Kaitlyn Barber. As time allows, the team likes to take to the Gulf of Mexico, Mississippi Sound, bayous, swamps, and marshes of Southern Mississippi to experience our “water world” first hand. The team enjoys investigating navigable lakes at high altitude and have contemplated introduction of Physeter macrocephalus into Lake Titicaca.

**Lake Sturgeon Bowl**
University of Wisconsin Milwaukee School of Continuing Education
Regional Coordinator: Ms. Elizabeth Sutton

**Spring Valley High School**
Michele Huppert is in her tenth year coaching and loves watching her students learn, compete, and be inspired to pursue science careers. Senior Captain Claire Arneson plans on majoring in physics at UW Eau Claire next year. Claire likes to read ocean books and ski, both downhill and cross country. Tyler O’Keefe, Senior, will major in biology at Carleton College next year. Tyler enjoys kayaking, snowshoeing, and practicing his buzzer speed. Sophie Koch, Senior, is planning a career as a scientific journalist. Sophie loves fossils and entomology. Tana O’Keefe is Tyler’s twin sister and new to the team. Tana will study chemistry at University of Minnesota – Duluth next year, and she really likes Carbon-12. Esther Gland, Sophomore, is ecstatic to be on this team and excited for next year, too. The team is looking forward to actually visiting the ocean, meeting interesting people, and the finals competition.
Chaparral Star Academy

Chaparral Star Academy is excited for its 7th national tournament; having dedicated numerous hours to continue the school’s mission of reaching goals through hard work. Kris Barnett enters his 6th coaching year with co-coach Allyson Fox in her 3rd year. Senior and Captain Randi Cannon is grateful to reach her dream of competing at nationals. With marine science being her main focus during high school, Randi will attend Texas A&M University-Corpus Christi to major in marine biology. Junior Brady Romero enjoys studying the Mantis Shrimp and plans to pursue computer engineering in college. The thrill of competition fires junior Alex Clarke and NOSB combines her love of science with this passion. Oceanography sparks Junior Kimberly Brockhausen’s scientific prowess while she adds an uplifting charm to the NOSB family. Sophomore Eric Clinch has earned the opportunity to further his scientific brilliance at the Texas Academy of Mathematics & Science next year.

Los Angeles Surf Bowl

Jet Propulsion Laboratory and University of Southern California, Wrigley Institute for Environmental Studies

Regional Coordinators: Ms. Ann Close, Ms. Kimberly Lievense

Arcadia High School

Karen Rapacon has coached Arcadia High School’s Ocean Sciences Bowl for the past three years. She is a biology teacher that also shares a passion for the marine sciences. Her team members Kathy Lee, Dorothy Chang, Lillian Chen, Kevin Wang, and Evin Zhao are eager to defend their school’s championship title at the national Finals Competition. The team has become very close through many practice sessions and enjoys spending time with each other. Evin’s favorite animal is the lobster because it tastes good. Lillian, on the other hand, loves the tripod fish for its unique qualities. Kevin loves studying meteorology and the Gulf Stream. Dorothy and Kathy often go to the beach together to enjoy the waves and add to their sea glass collection.
Hi, Coach McMillen here. Since I started coaching the team 6 years ago, we have greatly improved thanks to some swim coaching techniques. We have won our regions 3 out of the last 4 years and have been runner-up twice. Competition is an adrenalin rush and the kids think likewise...super competitive! Jeremy Johnson is brilliant and has really come on the scene in the last 2 years (future valedictorian). Jon loves diving and anything marine. Graham Oreo was kind of an intellectual until he joined the swim team. He discovered he had skills and never swam a race that he didn’t improve. He wants to be an MD. William Clarizio is also a swimmer and loves the water. He is a distance specialist and broke 7 minutes this year; not bad for a non year-round athlete. James Humphreys is our alternate. Don’t count him out; he answers the question no one else can but then is quiet inbetween. He loves baseball and fishing!
**Orca Bowl**

Washington Sea Grant, University of Washington  
*Regional Coordinators: Ms. Chelsea Kahn, Ms. Nancy Reichley, Ms. Maile Sullivan*

**Ocean Research College Academy**

The students at the Ocean Research College Academy engage in localized marine environmental research in Everett, WA. Team members conduct in-depth studies through monthly boat-based research excursions in the region. Students monitor physical, geological, chemical, and biological metrics of an estuarine system. Through this study, team members explore more deeply topics of their interest. For example, Alexis Dittoe and Karrin Leazer focus on plankton abundance and diversity. Jerod Flores is mentored by Christine Heisen (former team captain on her way to Germany during the Finals) on the heavy metal legacy from industry in the region. Rikki Tsoi and Lauren Hunter monitor the marine birds and marine mammal abundance in the region. Co-coaches Ardi Kveven and Robin Araniva were participants in the very first Orca bowl—Ardi as a coach and Robin as a competitor.

**Penguin Bowl**

Pittsburgh Zoo and PPG Aquarium  
*Regional Coordinators: Dr. Ray Beiersdorfer, Ms. Margie Marks*

**Boardman High School**

Boardman is coached by accomplished Great Lakes mage, Heather Moran who has run the team for over 400 years and owes her oceanic wisdom to her being one fourth mermaid. The team is led by Matt Stark whose ginger powers enable his connection to creatures of the deep. Luke Carabbia noted a cartographical error which placed Boardman far inland when it is in fact located on the beautiful coast of Ohio, aiding our team’s preparation. Kaye Moyer spends her free time in the Florida Keys becoming one with the sea cows, hoping one day to rule over them. Megan Banks is a connoisseur of fine cuisine and loves spending time with her fish. However, they do not like it when she calls them sushi. Jimmy Jones is in the witness protection program. He is posing as an ordinary student, though his friends Carl, Sheen and his dog Goddard miss him.
Quahog Bowl
Connecticut Sea Grant, University of Connecticut & Project Oceanology
Regional Coordinators: Dr. Diana Payne, Mr. Thaxter Tewksbury

Coginchaug Regional High School

The Coginchaug Cephalopods studied the Juan de Fuca plate subduction zone off the Seattle coast, yet Squid and Octopus team mascots are packed! Deanna Puchalski (Captain), Amelia Bianchi, Tyler Bjarnason, Abby Eisner and Ryan Gossart have yet to “come back to shore” after their thrilling, first Quahog Regional Bowl victory. For eight years, the Coginchaug team, coached by Lorrie Martin, has been maneuvering through question banks in a fun-filled quest to “upset the Ocean State” and ship off to Nationals! Amelia, Tyler and Ryan will soon pursue careers in marine sciences; Deanna and Abby will launch into other fields of science and business. Armed with their top secret strategy, “push the button quickly and get the right answer,” the Cephalopods have “created a pearl” as they continue sharing their passion for the ocean and sincerely thank all who have made this NOSB dream a REALITY.

Salmon Bowl
Oregon State University
Regional Coordinator: Ms. Saskia Madlener

Boise High (aka Treasure Valley)

Coach Tony Baca has been a Quiz Bowl coach for eight years. During that time he has coached teams at NOSB, NSB and NAQT. He holds a B.S. and M.S. in electrical engineering and a J.D. in law focusing on intellectual property. He works for Hewlett-Packard Company. This year’s team is thrilled to be competing - ask any of the team members for the full story. The team consists of one junior (Eric Huang), and three sophomores (Nate Marshall, Benjamin Huang, Karthik Mouli). The team is competitive in all forms of science and quiz bowl competition. But they also enjoy other activities such as playing musical instruments, bird watching, and cross-country. While Idaho is not a coastal state, at least not yet, we do have a sea port.
Princeton High School

Coach Tim Anderson teaches a semester of oceanography at Princeton High School in New Jersey. Striped bass fishing with his son in Long Island Sound, and the late Pete Seeger and the Clearwater keep him inspired. Captain Rye Anderson claims to have never seen the ocean. Christina Chen is interested in pursuing fine arts and game design. Her favorite animal is the tiny, luminescent, velvet belly lantern shark. Ysemay Dercon is an animal and marine mammal lover, who loves to travel and explore local wildlife. Rebecca Feldherr’s grandfather, an amazing underwater photographer, who taught anatomy and cell biology, is a big part of why she is so intrigued by the ocean. Alicia Mills is an animal lover too, thoroughly enjoys traveling as well as learning about the ocean. We are all looking forward to taking part in this year’s NOSB in Seattle for some friendly, ocean-loving competition.

Rockdale Magnet School for Science and Technology

Diana Kennen has coached the Ocean Science Bowl team from RMSST in Conyers, Georgia for two years. She teaches AP chemistry and has been the sponsor of the school’s Science Team for 8 years. The NOSB team members, Megan Symons, Michael Smith, Sean Keeler, and Arianna Gibbs, are ecstatic about participating in their first national Finals competition. The team enjoys the competition and the opportunity to meet students from other teams. In order to prepare, the team spends a great deal of time reading books and articles on the marine sciences. Megan would like to pursue a career in science education. Michael intends to become an environmental attorney. Sean and Arianna will pursue studies in medicine and biochemistry. Even though they live in a landlocked area, they all have a great appreciation for the ocean, its importance, and its beauty.
**Spoonbill Bowl**  
*University of South Florida, College of Marine Science*  
*Regional Coordinator: Dr. Teresa Greely*

**Eastside High School**

Anne West-Valle has coached the Eastside Team from Gainesville, FL for 5 years, and is looking forward to her third trip to nationals. The Eastside Oceanography team loves everything about oceanography, except policy. Three members of team, Alvaro Valle, Alicia Frazer, and Olivia Jaeger have parents who are oceanographers and have thus been interested in the ocean since an early age. Their powerful charisma attracted the other two members, Art Inhatsenka, also known as Mike, and Camille Kima, to the team. The favorite organism of the team is the ninja turtle. Other than Alvaro, every member of the team is in their first year of competing. Alvaro’s favorite NOSB memories are competing at nationals with his brother in 2011 and 2012. Alvaro wants to study materials science, Camille is interested in power, Olivia is thinking of restoring art, while Art and Alicia are interested in biology. Choo choo.

**Tsunami Bowl**  
*University of Alaska, Seward Marine Center*  
*Regional Coordinator: Ms. Phyllis Shoemaker*

**Juneau-Douglas High School**

The Caballers consists of three Nationals veterans, Captain Ruby Steedle and the Johnnies (Connolly and Elliott), as well as Stephen H.F. Mell, Megan Sheufelt, and their illustrious coach, Brian Stoody. This is Coach Stood-Dood’s first year at the helm, and he is overjoyed with his well-behaved team’s stellar performance. Ruby, a senior, is in her second year with the team, and will study marine biology far away from Alaska next year. Johnny Connolly, a four-year participant, will pursue his love of hyperbolic speech and bioengineering at an unknown university. Stephen, the team’s knower of stuff and a four-year participant, looks forward to attending college or programming in his mother’s basement. Johnny Elliot, a junior, will be still attending JDHS and hopes to finally understand quantum physics. Megan, also a junior, loves this opportunity to break free of her bass clarinet and use her knowledge of antiquated geological processes.
The NOSB would like to give a BIG THANK YOU to all of our National Finals Competition question reviewers for their time, effort, and dedication to high quality NOSB questions.

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University of Delaware

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State University of New York at Stony Brook

We also need to extend a ‘THANK YOU’ to the many volunteer reviewers at the regional level who assist us each and every year!
The Consortium for Ocean Leadership is a Washington, DC-based nonprofit organization that represents 90 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.

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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)

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**NOSB’s Mission**
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)