

2020 Finals Competition



Understanding Human, Economic, and Environmental Resiliency in the Gulf of Mexico



TABLE OF CONTENTS



Sponsors	2
Letter from COL	3
Competition Itinerary	4
Letter from NOAA	5
Speakers	
Craig McLean.	6
Dr. Ellen Prager	7
Theme	8
Host Thank You	9
Virtual Game Summary	10
Team Bios	
Aloha Bowl.	11
Bay Scallop Bowl	12
Blue Crab Bowl	13
Blue Heron Bowl	14
Blue Lobster Bowl	15
Dolphin Challenge	16
Garibaldi Bowl	17
Great Lakes Bowl	18
Lake Sturgeon Bowl	19
Los Angeles Surf Bowl	20
Manatee Bowl	21

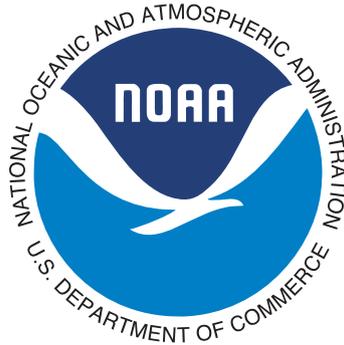
Nor'Easter Bowl	22
Orca Bowl	23
Penguin Bowl	24
Salmon Bowl	25
Sea Lion Bowl	26
Shore Bowl.	27
Spoonbill Bowl	28
Trout Bowl	29
Words from Our Sponsors	30-31
Question Reviewers Thank You	32

*For a better browsing experience,
open bookmarks in your PDF viewer.*



THANKS TO ALL OF OUR SPONSORS

The NOSB Would Not Be Possible Without Their Generous Support!



SCHWAB CHARITABLE FUND
MADE POSSIBLE BY THE GENEROSITY OF
WENDY & ERIC SCHMIDT



Sharon & Wayne
Sternberger





To say that the 23rd Annual National Ocean Sciences Bowl (NOSB) Finals is different from what we planned is a bit of an understatement. As you all well know, due to the ongoing public health situation surrounding COVID-19, we had to make several tough decisions very quickly about Finals. Early in March, it became clear we couldn't hold it as planned at the University of Southern Mississippi (USM)— would we postpone it? Cancel it entirely? Or could we figure out a way to hold it remotely? Thanks to lot of hard work from our national office staff, USM partners, Regional Coordinators, coaches, and volunteers, and with plenty of thoughtful input from the many members of our NOSB family, we settled on the virtual format you will take part in over the next several days. Our main goal was always to make sure that you, our hardworking NOSB students, still had the opportunity to (safely) compete at Finals. On behalf of the members of the Consortium for Ocean Leadership, I congratulate the teams who have made it this far by showcasing their extensive knowledge of – and passion for – ocean science, and I am pleased to welcome you to our first-ever virtual Finals.

Despite not gathering along the Gulf Coast for Finals as planned, the 2020 theme of *Understanding Human, Economic, and Environmental Resiliency in the Gulf of Mexico* is quite appropriate as we consider the resiliency challenges of today and tomorrow. In addition to sharing global concerns related to public health and climate change, the Gulf Coast faces ongoing threats from hurricanes, harmful algal blooms, and oil spills. The Deepwater Horizon event, which began almost exactly 10 years ago, resulted in what is now considered to be the largest marine oil spill in history. The serious impacts that spill had on the environment and the region's population shape science, research, monitoring, and education in the Gulf to this day. As the region balances the connections between human communities, Gulf ecosystems, and offshore energy production, decisionmakers look to work done by ocean scientists to help shape their policies. I hope this year's theme illustrates the tradeoffs in balancing competing resource needs within the ultimate goal of sustainability and inspires you to think critically,

cross disciplinary boundaries, and look at the “big picture” when it comes to working in ocean science — our future may well depend on it.

At the beginning of every year, I tell everyone how I believe the NOSB is the most important bowl of the season (sorry football fans). The Finals are certainly a highlight of my year, and while I regret that we can't be in the same place this year, I'm excited to watch the results roll in as you showcase your months of hard work and ocean science learning. **THANK YOU for your flexibility and willingness to be part of this NOSB experiment, and good luck to all!**

Sincerely,

Jon White, Rear Admiral, USN (Ret.)

President & CEO

Consortium for Ocean Leadership

COMPETITION ITINERARY



NOSB 2020 Virtual Competition Itinerary

**times listed in Eastern Time*

- Tuesday, April 14:** Virtual Meeting with Coaches/Zoom check, **6pm**
Students welcome to join
- Thursday, April 16:** Career Mentoring Event, **8pm – 9:30pm**
- Friday, April 17:** Opening Ceremony, **8pm – 9:30pm**
Featured speakers: Dr. Monty Graham (University of Southern Mississippi) and
Craig McLean (Assistant Administrator for NOAA's Oceanic and Atmospheric Research office)
- Saturday, April 18:** Modified, Virtual Competition, **9am – 5pm**
Preliminary rounds. Team time slots will be assigned, time zone will be taken into consideration.
- Sunday, April 19:** Modified, Virtual Competition, **9am – 2pm, 4pm – 7pm**
Preliminary rounds. Team time slots will be assigned, time zone will be taken into consideration.
Tiebreakers, if needed. Beginning of elimination rounds.
- Monday, April 20:** Modified, Virtual Competition, **2pm – 7pm**
Elimination rounds
- Tuesday, April 21:** Interactive Presentation with Ellen Prager, **7pm**
- Wednesday, April 22:** UN Decade #DrawYourDecade Activity, **(time TBC)**
- Thursday, April 23:** SEB Oral Presentations
Team time slots will be assigned, time zone will be taken into consideration
- Friday, April 24:** SEB Oral Presentations
Team time slots will be assigned, time zone will be taken into consideration
- Saturday, April 25:** SEB Oral Presentations
Team time slots will be assigned, time zone will be taken into consideration



Welcome to the 2020 Finals Competition of the National Ocean Sciences Bowl!

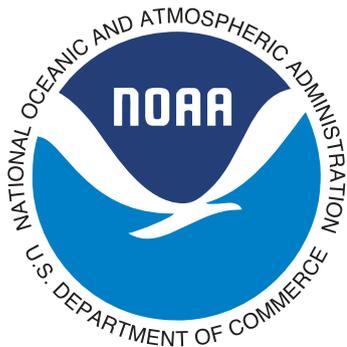
This year's theme on "Understanding human, economic, and environmental resiliency in the Gulf of Mexico" aligns well with the mission of the National Oceanic and Atmospheric Administration (NOAA) and covers the same topics that are the focus of our regional team for the Gulf of Mexico. NOAA plays a critical role in the stewardship of valuable Gulf of Mexico resources by leading efforts for better science and service in support of habitat restoration, sustainable growth, and hazard-resilient communities. We partner with universities, other federal and state agencies, and non-governmental organizations in the region to ensure that actionable Earth science is available in many areas including hurricane response, climate change, integrated assessments of ecosystems, community resilience, citizen engagement, coral reefs, critical habitats for protected resources, habitat restoration and conservation, fisheries and aquaculture, energy resources, and ports and shipping.

But it is not enough for NOAA to contribute to the science in these critical areas; our agency must also educate, inform, and inspire individuals to use this information to support robust economies, resilient communities, and healthy ecosystems and to serve as NOAA's future workforce. This is why, for 23 years, NOAA has supported the National Ocean Sciences Bowl (NOSB), providing funding, volunteer time, and expertise. I have witnessed the breadth and depth of knowledge and enthusiasm that NOSB contestants demonstrate at NOSB competitions. I hope that in preparing for, and participating in, this year's competitions, you gain an appreciation of the complexity of life in the Gulf of Mexico region, both the tremendous resources that exist here, but also the vulnerabilities that communities in the five Gulf states face. I hope your field trips provide further inspiration for your studies long after you return home.

Your hard work has paid off thus far. Congratulations! You are supported by many people working hard to ensure these NOSB competitions happen year after year. The support of your coaches, the regional coordinators, the NOSB National Office staff, and the hundreds of volunteers, who contribute their time and expertise to this program, are a testament to the ongoing inspiration the NOSB competition provides to all of us.

Good luck in this year's competition!

-- Louisa Koch, Director of Education, NOAA



A vision of resilient communities guides NOAA and its partners in a collective effort to reduce the vulnerability of communities and ecological systems in the short-term, while helping society avoid or adapt to potential long-term environmental, social, and economic changes. To achieve this vision, NOAA's dedicated scientists use cutting-edge research and high-tech instrumentation to provide citizens, planners, emergency managers and other decision makers with reliable information they need when they need it. To learn more about NOAA, visit

www.noaa.gov.

CRAIG MCLEAN

Assistant Administrator, NOAA OAR



Craig McLean is the Assistant Administrator for NOAA's Oceanic and Atmospheric Research (OAR) office. He is responsible for directing and implementing NOAA's research enterprise. Among numerous formal international engagements in science and technology, Mr. McLean serves as the U.S. Representative to the Intergovernmental Oceanographic Commission (IOC) and the Co-chair of the U.S. European Union Marine Working Group.

Mr. McLean previously served as NOAA's Acting Deputy Assistant Administrator of the National Ocean Service, was the founding Director of OAR's Office of Ocean Exploration and Research, and served nearly 25 years in NOAA's Commissioned Corps, making Captain's rank. Among his achievements and accolades, Mr. McLean led NOAA's planning for the Smithsonian Institution's Sant Ocean Hall and has won the Department of Commerce Silver and Bronze Medals, the NOAA Corps Commendation Medal, and Special Achievement Medal.



2021-2030 United Nations Decade of Ocean Science for Sustainable Development

The United Nations Decade of Ocean Science for Sustainable Development, 2021-2030 (Decade) is a unique 10-year, global cooperative program to expand scientific partnerships to support effective science, ocean management, and sustainable development. The Decade will provide a "once in a lifetime" opportunity to create a new foundation across the science-policy interface to strengthen the management of the ocean. The UN has outlined six goals that the world should hope to achieve during the Decade: (1) a clean ocean; (2) a healthy and resilient ocean; (3) a predicted ocean; (4) a safe ocean; (5) a productive ocean; and (6) a transparent and accessible ocean.

DR. ELLEN PRAGER

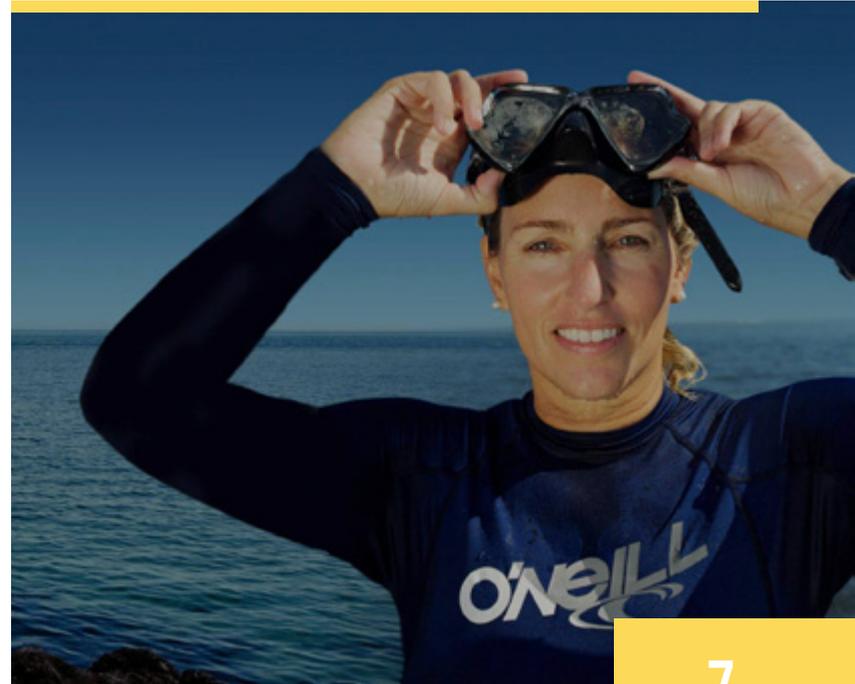
President, Earth2Ocean, Inc.



Dr. Prager is a marine scientist and author, widely recognized for her expertise and ability to make science entertaining and understandable for people of all ages. She currently works as a freelance writer, consultant, and science advisor to Celebrity Cruises in the Galapagos Islands. She was previously the Chief Scientist for the Aquarius Reef Base program in Key Largo, Florida, which includes the world's only undersea research station, and she was at one time the Assistant Dean at the University of Miami's Rosenstiel School of Marine and Atmospheric Science. Dr. Prager has built a national reputation as a scientist and spokesperson on Earth and ocean science issues and is a sought-after speaker for public-oriented events. She has appeared on The Today Show, NBC News, Good Morning America, CNN, Fox News, CBS Early Show, The Weather Channel, and in shows for the Discovery Channel, and was a consultant for the Disney movie *Moana*.

Dr. Prager focuses much of her time on bringing Earth and ocean science to the public through writing, working with the media, creating innovative partnerships, and speaking events. Her latest publication *Dangerous Earth: What We Wish We Knew About Volcanoes, Hurricanes, Climate Change, Earthquakes and More* takes an engaging look at what scientists wish they knew about some of the planet's most powerful forces. In October 2019 her adventure novel for middle graders, *Escape Galapagos*, was released. While full of fast-paced adventure, humor and relatable characters with teenage angst, the book also integrates science, conservation, and fun learning into the story. It is the first book in a series entitled *The Wonder List Adventures* published by Tumblehome, Inc. The first book in her previous middle grade series, *The Shark Whisperer*, has been called "an underwater Harry Potter". Dr. Prager's previous popular science book, *Sex, Drugs, and Sea Slime: The Oceans' Oddest Creatures and Why They Matter*, took an entertaining

look at marine biodiversity, its relevance to the average person, and why ocean life and resources are now at risk. Ocean advocate Carl Safina says of the book, "A great book for beginners and one even experts can learn from and enjoy — this is possibly the best general book ever written on creatures of the deep." It has also been called hilarious, tastefully salacious, and fascinating. She has written articles for scientific journals, public-oriented magazines, and several other books including *Chasing Science at Sea: Racing hurricanes, stalking sharks, and living undersea with ocean experts* and *The Oceans*. Dr. Prager has also published a series of children's books with the National Geographic Society, the first *SAND* received the 2000 Parents Choice Award, it was followed by *Volcano* and then *Earthquakes*.





Understanding Human, Economic and Environmental Resiliency in the Gulf of Mexico

The Gulf of Mexico is a tremendously important body of water due to its enormous productivity and economic, ecological, and cultural value to the five coastal states surrounding it. But it doesn't stop there — the Gulf is of great importance to the entire United States and the world, as well as its importance as a “living laboratory” for ocean science researchers. Its offshore depths, coastal wetlands, and submerged vegetation serve as an essential habitat for numerous species of recreational and commercial value. Oil deposits beneath its western edge make it an important region for oil energy resources and production. According to the U.S. Energy Information Administration, federal offshore oil production in the Gulf accounts for 17 percent of total U.S. crude oil production. The Gulf is also home to the Gulf Stream, one of the most powerful ocean currents in the global ocean, moving warm water from the Gulf into the North Atlantic and moderating temperatures along the East Coast of North America and the coasts of Western Europe and Northwestern Africa.

The human use of and impact on the Gulf create a challenge for resiliency. Contamination from oil production, shipping, and agricultural runoff harm ecosystems. The Gulf experiences “dead zones” due to heavy nutrient loads from the Mississippi River fueling large algal blooms that deplete oxygen to levels insufficient to support most marine life. Human development, water management, and industrial activities contribute to loss of wetlands and land subsidence, the impacts of which are exacerbated by sea level rise and other environmental changes. These stressors are difficult to tackle individually; in the Gulf, they have complicated, cumulative, and uncertain effects. Gaps also remain in our knowledge on how multiple stressors interact and impact the health, security, and resilience of the Gulf's marine life, oceanic and estuarine ecosystems, coastal communities, and those across the United States who depend on the Gulf's ecosystem services.

Our 2020 theme centers on connecting human and environmental systems within the Gulf. The 2020 national Finals will coincide with the 10th anniversary of the Deepwater Horizon oil spill, an event that exemplifies the challenges in the Gulf but also provided an opportunity for researchers, ocean science institutions, and numerous stakeholders to better understand regional dynamics and support recovery and resilience actions in the “living laboratory” of the Gulf.

THANK YOU TO THE HURRICANE BOWL AT



THE UNIVERSITY OF
SOUTHERN
MISSISSIPPI®

The NOSB National Office thanks the Gulf Coast Research Laboratory (GCRL) Marine Education Center at the University of Southern Mississippi (USM) for all the hard work they put into the planning of our 2020 NOSB Finals competition. It's truly unfortunate the event had to be canceled due to the COVID-19 health crisis. But we can still celebrate our Finals host, our 2020 theme, and importance and beauty of the Gulf of Mexico. This coastal region exemplifies how researchers, ocean science institutions, and numerous stakeholders are better understanding the science of ecosystem recovery as a result of environmental restoration projects and what is needed to support ongoing and future recovery and resilience actions.

We had hoped that students attending the 2020 Finals would enjoy learning first-hand about the Gulf of Mexico, a body of water with tremendous importance to the five coastal states surrounding it due to its enormous productivity and economic, ecological, and cultural value, but also to the entire country as it serves as a "living laboratory" for ocean science researchers. The 2020 theme, "Understanding Human, Economic, and Environmental Resiliency in the Gulf of Mexico" remains timely, even as we meet and compete virtually this year, as the Finals competition dates coincide with the 10th anniversary of the Deepwater Horizon oil spill, an event that precipitated a need for a better scientific understanding of the Gulf's coastal

environments and the how the oil would impact the health, security, and resilience of the Gulf's marine life and oceanic and estuarine ecosystems, both in the short- and long-term.

We sincerely appreciate the commitment and dedication of USM leadership for planning a Gulf Coast Finals competition and their willingness to assist with the necessary virtual event. We are obviously saddened that the in-person Finals had to be canceled, but we are certain the national Finals competition will find its way back to the Gulf Coast of the Magnolia state in the future.

The Gulf Coast Research Laboratory is also the host of the NOSB's regional Hurricane Bowl. The bowl's Regional Coordinator, Aaron Lamey, deserves a huge thank you for all the time and effort he put in to planning a fun and educational Gulf Coast Finals competition! The Hurricane Bowl was established in 1998 as one of the original 16 NOSB regions and has hosted two previous Finals competitions as well – in 2005 (Biloxi, MS) and 2015 (Ocean Springs, MS).



The MEC connects people with coastal sciences and research through school visits, summer camps, professional development for teachers, college programs, and citizen science.

VIRTUAL GAME SUMMARY



Science Expert Briefing (SEB):

The teams that submit their SEB written testimony by the deadline are eligible to compete in the virtual competition rounds. In a closed session, each team will also present oral testimony to, and answer questions from, a panel of judges. The oral testimony component of the SEB will be conducted after the virtual competition rounds. Therefore, the SEB scoring will be separate.

Competition Rounds

Preliminary Rounds:

Due to the need for a virtual competition, teams will not be playing head-to-head as in traditional round robins. Each team will play individually and have the opportunity to answer the same number of buzzer (toss-up and bonus) and Team Challenge Questions (TCQs). Teams will earn points for correct answers and the interrupt penalty will not apply.

Scoring for Advancement:

The top eight teams with the highest preliminary round scores will move on to the elimination rounds portion. All of the remaining teams are then eliminated.

Seeding for Elimination:

Seeding for the elimination portion, and final rank for the competition, is based on the game points earned by each team during their preliminary round. Ties will be broken through a series of TCQs.

Elimination Rounds:

The elimination rounds involve the top eight teams, which are seeded based on their results in the preliminary rounds. After the first series of elimination rounds, the top four teams will compete again; then the top two teams, until one team comes out on top. Ties in the elimination portion will be resolved with a group of five toss-up questions (no bonus) to determine a winner. This procedure will be repeated until there is a winner.

PARTICIPANT CODE OF CONDUCT & ANTI-HARASSMENT POLICY

The Consortium for Ocean Leadership and the National Ocean Sciences Bowl are dedicated to providing a harassment-free experience for everyone, regardless of gender identity and expression, age, sexual orientation, disability, physical appearance, body size, race, ethnicity, religion (or lack thereof), or other protected category. We do not tolerate harassment of participants in any form. NOSB participants violating these rules may be disqualified from competition or expelled from any NOSB events (in-person or virtual) at the discretion of the NOSB national office staff.

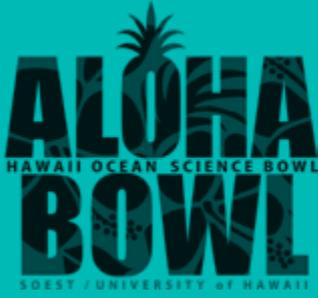
REPORTING: If you experience or witness disrespectful behavior and are uncomfortable or unable to respond or resolve it respectfully (for any reason), please immediately notify the NOSB Director, Kristen Yarincik, at:

kyarincik@oceanleadership.org

or (202) 448-1237.

Anyone experiencing or witnessing behavior that constitutes an immediate or serious threat to individual or public safety is advised to contact security or local law enforcement.

The full policy document is available at [NOSB.org](https://www.nosb.org).



Aloha Bowl

Hawai'i Sea Grant, University of Hawaii at Manoa

Regional Coordinators: Ms. Cindy Knapman, Ms. Heather Dudock

Punahou School

Coach Tiffany Coke has had the pleasure of working through physics concepts with students at Punahou School for 12 years. Her favorite lab involves circuits, although she has shocked herself an embarrassing number of times. A favorite pastime is discussing and dissecting movie physics.

Coach Adam Jenkins enjoys the ocean, physics, and best of all, ocean physics, including studying waves, surfing, sailing, and all kinds of navigation. Team members Maya, Ethan, Mattie, Jonah, and Noah are curious to see the sights in Gulfport, Mississippi. Ethan is fascinated by the physics of waves. Jonah is a dedicated surfer, kayaker, and diver. Maya enjoys scuba diving and watching spinner dolphins. Mattie is curious about soft-bodied invertebrates. And Noah is so excited about every aspect of ocean science that he read 300 pages of ocean policy!





Bay Scallop Bowl

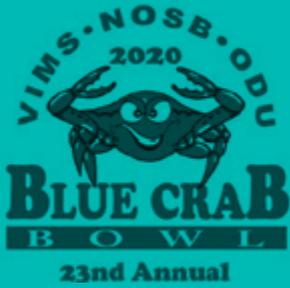
Stony Brook University

Regional Coordinators: Ms. Kim Knoll, Ms. Kaitlin Willig

Mount Sinai High School

Andy Matthews has coached the ocean science bowl team from Mount Sinai high school in Mount Sinai, NY on and off for the past 17 years. He received a master's degree in marine science at Stony Brook University's school of marine and atmospheric science in 1996. His team members include Arielle Mule, Aaron Angress, Katherine Fedotov, Jonathon Jacobson and Matthew Miller. Captain Arielle says: "I feel fantastic!", Aaron is still living his life humbly as a beardy bit, Katherine is excited to be playing Tetris in a new state, Jonathon's spirit plant is the red mangrove because he is the saltiest of the group, and Matthew quotes a famous turtle saying: "Cowabunga Dudes." The team is looking forward to competing and making new friends at this year's national competition in Mississippi. Good luck to all.





Blue Crab Bowl

Virginia Institute of Marine Science

Regional Coordinators: Dr. Carol Hopper Brill, Mr. William Dunn

Catholic High School

The team is led by seniors Matthew Mytych (Captain) and Andrew Michalak and supported by juniors Jacob Bovatsek, Robert Cajes, and Brandon Ly. Matthew, an expert on sea bears, plans to study Mechanical Engineering in college. Andrew, an artist and meme lover, will study biology and marine science in college to further his knowledge of sea toads. Jacob enjoys swimming, and has taken an interest in marine animals, especially the humpback whale. Robert, built like a blobfish, is a whale shark enthusiast and profound gamer. Brandon, an admirer of the axolotl, spends his time playing the piano and cello as well as destroying kids on Super Smash Bros. Coach Carol Stapanowich is ably assisted by Jennifer McMullen in bringing their 12th team to the NOSB finals. The team is honored to attend Finals and is excited about the opportunity to explore and learn more about the Mississippi Gulf coast.





Blue Heron Bowl

Coastal Studies Institute and East Carolina University

Regional Coordinator: Mr. David Sybert

Raleigh Charter High School

The 2020 Blue Heron Bowl champions hail from Raleigh Charter High School, home of the Phoenix. Their coach, Whit “Octopus” Hames with his acclaimed eyesight, watches each match, sighs with blurts, and cheers with fantastic play. Each team member creates waves of their own which constructively interfere to create the rogeust of waves to sweep the competition. Their Captain Arkin “Sailfish” Worlikar buzzes with speed and unites us all. Second up is the clutch Aditya “Spider” Ghali whose pycnogonida expertise led us to greatness. Next, we have Jack “Cousteau” Balint-Kurti who has meditated for years on ocean history and vessels. Henry “COOS” Macomber with his technology expertise continues the Macomber family history of Blue Heron Bowl winners. Syed “Nautilus” Shah has studied the deep sea to withstand inconceivable pressures like those found in Ocean Bowl matches with a 2-point difference and 5 seconds left. May luck be on your side.





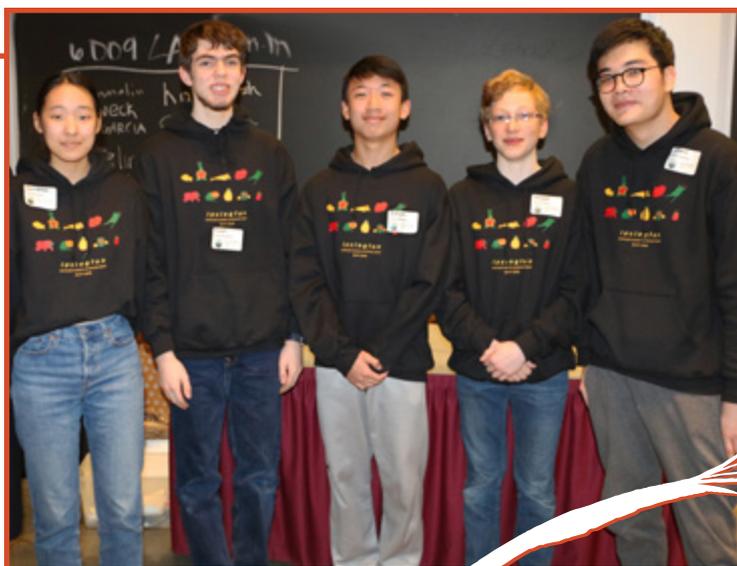
Blue Lobster Bowl

Massachusetts Institute of Technology Sea Grant College Program

Regional Coordinators: Ms. Lori Tsuruda, Dr. Thomas Consi

Lexington High School

Lexington, despite being a landlocked town, is filled with ocean enthusiasts. Although the members of Lexington NOSB have studied the oceans intensely, they have never actually seen a real ocean nor what it contains. The team consists of five people, all of whom have diverse interests. Sunwoo, much like her favorite animal, the sponge, is sessile. She uses Wikipedia quite religiously. Lewis is an avid learner and consumer of marine organisms and won't hesitate to eat something new. Evan likes trains. His favorite edition of the NYC Subway Map is 1959. Ethan throws upside down plates to other people and finds it entertaining. Jasper is a type of rock. He also likes cephalopods. As mismatched as these interests may be, the team still shares a passion for learning whether water is wet or not.





Dolphin Challenge

Texas A&M - Galveston, hosted by Texas Sea Grant

Regional Coordinator: Ms. Julie Massey

Arkansas School for Mathematics, Sciences, and the Arts

Likely the third ever team to represent Arkansas at the Finals Competition, ASMSA is proud to hail from a state classified as coastal a mere 50 million years ago. Despite only sharing two brain cells, they managed to win the Dolphin Challenge in Galveston. Coach Dr. Lindsey Waddell teaches courses in geology, environmental science, chemistry, and oceanography, and she has been an Ocean Bowl coach for eight years. The team is composed of seniors Emily Smith, Kasey Meyer, Howard Orlina, Amadeo Scott, and Hadley Medlock. Following graduation, the members plan to pursue a variety of subjects — including chemistry (Emily; Georgetown University), environmental law (Hadley; Rice University), biology/environmental science education (Kasey), oceanography/climate (Amadeo), and rocks (Howard) — at universities across the country. Kasey, Amadeo, and Howard recently enjoyed spring break in Costa Rica helping sea turtles. Team Motto: “We might all be visually impaired, but we have our eyes on the prize.”





Garibaldi Bowl

University of San Diego

Regional Coordinator: Dr. Jennifer Prairie

Canyon Crest Academy

Students at Canyon Crest Academy have participated in NOSB for years. Our regional competition is named after California's state fish, the garibaldi, which you'll find in the ocean just six miles from the school. Team captain Alex Shahla loves to go to the beach and listen to the waves and watch for whales. Andrew Zhang is interested in marine biology and water pollution, as well as physical oceanography. Eleanor Crotty and Gavin Budikentjana are both certified scuba divers and plan to study marine biology in college. Richard Chen's older sister inspired him to use his passion for math and science to participate in NOSB. The whole team is excited to travel to Gulfport and meet teenagers from around the country who share their love of the ocean, and to see the Gulf, which is so different from the coastline they are familiar with.





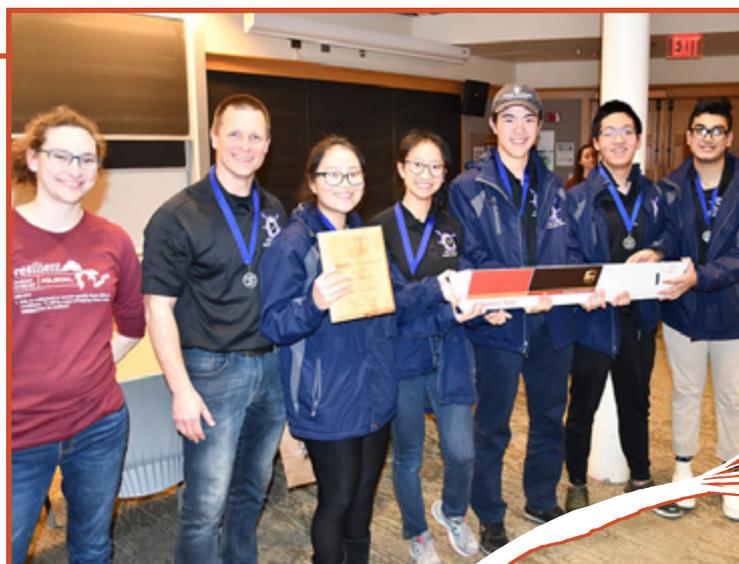
Great Lakes Bowl

Michigan Sea Grant

Regional Coordinators: Ms. Elyse Larsen, Mr. Kevin Keeler, Ms. Emily Rau, and Ms. Shannon Blair

Troy High School

The Troy High team is a paradigm for competitive spirit. Led by Jeff Moore, a beloved chemistry teacher at the school, the team focuses on bonding in order to develop an incredibly strong, near telepathic, connection. This has enabled the team, made up of members Pratham Soni, Matthew Dong, Allan Zhao, Carol Zhang, and Jasmine Wu, to transcend the Great Lakes Bowl and qualify for the National Finals. Although located in a prime location for hands-on oceanographic study, the team members have opted to consume textbooks in preparation for the competition due to their fear of water and inability to swim. As fickle teenagers, no team member has their heart set on a definite career path; however, through participation in the NOSB, we all hope to make great impacts in preserving the ocean and the vast wildlife it contains.





Lake Sturgeon Bowl

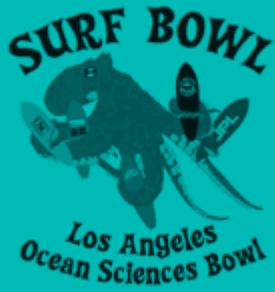
University of Wisconsin, Milwaukee - School of Freshwater Sciences

Regional Coordinator: Ms. Elizabeth Sutton

Ladue Horton Watkins High School

The Ladue Horton Watkins High School Ocean Bowl team from St. Louis, Missouri was formed in 2017 and is coached by captain and senior Christopher Ye. He and his teammates juniors Eric Yin, Jason Xu, Jason Ding, and freshman Max Yang are avid STEM competition participants. They are excited to attend their second ever National Finals. The team is passionate for ocean sciences because of how interdisciplinary the subject is, incorporating topics from ecosystem interactions to physical calculations. Their favorite NOSB memories are of gathering after school to practice buzzing, celebrating three close birthdays with blue cookie cake, and performing dangerously quick interrupts. The team's favorite animal is a Ramora, an intelligent, powerful, and legendary hybrid between the Ladue ram mascot and the remora suckerfish. Wei Ye and all of the other team parents have provided the five members with endless support.





Los Angeles Surf Bowl

Jet Propulsion Laboratory

Regional Coordinator: Ms. Kimberly Lievense

Santa Monica High School

Ingo Gaida has coached Ocean Bowl for 19 years, and in all this time, ours is the only team to make him consider retirement. Ireland “Bird-Flight-Pattern” Neville is the returning A1 Beachmaster. His universal motto: “W-I-N,” quoted in the JPL newsletter, is a testament to his commitment to NOSB. Captain Teddy Berger will be leaving every game at halftime due to mandatory track meets. We hope marine bio gives his life some porpoise, because something has to. Rosalind Jewett is only here because she’s deeply method-acting the role of a dork. Sara Akiba says she’d Ekman spiral out of control without her brother’s wise words: “Sara, that’s not how you pronounce that.” Sara is CURRENTly the baddest beach on the team. Somewhere between Acaditz and Acadarling lies Emily Chase. Leader of Operation Sunshine, Emily is a singer and actress who’s into dating, but only the carbon kind.





Manatee Bowl

University of Miami Rosenstiel School of Marine and Atmospheric Science

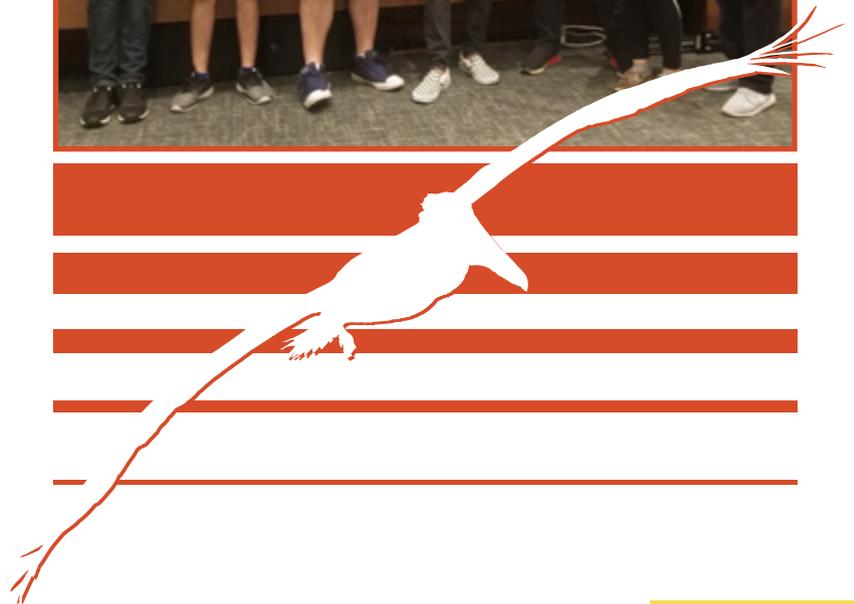
Regional Coordinator: Mr. Touri White

Westwood Marine and Oceanographic Academy (MOA)

We represent the Marine and Oceanographic Academy (MOA) of Fort Pierce, Florida. We are coached by Allen Ruppert and Susan Sennett. Team captain is Caleb Stacey (immunology, UM). Other members include Casie Schulz (cosmetology, IRSC), Matthew Zoll (marine biology, undecided), Salvatore Piazza (computer science, UF) and Chad Adkins (political science, LSU) and their favorite organisms are the dumbo octopus, nurse shark, emperor penguin, zooxanthellae, and mantis shrimp respectively.

We have been together at MOA for four years studying marine science partnered with Harbor Branch Oceanographic Institute at FAU deepening our commitment to the stewardship of the oceans. This is our first trip to Nationals.

We enjoy marine science because we have a love for the oceans and its effect on our education. This led us to NOSB for the team building environment along with the memories of previous coaches. Competitions were at HBOI and UM.





Nor'Easter Bowl

University of New Hampshire

Regional Coordinator: Mr. Mark Wiley

Narragansett High School

Narragansett High School students drive by the beach on their way to school every day which is the foundation of their passion for the ocean. Captain Bryn (whale shark) is hoping to attend UC Santa Barbara to major in aquatic biology with a minor in film. Senior Ryan (horseshoe crab) is passing on a trip to Spain to compete at Nationals. He plans on majoring in computer engineering. Senior chemist Erin (lobster...with claws) will be majoring in pharmacy at the University of Rhode Island. Juniors Julia and Shelby (harbor seal and sea turtle) are brine shrimp farmers. Sophomore Liam's favorite marine creature is the blob fish...really Liam? Sarah (Caribbean reef squid) has been coaching NOSB for 23 years. In the summer she scuba dives for quahogs with her husband Steve, a retired NOSB coach.





Orca Bowl

Washington Sea Grant, University of Washington

Regional Coordinator: Ms. Maile Sullivan

Newport High School

This is Newport's 3rd appearance at Nationals. This all-woman team is thrilled to compete and loves NOSB. Captain Isha is planning on double majoring in computer science and oceanography. Senior Sophie Wu will be attending Duke University and majoring in biomedical engineering. Senior Caroline Wu is planning on majoring in electrical engineering. Senior Ailis Clifford is excited to be starting her marine biology career and her first year in NOSB. Junior Joanne Wu loves biology and is looking forward to her first Nationals.





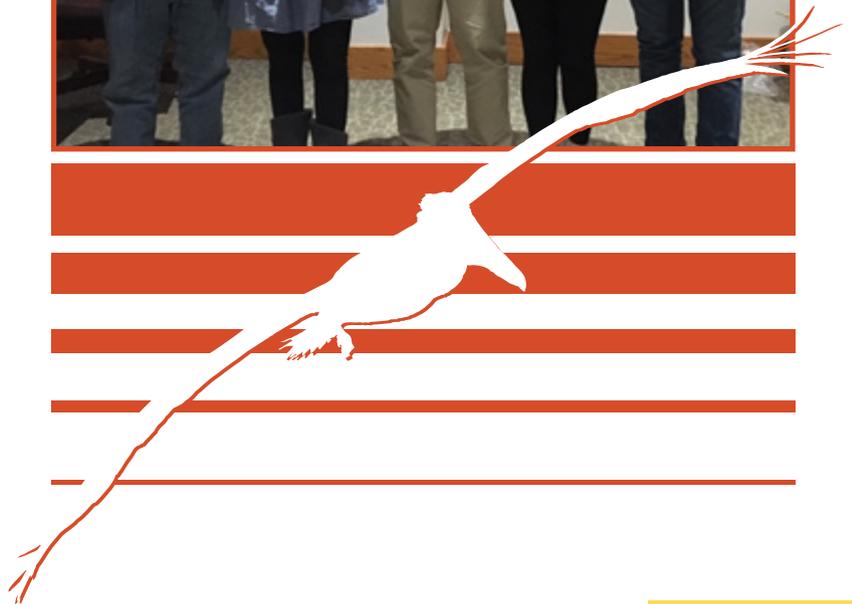
Penguin Bowl

Pittsburgh Zoo

Regional Coordinators: Dr. Felicia Armstrong, Ms. Margie Marks

Centerville High School

The Centerville High School Bone-Eating Snot Flowers are excited to participate in the 2020 NOSB National Tournament! Coming from Centerville, Ohio, they practice under the guidance of Mr. Jim Simpson, Mrs. Penny Manfredi, and Mrs. Beth Cahill. Across the team, there's a wide range of interests. William, the team captain, has an intense love of everything living under the sea and is burdened with the task of finding Auggie bread. Deklin stays up to date on the latest happenings of the ocean and enjoys learning about the history of the oceans. Shriya is our resident chemistry goddess and passionate about everything related to it. Alison has a deep understanding of and passion for Earth science and how it relates to the world's oceans. To round out the team, Auggie brings an intense knowledge and love of geography and history. Along with being our resident map-drawing expert, Auggie is also a carbohydrate connoisseur. Although the team is far from any major body of water, the competitors are unified by their genuine concern for ocean welfare along with their strong disdain for memorizing acronyms associated with marine policy.





Salmon Bowl

Oregon State University

Regional Coordinators: Mr. Andy Teahan, Ms. Toby Harbison

Benson Polytechnic High School

Benson's Ocean Bowl Coach is Kerry Zambrano, whose love for the ocean started on the Oregon coast and has taken her from southeast Alaska to the Red Sea. Our Benson Tech Team, Henry Senters, Alex Millican, Gabriel Bliss, Tory Norton, and Carson Ogren are all juniors. Veterans Alex and Henry have built up their knowledge and enthusiasm since their freshman year. Newcomers Gabe, Carson, and Tory are also extremely excited to compete in Nationals. Team Captain Henry leads the team in strategy and waves. Alex, geology whiz, loves how the ocean can connect almost every science. Gabriel, while being specifically interested in reptiles, can definitely hold his own in the field of biology. Carson, the most purple man we have ever seen, has a vast knowledge of the world. Tory participates in both NOSB and Dance Team, and she excels in both. We are Team Agnatha!





Sea Lion Bowl

California State University, Monterey Bay

Regional Coordinators: Dr. Corey Garza, Dr. Laura Good

Dougherty Valley High School

Kevin Jones is the coach of the Dougherty Valley High School team from San Ramon, California, where he teaches math. The team members include Edmund Young (captain), Venkat Ranjan, Prayrak Bajaj, Siddarth Vinnakota, and Harish Balasubramanian. Edmund, a senior, enjoys studying biology/computer science and learning about the different species of jellyfish as a result of going to the beach frequently. Venkat, a sophomore, is interested in geography and Earth science and also likes chemistry as well. Prayrak, a freshman, loves learning about biology and is interested in math. Siddarth, a senior, has an interest in physics and computer science. Harish, a sophomore, enjoys studying ocean policy and history.





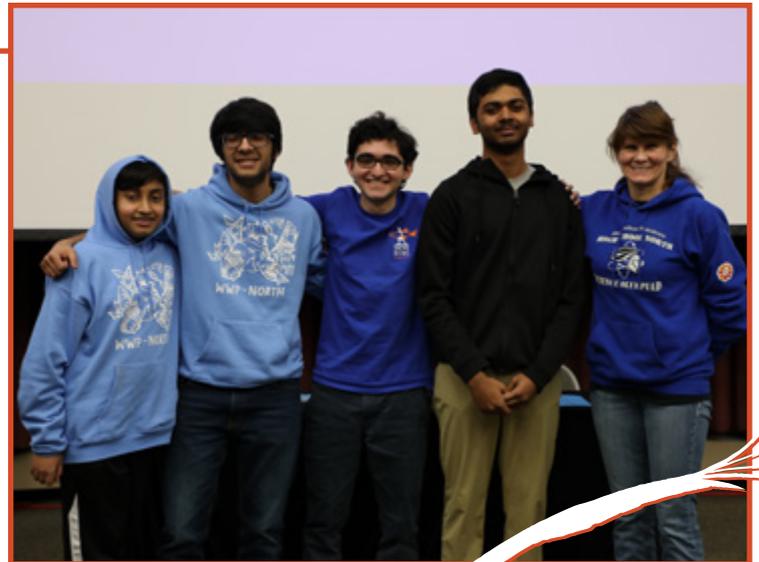
Shore Bowl

Rutgers University Institute of Marine and Coastal Science

Regional Coordinator: Ms. Rachael Saccatelli

West Windsor Plainsboro High School North

This is West Windsor Plainsboro High School North's first year qualifying for the NOSB National competition! The team includes Vijay Josephs, Vivek Vajipey, Keshav Ratra, and Shreyash Singh. Coached by Regina Celin, they are ecstatic to compete at a higher level than ever before and meet like-minded ocean science enthusiasts at NOSB 2020. Vijay's passion for oceanography and Earth sciences began in middle school and, as senior team captain, he is thrilled to share his appreciation for the oceans with others. He plans to become a physicist and pursue physical oceanography on the side. Vivek loves Earth sciences, especially geology and astronomy. Shreyash, a freshman, enjoys learning about meteorology and astronomy. Keshav, a junior, loves ingratiating himself with marine organisms, specifically those of the phylum Echinodermata. The team is excited to have learned so much about ocean science by preparing for and participating in the NOSB events.





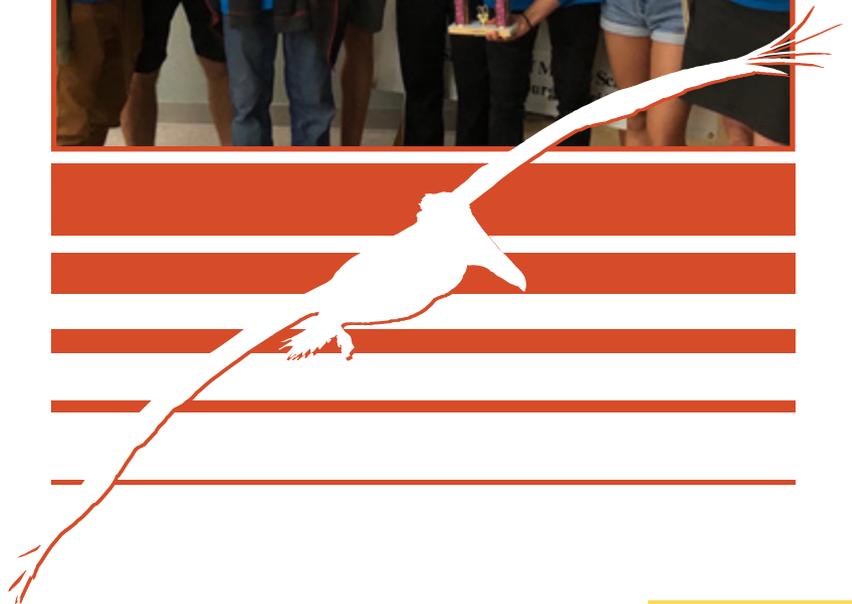
Spoonbill Bowl

University of South Florida, College of Marine Science

Regional Coordinator: Dr. Teresa Greely

Gainesville 4-H

The Gainesville 4-H team was created in 2018 by coach Emily An, a sophomore University of Florida marine science major who competed in the NOSB from 2014-2018 with Eastside High School. Assistant coach Sarah Wolking's love for marine science and supporting students in their endeavors to change the world motivates her to volunteer her time with 4-H and the NOSB team. Freshman Benjamin Wolking was inspired by Florida's vast coastlines and their preservation to study marine organisms and oceanography. After the update in Fortnite that allows for players to swim in rivers, sophomores Michael Janelle and Vishnu Gautam have become interested in marine science. Junior Ethan Cockey's favorite NOSB memory was filling and clogging a bathtub with various ingredients whilst studying with the team for regionals, and junior Bill Zhao joined the team due to an invitation from Ethan, becoming interested after he found out about the free cookies.





Trout Bowl

University of Colorado, Boulder

Regional Coordinator: Ms. Amanda Morton

Fort Collins High School

Angela Morris has coached an Ocean Science Bowl team from Fort Collins High School in Fort Collins, Colorado for the past 11 years. She began teaching a geology class with a marine focus eight years ago, due to interest in advanced Earth science. Suhaas Narayanan, Henry Cafaro, Alena Zhu, and Dustin Mock are excited to compete at Ocean Bowl Nationals. Suhaas is the only returning member of their national-bound team from 2018. The team loves practice, competition, working together to solve the TCQs, and eating. This team is composed of three seniors who are interested in pursuing a wide range of careers in biomedical engineering (Suhaas @ CU Boulder), mathematics (Henry @ University of Chicago) and biochemistry (Alena @ UCLA). Dustin, a sophomore, is thinking of science of some variety, but uncertain on the details. The Lambkins are ready to represent the land-locked states down in Mississippi @ Ocean Bowl Nationals.



1998



NATIONAL OCEAN
SCIENCES BOWL®

2020

The NOSB began in 1998, so that means every NOSB competitor is part of a long, rich history of ocean science education and career exploration. If you are a senior, don't worry, your important role in the program does not end here. For this program to continue to impact students like yourselves, we need your stories; we need to hear how the NOSB has impacted you during competing years and, later, how it helps you prepare for your future in college, in employment, and as a responsible, ocean literate citizen. After you graduate from high school and put down the buzzers, please stay in touch with your Regional Coordinators and the National NOSB office, and please participate in our ongoing longitudinal study. Your response is critical for ensuring the program's sustainability, allowing future NOSB students to benefit as you have!

Big Ocean questions...



need Big Ocean data.



Good luck to all the teams...

chasing their Big Ocean dreams!



CONGRATULATIONS TO ALL THE TEAMS IN THE NATIONAL OCEAN SCIENCES BOWL

WHAT FUTURE WILL YOU CREATE?



The Gulf Research Program (GRP) is putting science into action to enhance offshore energy safety, environment protection, and community health and resilience in the Gulf of Mexico and other U.S. coastal regions. Much of our work relies on advancing the scientific understanding of the ocean both now and into the future. By using science to address real-world problems, you can help create a secure future for the Gulf region.

LEARN MORE ABOUT OUR PROGRAMS AND GET INVOLVED:
[NATIONALACADEMIES.ORG/GULF](https://nationalacademies.org/gulf)
FOLLOW US ON TWITTER @NASEM_Gulf

*The National
Academies of* | SCIENCES
ENGINEERING
MEDICINE

GULF RESEARCH PROGRAM

THANK YOU
THANK YOU
THANK YOU
THANK YOU
THANK YOU



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.

Dara Cadden – *Naval Oceanographic Office*

Alex Draper – *Georgia Institute of Technology*

Katherine Fillingham – *Consortium for Ocean Leadership*

Leah Gaines – *Arizona State University*

Ari Gerstman – *University Corporation for Atmospheric Research*

Evan Howard – *MIT/WHOI*

Abigail Johnson – *Georgia Institute of Technology*

Annabelle Leahy – *Consortium for Ocean Leadership*

Jim Lubner – *University of Wisconsin Sea Grant*

Charna Meth – *Southeastern Universities Research Association*

George Sharman – *National Oceanic and Atmospheric Administration (retired)*

Ned Smith – *FAU Harbor Branch Oceanographic Institution (retired)*

Wayne Sternberger – *Johns Hopkins University, Applied Physics Laboratory*

Gene Williamson

Bill Wise – *New York Sea Grant (retired)*

Jonathan Whitefield – *University of Washington*

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 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



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