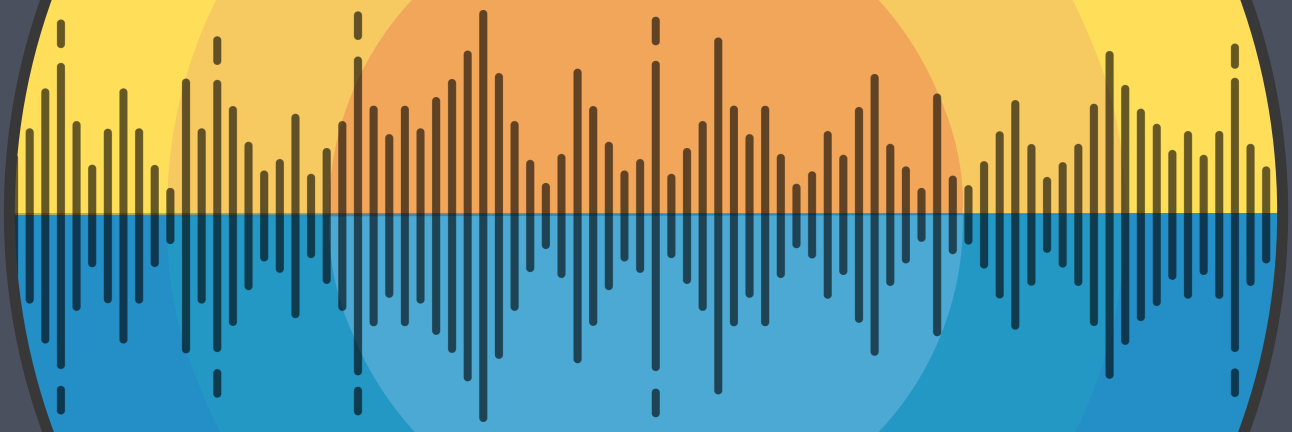
NATIONAL OCEAN SCIENCES BOWL®



Sounding the Depths:
Understanding Ocean Acoustics

2025 FINALS COMPETITION

TABLE OF CONTENTS

WELCOME

Welcome to the 27th annual National Ocean Sciences Bowl (NOSB) Finals Competition! While the Finals have been held virtually since 2020, I hope you're excited to compete in our first ever head-to-head virtual Finals. The level of technology needed to provide this opportunity is quite impressive - including the online buzzer system, COBA-cc, created during the COVID-19 pandemic, and the OSB Team Challenge Question software and master scoreboard, designed by NOSB alums! Nothing makes me happier than seeing past NOSB participants still engaging with the program, especially in ways that put their unique skill sets to use.

It's exciting to have the chance for our community to once again come together in support of you - our students - to celebrate your achievements at their regional bowls and now at the Finals. We also need to thank the dedicated coaches, resourceful regional coordinators, tireless volunteers, and the enthusiastic family and friend supporters that ensured you could compete in the competition you love, all while feeding your curiosity about the natural world.

This year's theme, "Sounding the Depths: Understanding Ocean Acoustics", invites you to dive into the fascinating world below the ocean surface. Acoustics is what lets us hear what we can't see, from the amazing songs of whales to the echoes used by scientists to map the seafloor...

WELCOME

Ocean acoustics is critical to answering so many research questions about fish populations, communication, shipwrecks, marine life behaviors, and navigation. But we also have to consider how growing human activity increases noise pollution that can negatively affect marine organisms. As our next generation of leaders, you may study how we can reduce noise pollution and contribute to healthy, sustainable marine environments.

More than 845 students from 26 states competed in the 2025 regional bowls, which means that those of you competing in the Finals are already winners - our country's top high school ocean science whizzes! I'm always inspired and impressed by your commitment to learning and eagerness to explore the myriad of topics covered in the buzzers and Team Challenge Questions, gaining knowledge as well as becoming stewards of our ocean planet. I wish you the best of luck as you compete again to become our 2025 champions!

Thank you for being part of the NOSB. I hope this weekend challenges your mind, fuels your passion, and connects you with fellow ocean enthusiasts, as well as experts in the field, from across the country....and the globe (thank you to our international volunteers).

As a reminder, the NOSB is a program of the Center for Ocean Leadership (COL), the newest University Corporation for Atmospheric Research (UCAR) Community Program (UCP). COL connects, convenes, and supports collaboration within the ocean science and technology community, represented by a network of affiliate institutions from academic, non-profit, and commercial sectors - many of which host your regional NOSB competitions. UCAR is home to numerous science education programs and I encourage you to check out their many resources to help you through your high school, college, and professional careers.

Dr. Sonya Legg
Director, Center for Ocean Leadership

HOSTS

NOSB National Office

The National Ocean Sciences Bowl (NOSB) is an education program of the Center for Ocean Leadership (COL), a Community Program of the University Corporation for Atmospheric Research (UCAR). Regional competitions are hosted by dedicated local institutions, organizations, and agencies across the country, while the National Finals are coordinated by the NOSB National Office team, Melissa Brodeur, Program Manager, and Nicole Palma, Program Specialist, with valuable support from a local host partner.

Local Partner

In 2025, People Making a Difference proudly hosted both the Blue Lobster Bowl and the Virtual Sponge Bowl, led by Regional Coordinator Lori Tsuruda. The organization specializes in creating fun, one-time volunteer opportunities in collaboration with community-based charities. Lori brings a wealth of experience organizing both in-person and virtual competitions for the National Ocean Sciences Bowl (NOSB) and the National Science Bowl (NSB). We're deeply grateful for her volunteer coordination expertise and the technical support she provided to help power this year's National Finals.

CODE OF CONDUCT

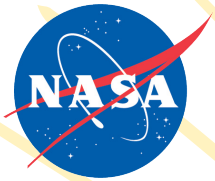
All event participants (students, coaches, and volunteers) must agree to the Center for Ocean Leadership and National Ocean Sciences Bowl Event Participant Code of Conduct and Anti-Harassment Policy.

The Center for Ocean Leadership (COL) and the National Ocean Sciences Bowl (NOSB) are dedicated to providing a harassment-free experience for everyone, regardless of sex, age, sexual orientation, disability, physical appearance, body size, race, ethnicity, religion (or lack thereof), or other protected identity. 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 your Regional Bowl Coordinator or Melissa Brodeur, NOSB Program Manager, at mbrodeur@ucar.edu, or by private Zoom (or virtual meeting platform) chat. Please note that a report to the on-duty point of contact, who is not a COL manager or supervisor, is NOT considered filing an official report / complaint with UCAR. Making a report to any COL manager or supervisor is considered an official report to UCAR regardless of whether the manager or supervisor is located on-site or off-site.

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 on the NOSB website.



The Curtis & Edith Munson Foundation

SCHMIDT OCEAN INSTITUTE

BOEM
Bureau of Ocean Energy Management

IEEE Oceanic Engineering Society

CHICAGO
The University of Chicago Press

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A FUND TO ADVANCE EARTH SYSTEM SCIENCE

THANK YOU TO THE 2025 NOSB REGIONAL AND NATIONAL SPONSORS!

is a program of

VIRTUAL COMPETITION ITINERARY

Thursday, May 1
- Optional Team Practice Session | 8-9 pm

Thursday, May 8
- Virtual field trip with MBARI's FathomVerse | 8-9 pm

Friday, May 16
- Opening Ceremony with USF CRESCENDO | 8-9 pm
- TCQ session 1a or 1b | 3-4 pm or 9:30-10:30 pm

Saturday, May 17
- TCQ session 1c | 9:50-10:45 am
- Round robin buzzer rounds & TCQ session 2 | 11 am-5:25 pm

Sunday, May 18
- Single elimination buzzer rounds & TCQ session 3 for top 8 teams | 12:30-4:45pm
- Awards Ceremony | 4:50pm

All times listed in Eastern. Visit the Finals webpage for additional details: www.nosb.org/2025-finals

2025 THEME

Ocean acoustics is the study of sound in the marine environment – a mixture of physical noise, biological noise, geological noise, and anthropogenic (human-caused) noise. By studying sound in the ocean, scientists advance our understanding of the ocean, its inhabitants, natural processes, and how humans have influenced the ocean system. Scientists can use active or passive acoustic technology. Active acoustics involves emitting sound waves and analyzing their echoes to study objects in the ocean, such as seafloor topography, fish populations, or a shipwreck. In contrast, passive acoustics involves capturing sounds from the surrounding environment with an acoustic device to monitor and estimate marine life behaviors and abundance, or investigate undersea volcanoes and earthquakes.

As sound is a primary means of communication for many marine species, disruption in acoustic environments can impact their behavior and survival. Specifically, ocean noise causes stress on marine life, disrupting communication, navigation, and marine behaviors of whales, dolphins, and fish. Prolonged exposure to high levels of underwater noise can lead to hearing loss, reduced feeding efficiency, and increased vulnerability to predators, threatening the existence of many organisms. Reducing ocean noise pollution contributes to healthier marine environments, supporting biodiversity and environmental sustainability.

Lastly, the study of ocean acoustics is also critical to society and our national security. The U.S. Navy is specifically interested in enhancing underwater navigation and communication, and the detection of submarines or other vessels. This knowledge helps improve maritime safety and maintains our nation's strategic defense in global waters. But studying sound is also essential for protecting marine ecosystems, which directly impact our food security, livelihoods, and the health of coastal communities which are key to the growing blue economy.

FEATURED SPEAKERS

Dr. Kakani Katija, MBARI, Principal Engineer

Dr. Kakani Katija is a Principal Engineer at the Monterey Bay Aquarium Research Institute (MBARI). As lead of the Bioinspiration Lab, Kakani and her group investigate ways that imaging and broad community engagement can enable observations of life in the ocean. As lead of the FathomNet program, Kakani guides the development of the FathomVerse mobile game.

Dr. Heather O'Leary, University of South Florida, Assistant Professor and CRESCENDO Project Director

Dr. Heather O'Leary champions citizen engagement for sustainable urban development. Her research interests include transnational disparities related to [human] rights, water politics, urbanization and the environment. She regularly presents on these topics at national and international anthropology conferences and works with governance institutions like the OECD to find social-science solutions.

O'Leary was a Wenner-Gren and a Fulbright Fellow in India, where she has traveled and performed ethnographic research in Hindi for more than a decade. She speaks Hindi and Urdu, having received a Foreign Language and Area Studies Award from United States Department of Education. She researches how sustainable development plans in coastal cities can be more [all-encompassing]. She is an active leader member of many respected anthropology organizations, including presently serving on the executive committee for the International Union for Anthropological and Ethnological Sciences and the steering committee of the World Anthropological Union.

VIRTUAL GAME SUMMARY

The NOSB virtual Finals Competition is composed of two elements: a Round Robin competition and a Single Elimination competition.

Round Robin

The Round Robin competition involves all participating teams. The 18 teams are placed by random draw into three divisions of six teams. These teams compete against one another for the opportunity to proceed to the single elimination portion of the game. Teams will complete their Team Challenge Questions (TCQs) individually in proctored sessions separate from the buzzer rounds.

Single Elimination

The Single Elimination competition involves the top eight teams. Competing teams are identified and seeded based on the scoring procedure described below. The winning team progresses on to the next match, while the losing team is eliminated from the competition. During the final match, the winning team becomes the national champion.

Scoring for Single Elimination Advancement

The top eight teams will be determined by a tally of wins, ties and losses. Regardless of the overall score, two points are awarded for a win; one point for a tie; and zero points for a loss. There will be no tie-break questions during the Round Robin matches. In case of a tie in Round Robin points, the tie will be broken according to: 1) head-to-head win/loss record, 2) average buzzer points scored, 3) total TCQ points scored.

PRIZES AND AWARDS

James D. Watkins Sportsmanship Award

This highly esteemed award is offered to the team that demonstrates the best sportsmanship throughout the NOSB Finals competition and associated events. The selected team will receive a three-day award trip to visit Boulder, Colorado to learn more about the University Corporation of Atmospheric Research (UCAR), the new home to the Center for Ocean Leadership and the National Ocean Sciences Bowl. This prize is provided courtesy of UCAR's Friends of the National Center Education Fund (Trip Date: July/August 2025, exact dates TBD)

1st - 2nd Place

This year the NOSB national office plans* to provide the top two national teams with award trips. The national champions will have the honor of making the first selection. (*Please note these award trips are dependent on successful fundraising efforts about which the national office is still awaiting word. If funding does not become available, the national office will provide the 1st and 2nd place teams with brand-new buzzer systems.)

Award Trip Option #1

Monterey, California. (Trip Date: July/August 2025, exact dates TBD)

Award Trip Option #2

Cambridge, Massachusetts. (Trip Date: July/August 2025, exact dates TBD)

PRIZES AND AWARDS

1st - 4th Place

Teams will receive the traditional engraved trophies celebrating their success.

3rd - 4th Place

Teams will receive copies of *Deep Water: From the Frilled Shark to the Dumbo Octopus* and *From the Continental Shelf to the Mariana Trench* by Riley Black and *From the Seashore to the Seafloor* by Janet Voight. These books are provided courtesy of University of Chicago Press.

5th - 18th Place

Teams will receive books on various ocean and atmospheric science topics provided courtesy of University of Chicago Press.

All Teams

All teams will receive an engraved plaque to celebrate their participation in the first-ever virtual head-to-head competition. All teams will also receive a copy of *Megalodons, Mermaids, and Climate Change: Answers to Your Ocean and Atmosphere Questions* by Ellen Prager and Dave Jones. These books are provided courtesy of StormCenter Communications.

All Coaches

Coaches of the 1st place teams at each regional competition will receive a complimentary one-year membership to the National Marine Educators Association (NMEA). These memberships are provided courtesy of NMEA.

BLUE CRAB BOWL

Host: Virginia Institute of Marine Science

Regional Coordinator: Bethany Smith

Winning Team: Warwick High School

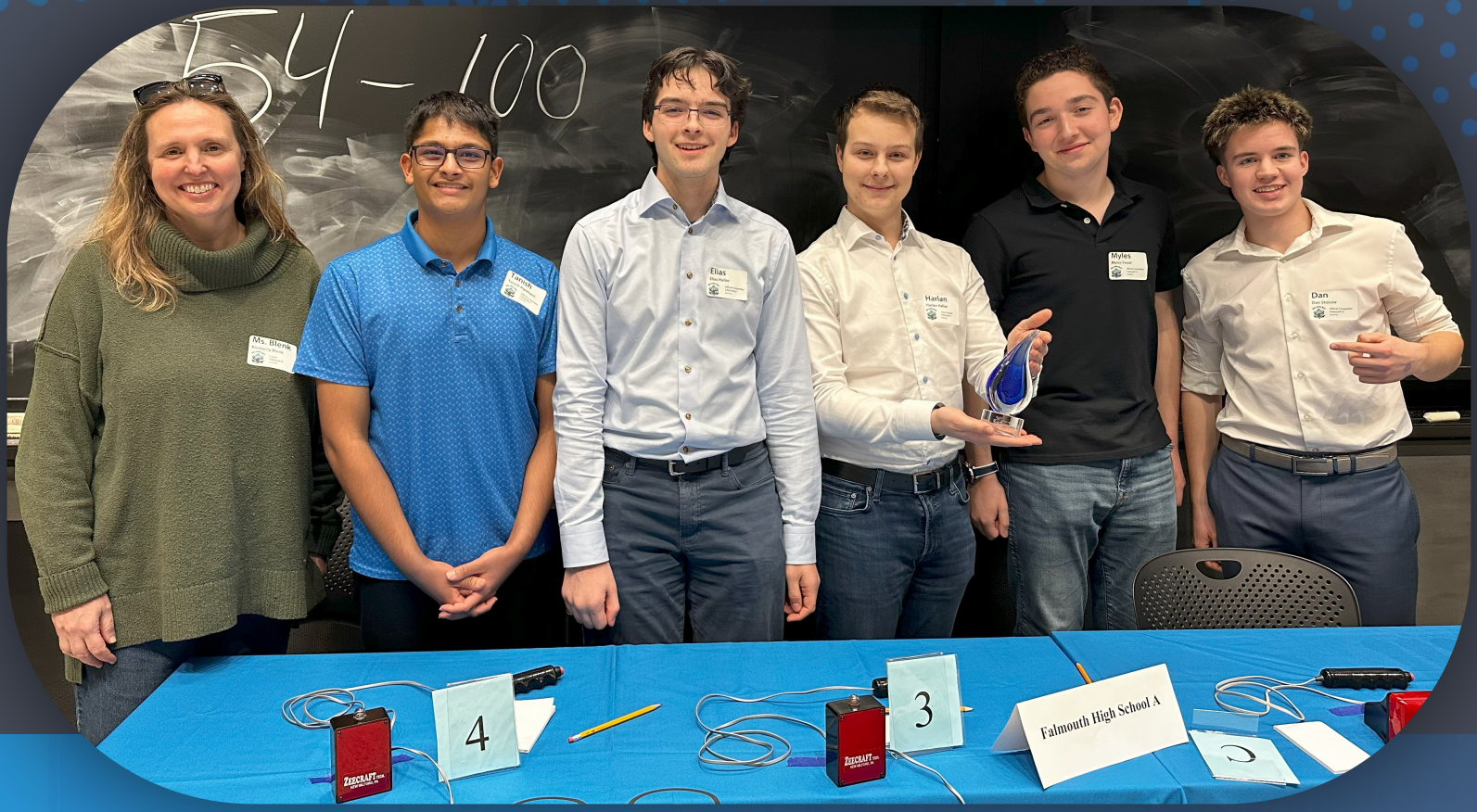
BLUE HERON BOWL

Host: MERROW Foundation

Regional Coordinator: Janelle Fleming

Winning Team: AQUAneers

BLUE LOBSTER BOWL



Host: People Making a Difference & MIT Dept. of Earth, Atmospheric, and Planetary Sciences

Regional Coordinator: Lori Tsuruda

Winning Team: Falmouth High School

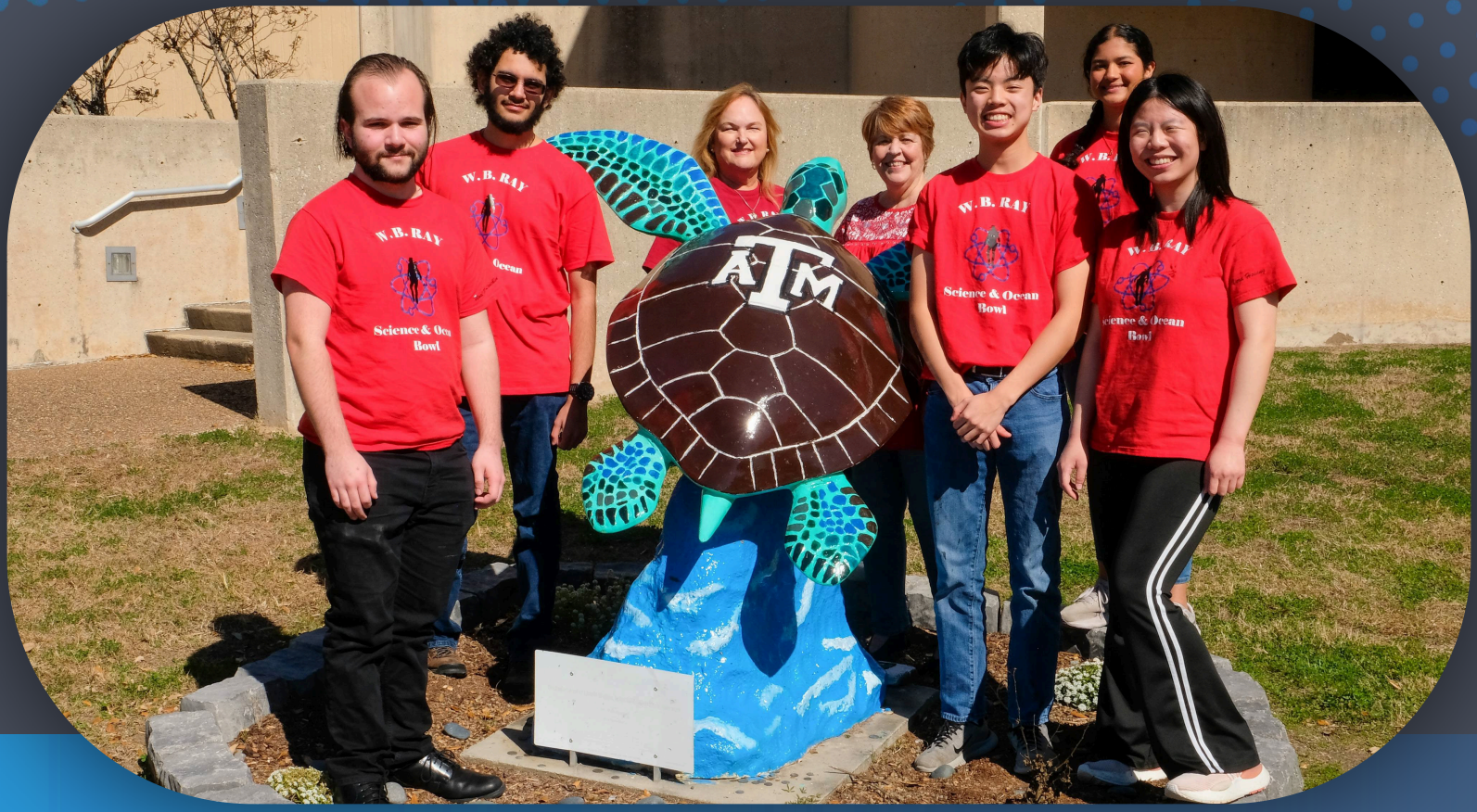
CHESAPEAKE BAY BOWL

Host: Delaware Sea Grant/University of Delaware

Regional Coordinator: David Christopher

Winning Team: Thomas Jefferson High School for Science and Technology

DOLPHIN CHALLENGE



Host: Texas Sea Grant at Texas A&M University

Regional Coordinator: Brandi Keller

Winning Team: W.B. Ray High School

GARIBALDI BOWL

Host: University of San Diego

Regional Coordinators: Darbi Berry & Jennifer Prairie

Winning Team: Canyon Crest Academy

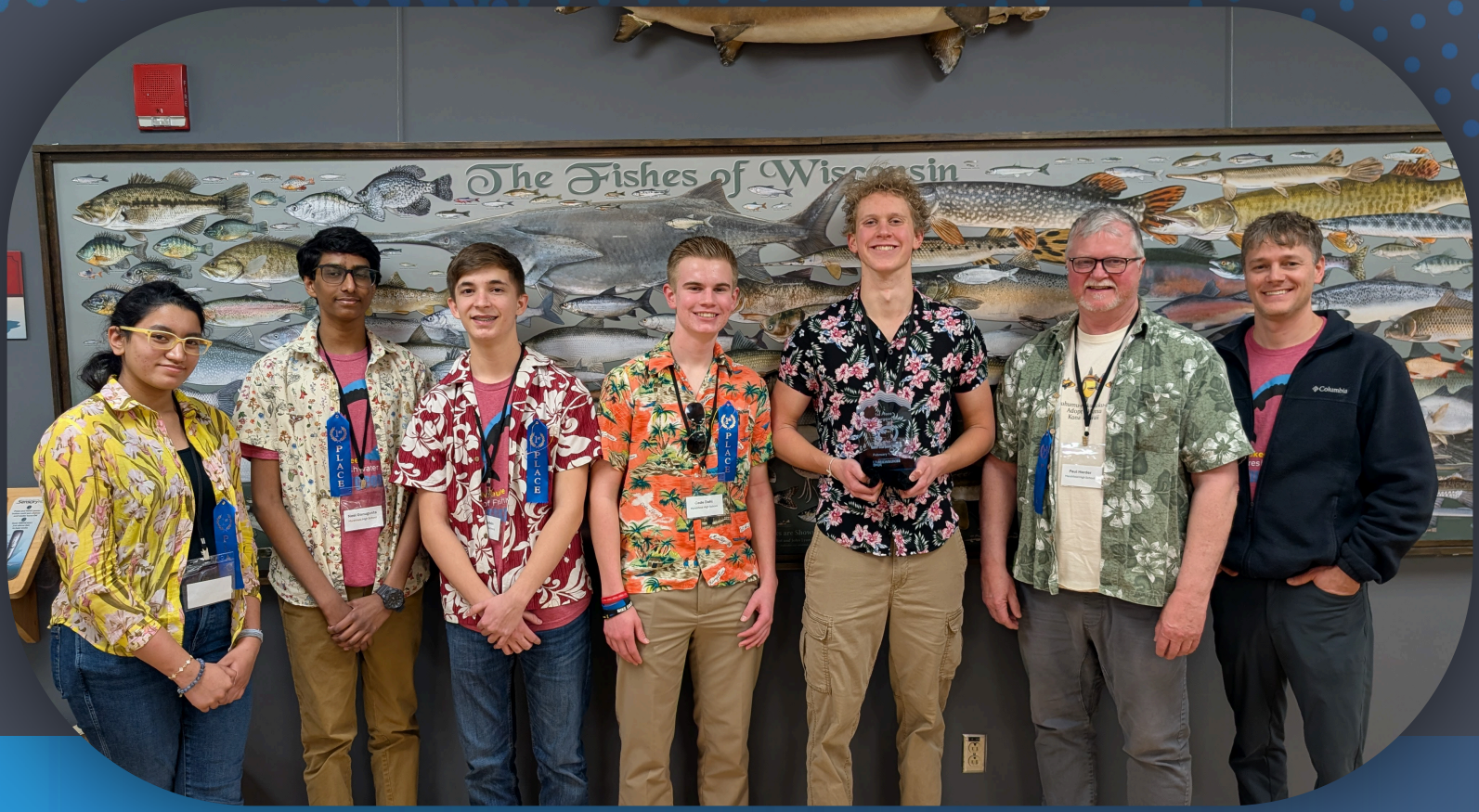
HURRICANE BOWL

Host: University of Southern Mississippi Marine Education Center

Regional Coordinators: Jessie Kastler, Samantha Capers, & Alicia Mount

Winning Team: Navarre High School

LAKE STURGEON BOWL



Host: University of Wisconsin - Milwaukee, School of Freshwater Sciences

Regional Coordinator: Liz Sutton

Winning Team: Marshfield High School

LOS ANGELES SURF BOWL

Host: Jet Propulsion Laboratory

Regional Coordinators: Kimberly Lievense & Kimberly Johansen

Winning Team: University High School

ORCA BOWL

Host: Washington Sea Grant / University of Washington

Regional Coordinator: Maile Sullivan

Winning Team: Tacoma School of the Arts

PENGUIN BOWL

Host: Youngstown State University and Pittsburgh Zoo & PPG Aquarium

Regional Coordinators: Felicia Armstrong & Margie Marks

Winning Team: Centerville High School

QUAHOG BOWL

Host: Project Oceanology & University of Connecticut at Avery Point

Regional Coordinators: Andrew Ely & Megan Szymaszek

Winning Team: E.O. Smith High School

SALMON BOWL

Host: Oregon State University, College of Earth, Ocean, and Atmospheric Sciences

Regional Coordinators: Jace Bell & Jessica Cunningham

Winning Team: Neah-Kah-Nie High School (second place)

SEA LION BOWL

Host: California State University Maritime Academy

Regional Coordinators: Alex Parker & Michael Strange

Winning Team: Lynbrook High School

SOUTHERN STINGRAY BOWL

Host: Savannah State University

Regional Coordinators: Victoria Young & Dionne Hoskins-Brown

Winning Team: Rockdale Magnet School for Science and Technology

SPOONBILL BOWL

Host: University of South Florida, College of Marine Science

Regional Coordinators: Teresa Greely & Makenzie Kerr

Winning Team: P.K. Yonge Developmental Research School

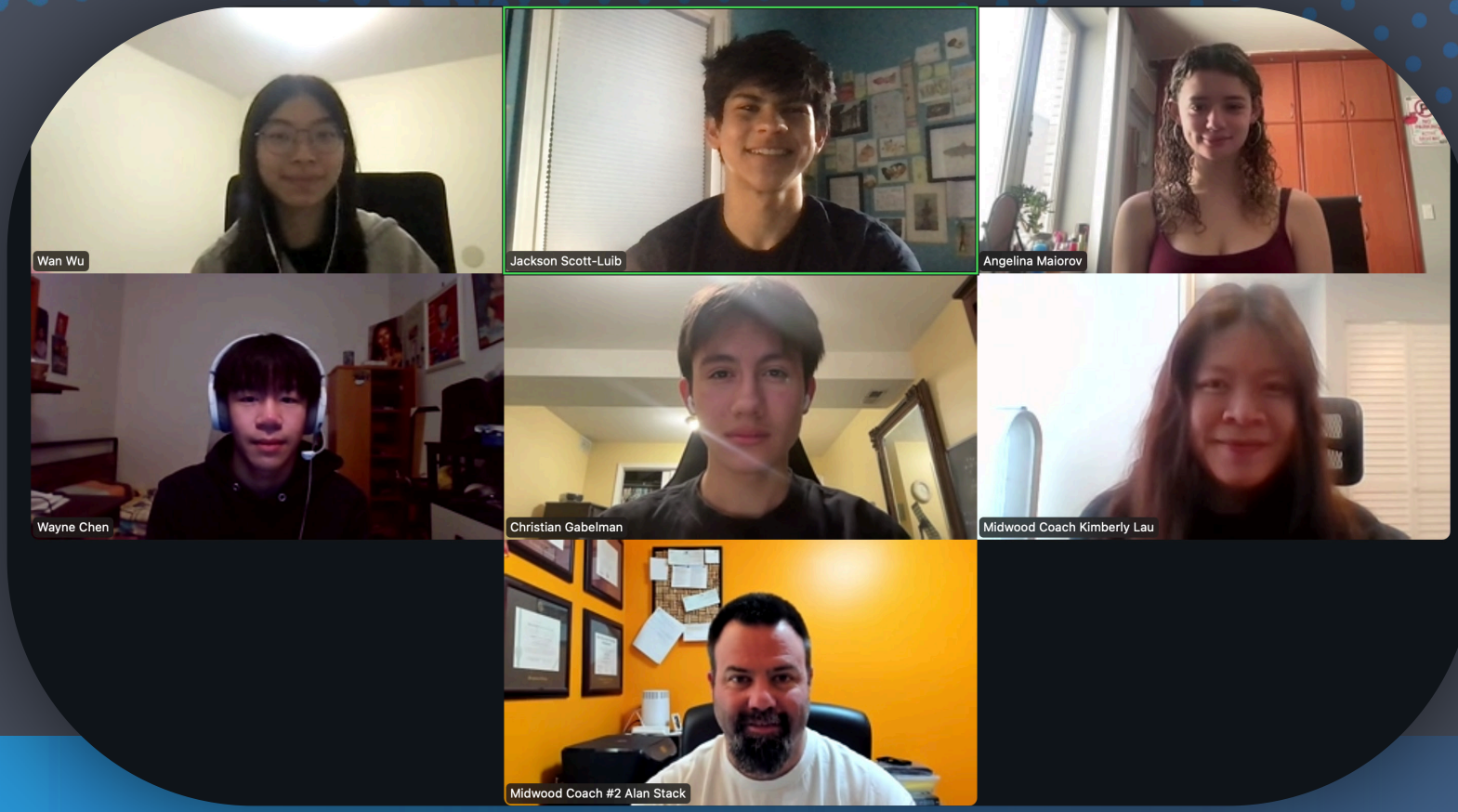
TSUNAMI BOWL

Host: University of Alaska - Fairbanks Seward Marine Center

Regional Coordinators: Jennifer Elhard

Winning Team: Juneau-Douglas High School

VIRTUAL SPONGE BOWL



Host: People Making a Difference

Regional Coordinator: Lori Tsuruda

Winning Team: Midwood High School

THANK YOU!

Wayne Sternberger	Retired (Johns Hopkins University)
Jason Krumholz	University of Connecticut
Magaleate Kostelnik	Florida Atlantic University - Harbor Branch Oceanographic Institute
Wei Ying Wong	Alaska SeaLife Center
Charna Meth	Scripps Institution of Oceanography
David Ludeke	NOSB Alumnus & Volunteer
Kristin Kleisner	Environmental Defense Fund
Deanesh Ramsewak	Centre for Maritime and Ocean Studies, The University of Trinidad and Tobago
Eugene Williamson	Northwest Aquatic and Marine Educators
Siddhesh Tirodkar	Post-doctoral fellow at Florida Atlantic University

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. We also need to extend a 'THANK YOU' to the many question writers and volunteer reviewers at the regional and finals level who assist us every year!

STUDENT OPPORTUNITIES

National Ocean Scholar Program

As part of the NOSB's continuing effort to recognize individual achievement, the Center for Ocean Leadership offers the National Ocean Scholar Program. This scholarship program provides tuition assistance (up to $1,000) for NOSB students who have an interest in pursuing an ocean or environmental science major in their first year of post-high school education. Graduating seniors are encouraged to apply by June 2, 2025. Visit the scholarship webpage to learn more.

NSF National Center for Atmospheric Research (NCAR) and UCAR

NSF NCAR and UCAR has a wealth of opportunities available for undergraduate and graduate students as well as postdoctoral researchers. These range from one-week workshops to summer-long internships to multi-year programs, and the opportunities span all our fields of study, from high-performance computing and data science to solar physics and climate science. Visit the Students and Postdocs landing page to learn more.

SUPPORT THE NOSB

Celebrate the 2025 National Ocean Science Bowl Finals with an official competition t-shirt and help support the National Ocean Scholar Program.

Proceeds provide scholarships for NOSB students pursuing ocean or environmental science degrees, helping them turn their passion into a career—and make waves in the world.

www.bonfire.com/nosb-finals-t-shirts/

SUPPORT THE NOSB

We need the help of our community now more than ever to ensure the NOSB thrives for another 27+ years! Students, coaches, and volunteers are the heart of the NOSB, bringing the program to life in communities across the country and experiencing firsthand the incredible impact it has on the next generation of ocean leaders.

Here are a few meaningful ways you can support the NOSB year-round:

- Join our mailing list via the NOSB website or by scanning the QR code
- Spread the word to help recruit new schools, teams, coaches, and sponsors
- Share NOSB resources and activities with educators, students, and ocean science enthusiasts
- Make a donation to support our mission: nosb.org/donate

NATIONAL OCEAN SCIENCES BOWL®

CENTER FOR Ocean Leadership

UCAR COMMUNITY PROGRAMS

Inspiring Tomorrow's Ocean Leaders

The National Ocean Sciences Bowl (NOSB) is an academic competition and program that addresses a national gap in environmental and earth sciences in public education by introducing high school students to and engaging them in ocean science, preparing them for ocean science-related and other STEM careers, and helping them become knowledgeable community members and environmental stewards.

Science - Competition - Stewardship

The Center for Ocean Leadership (COL) at UCAR, home of the NOSB, connects, convenes, and supports collaboration within the ocean science and technology community, represented by a network of affiliate institutions from academic, non-profit, and commercial sectors.

Mission

To serve, support, and convene the ocean science, education, and technology community as a trusted, neutral, and knowledgeable broker that facilitates strategic partnerships and collaborations, advocates for solutions to meet community needs, and enables broader participation in ocean education, science, and communication.