2024 INTERNATIONAL SEAPERCH CHALLENGE

UNIVERSITY OF MARYLAND
MAY 31 - JUNE 1, 2024

robonation

seaperch seaglide gosense roboboat robosub robotx IGVC SUAS IARC

SEAPERCH.ORG

Welcome SeaPerchers,

Congratulations on earning a spot at the 2024 International SeaPerch Challenge!

The 14th International SeaPerch Challenge brings together the 174 top-performing teams from around the world. Pause for a moment to recognize the significance of representing your team, school, and community this weekend. You and your team bring distinct qualities to make up this community of exceptional roboticists-in-training.

During your time here at the Challenge, we can't wait to see how you apply your creativity in designing your ROVs, ideating real world challenges, presenting your experiences to your peers and our community, and applying Science, Technology, Engineering, and Mathematics (STEM) throughout your experience.

But of course, no accomplished person is ever alone in their journey. We would like to recognize the parents, teachers, administrators, coaches, mentors, volunteers, and SeaPerch regional advocates – who devote time, energy, and care in mentoring and supporting all of you. We are grateful for the countless hours they have dedicated to you.

We know that all of you will have a memorable experience at this year's SeaPerch Challenge. We encourage you to learn as much as you can, connect with each other, be courageous, motivate one another, and most importantly – have fun!

As a nonprofit organization, our vision is a world where technology unites people to learn, share, and create. This weekend is a time for these connections to take place and for all of us to learn from each other and to celebrate what you have accomplished this season with your creations.

We wish you the best of luck today and in all your future endeavors. We are honored to be a part of your journey.

From,
The RoboNation Staff

THANK YOU TO OUR COMMUNITY

The SeaPerch program thrives thanks to the support of our sponsors, partners, volunteers, regional advocates, and educators. We deeply appreciate the commitment and contributions that fuel our shared goals and are integral to our success.

Make sure to say THANK YOU to all our volunteers in blue shirts.

SPONSORS & PARTNERS

NOAA OECI & NOAA OCEAN EXPLORATION

The Ocean Exploration Cooperative Institute (OECI) is a unique consortium of top oceanographic institutions—several graduate degree-granting institutions, an ocean exploration non-profit, and task-specific affiliates. They work as one to advance the core priorities of NOAA Ocean Exploration. Put simply, the OECI is uncovering the potential benefits our ocean has to offer.

HYDRONALIX

Hydronalix is a small high technology company specializing in extreme performance, small unmanned vehicles, both for water and air. Founded in 2009, the company has grown to be internationally recognized as the world leader in robotic water rescue systems and advanced small unmanned surface vehicles.

SOLIDWORKS

Dassault Systèmes, the 3DEXPERIENCE Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations.

If you are interested in learning more about sponsorship or partnership opportunities, contact Alicia Gavin at agavin@robonation.org

OFFICE OF NAVAL RESEARCH (ONR)

ONR is the catalyst of future naval power, ensuring technological dominance for our fleet and force. With a workforce that includes some of the top PhDs and engineers in the world in their fields, ONR finds the best minds from across the nation and around the globe, sponsoring new research and creating new capabilities for America's Sailors and Marines.

MATHWORKS

MathWorks is the leading developer of mathematical computing software. Engineers and scientists worldwide rely on its products, including MATLAB and Simulink, to accelerate the pace of discovery, innovation, and development.

ONSHAPE

Onshape is a next-generation SaaS design platform that speeds up product development. It's an all-in-one system that combines CAD, release management, workflow, collaboration, analytics, admin tools, and an API with more than 50 engineering applications. Onshape helps extended design teams work together faster and helps executives make better business decisions with real-time analytics and unprecedented visibility into their company's design and manufacturing processes.

DoD STEM

Science, Technology, Engineering and Mathematics, or STEM, is the gateway to a world of wonder. U.S. Department of Defense (DoD) STEM professionals work at the leading edge of our nation's most advanced technological breakthroughs.STEM is our future.

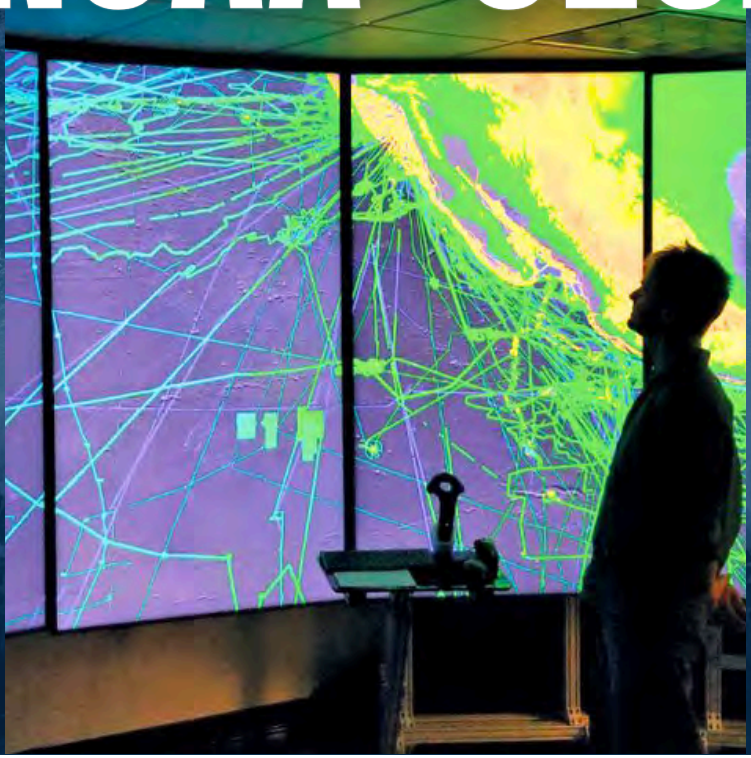
BLUE ROBOTICS

Blue Robotics makes low-cost, high-performance components for marine robotics to enable the next generation of ocean exploration! Based in Torrance, CA, they are a young and innovative company with a diverse and international customer base.

UNIVERSITY OF MARYLAND & MARYLAND ROBOTICS CENTER

The University of Maryland, College Park is the state's flagship university and one of the nation's preeminent public research universities.
The Maryland Robotics Center is an interdisciplinary research center. The mission of the center is to advance robotic systems, underlying component technologies, and applications of robotics through research and educational programs that are interdisciplinary in nature and based on a systems approach.

NOAA: OECI



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The OECI's mission is to explore, map, and characterize the nation's vast ocean territory, to develop and implement new technologies, and to engage future generations of ocean scientists, engineers, and stakeholders.

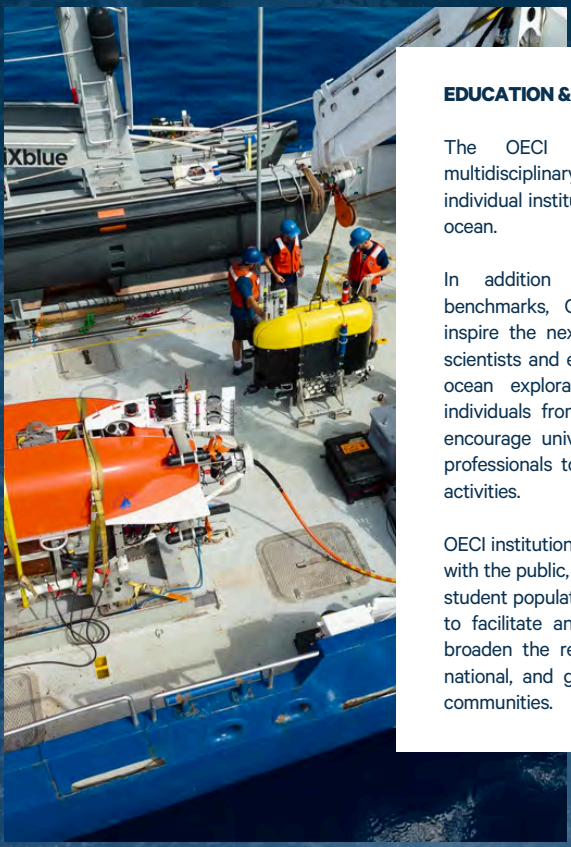
OCEAN EXPLORATION COOPERATIVE INSTITUTE

oeci

EXPLORING THE NATION'S BLUE FRONTIER

NOAA OCEAN EXPLORATION

2024 SIGNATURE SPONSOR



EDUCATION & OUTREACH

The OECI brings together high-caliber, multidisciplinary expertise to engage beyond our individual institutions on priority issues facing our ocean.

In addition to meeting key exploration benchmarks, OECI activities are intended to inspire the next generation of ocean explorers, scientists and engineers; educate students about ocean exploration; increase opportunities for individuals from under-represented groups; and encourage university students and early career professionals to participate in ocean exploration activities.

OECI institutions place a high priority on engaging with the public, K-12, undergraduate, and graduate student populations, as well as other stakeholders to facilitate and augment research efforts and broaden the reach of research results to local, national, and global scientific and non-scientific communities.

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UMD CAMPUS MAP

KEY

A. CHECK-IN / TEAM VILLAGE – Eppley West Gym *(Upper Level)*

B. SPECTATOR SEATING *(Upper Level)*

C. POOL CHECK-IN / TRIAGE - *(Lower Level)*

D. COMPETITION POOL - *(Lower Level)*

E. PRACTICE POOL - *(Lower Level)*

F. OUTDOOR EXHIBITS – *(Lower Level)*

G. TEAM PRESENTATIONS – Cambridge Community Center 1100, 1111, 1205

H. PARKING (FRIDAY) – Stadium Drive Garage

I. PARKING (SATURDAY) – Terrapin Trail Garage

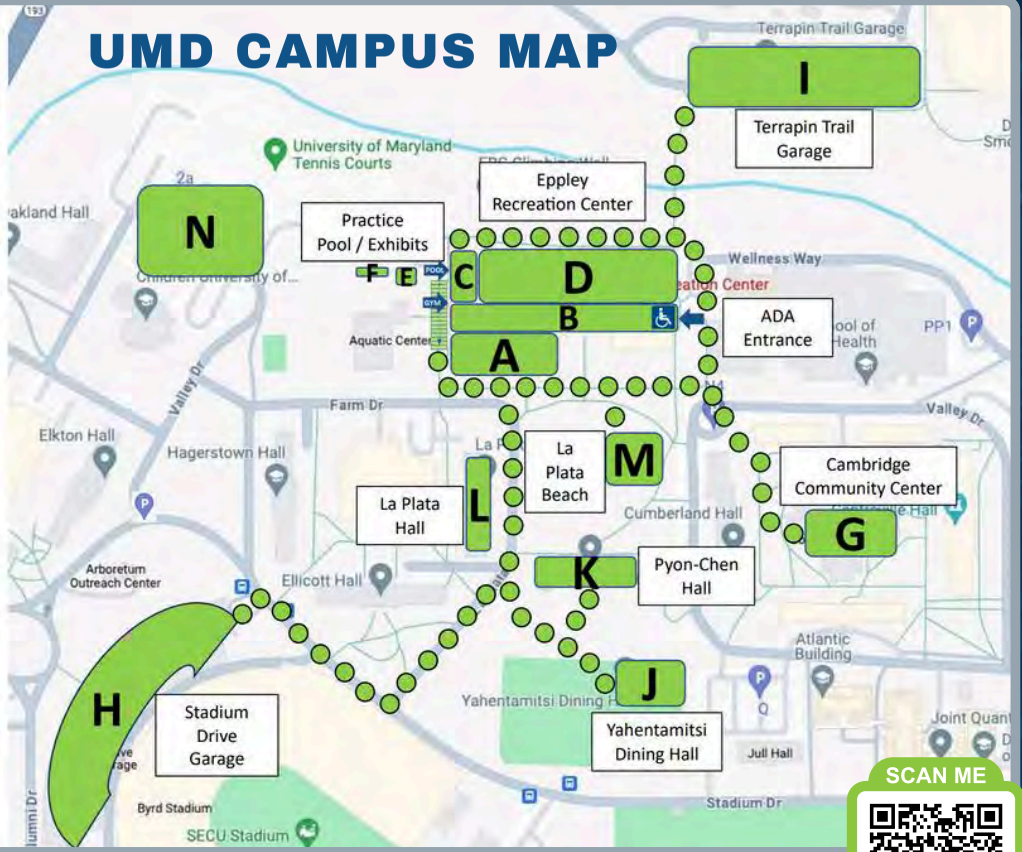
J. DINING - Yahentamitsi Dining Hall

K. DORM – Pyon-Chen Hall

L. DORM – La Plata Hall

M. AWARDS – La Plata Beach

N. STAFF PARKING – Lot 2A



SCAN ME

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For a digital map and additional resources scan the QR code!

EPPLEY NATATORIUM

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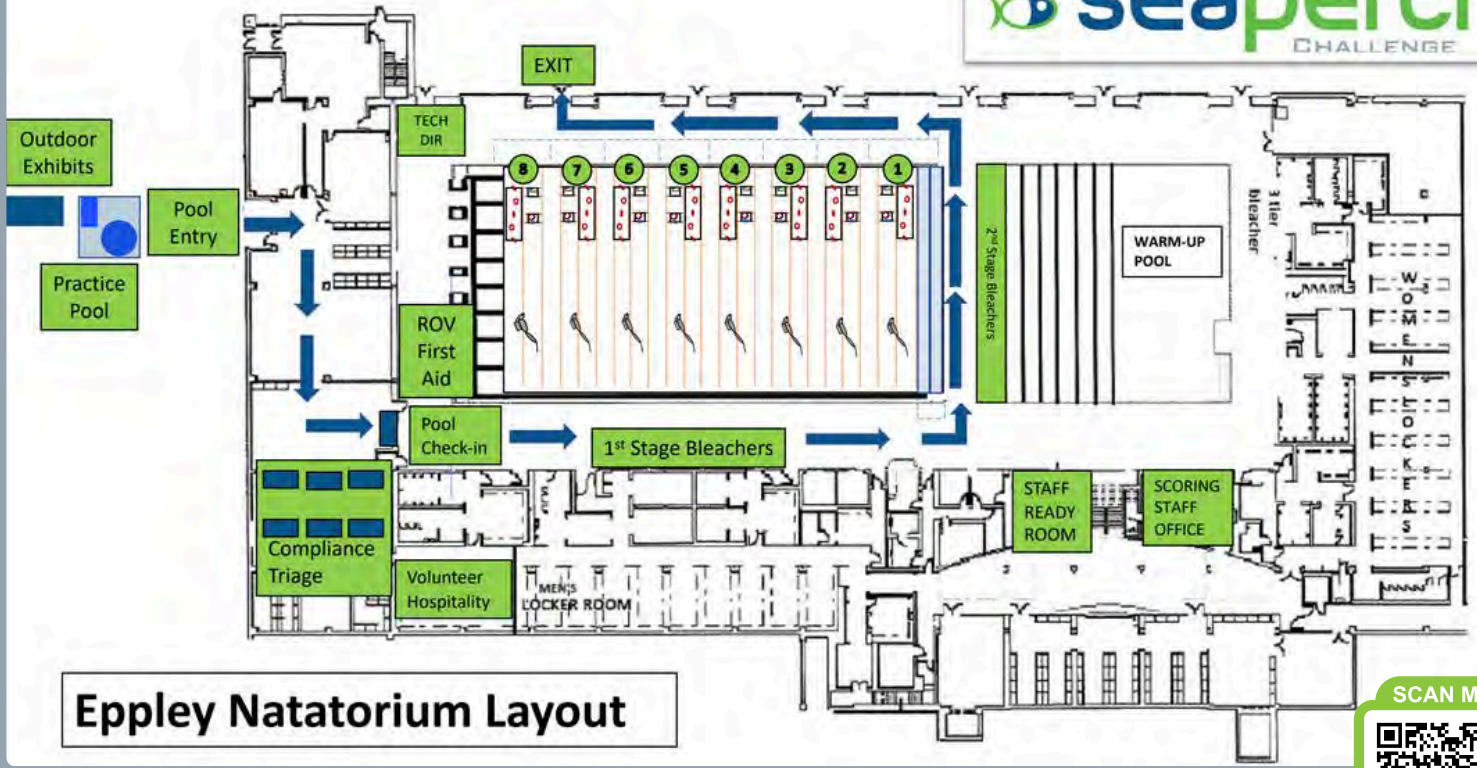

Eppley Natatorium Layout

SCAN ME

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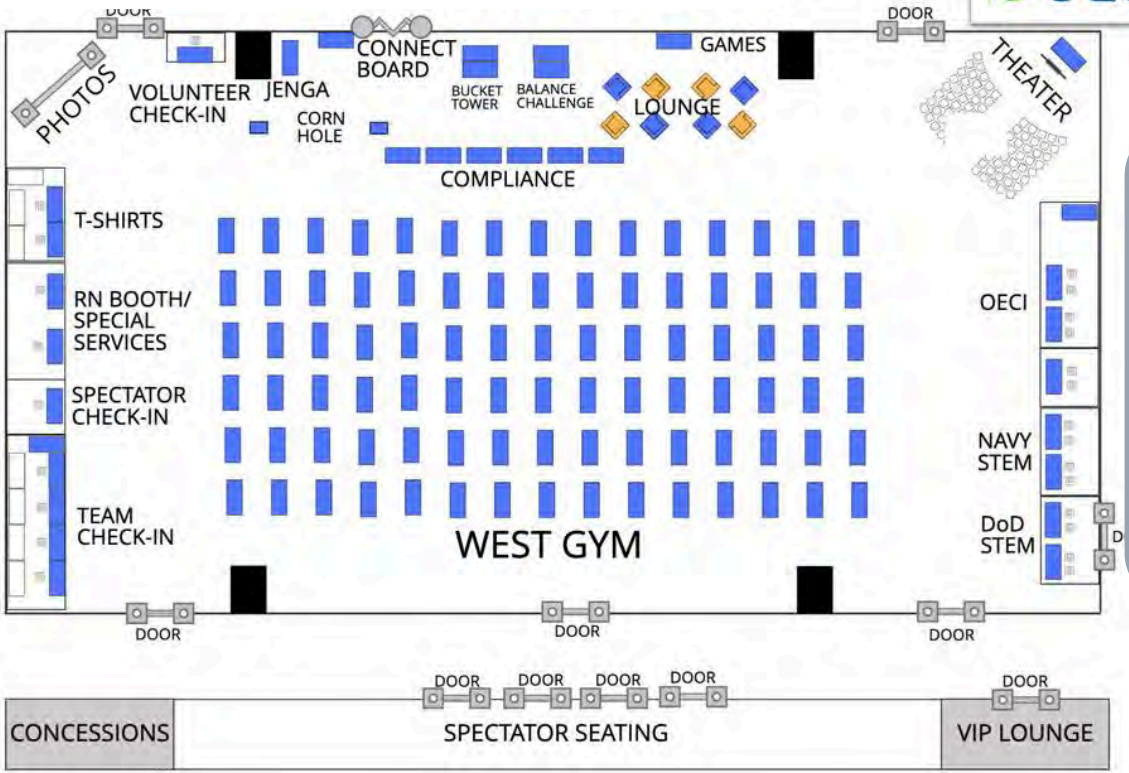
For a digital map and additional resources scan the QR code!

TEAM VILLAGE MAP



Exhibits in the Gym:

- OECI *(The Ocean Exploration Cooperative Institute)* & NOAA *(National Oceanic and Atmospheric Administration)* Ocean Exploration
- Blue Robotics
- Naval STEM
- DoD STEM (DSEC)

Exhibits at the Pool Entrance:

- MIT SeaGrant
- George Mason University RobotX Team
- University of Maryland RoboSub Team

SCAN ME

For a digital map and additional resources scan the QR code!

The Schedule

FRIDAY – MAY 31, 2024		
9:30 am – 1:00 pm	Team Check-In & Compliance Checks*	Eppley Rec Center – West Gym
9:30 am	Team Village Open	Eppley Rec Center – West Gym
12:00 pm - 1:00 pm	Lunch Break	Teams Responsible for their Lunch
1:00 pm - 4:00 pm	UMD Robotics Lab Tours *(Pre-registration required)***	UMD Robotics Labs
1:30 pm - 5:00 pm	Pool Competition***	Eppley Rec Center – Natatorium
2:00 pm – 2:45 pm	Team Presentations • Session 1 • Session 2 • Session 3	Cambridge Community Center • Room 1100 • Room 1111 • Room 1205
2:00 pm – 2:45 pm	Team Presentations • Session 4 • Session 5 • Session 6	Cambridge Community Center • Room 1100 • Room 1111 • Room 1205
5:00 pm	Team Village Closed	Eppley Rec Center – West Gym

** Team check-in, pool times, and presentation information was provided to each team via email.*

*** Brin Family Aerial Robotics Lab, E.A. Fernandez IDEA Factory, Neutral Buoyancy Research Facility*

****Pool Group Check-In times can be found following the schedule in the program.*

DIGITAL SCHEDULE

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The Schedule

SATURDAY – JUNE 1, 2024		
8:00 am – 9:30 am	Team Check-In & Compliance Checks*	Eppley Rec Center – West Gym
8:00 am	Team Village Open	Eppley Rec Center – West Gym
9:00 am - 12:15 pm	Pool Competition	Eppley Rec Center - Natatorium
9:30 am – 10:15 am	Team Presentations • Session 7 • Session 8 • Session 9	Cambridge Community Center • Room 1100 • Room 1111 • Room 1205
10:30 am – 11:30 am	Team Presentations • Session 10 • Session 11 • Session 12	Cambridge Community Center • Room 1100 • Room 1111 • Room 1205
11:00 am – 1:00 pm	Registered Attendee Lunch	Yahentamitsi Dining Hall
1:00 pm - 4:00 pm	Pool Competition	Eppley Rec Center - Natatorium
1:30 pm - 2:15 pm	Team Presentations • Session 13 • Session 14 • Session 15	Cambridge Community Center • Room 1100 • Room 1111 • Room 1205
2:30 pm - 3:15 pm	Team Presentations • Session 16 • Session 17 • Session 18	Cambridge Community Center • Room 1100 • Room 1111 • Room 1205
5:30 pm	Awards Ceremony	LaPlata Beach (Rain – Eppley West Gym)

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Pool Check-In

POOL CHECK IN - FRIDAY

TEAMS MUST CHECK-IN AT THE POOL ENTRANCE WITH THEIR ASSIGNED GROUP AT THE TIME LISTED ON THEIR TEAM PACKET.

1:00 pm *(estimated group start time: 1:30 pm)*	**Group 1**
1:45 pm *(estimated group start time: 2:15 pm)*	**Group 2**
2:45 pm *(estimated group start time: 3:15 pm)*	**Group 3**
3:30 pm *(estimated group start time: 4:00pm)*	**Group 4**

POOL CHECK IN - SATURDAY

TEAMS MUST CHECK-IN AT THE POOL ENTRANCE WITH THEIR ASSIGNED GROUP AT THE TIME LISTED ON THEIR TEAM PACKET.

8:30 am *(estimated group start time: 9:00 am)*	**Group 5**
9:15 am *(estimated group start time: 9:45 am)*	**Group 6**
10:15 am *(estimated group start time: 10:45 am)*	**Group 7**
11:00 am *(estimated group start time: 11:30 am)*	**Group 8**
12:45 pm *(estimated group start time: 1:15 pm)*	**Group 9**
1:00 pm *(estimated group start time: 1:35 pm)*	**Group 10**
1:45 pm *(estimated group start time: 2:15 pm)*	**Group 11**
2:45 pm *(estimated group start time: 3:15 pm)*	**Group 12**

Find a digital copy of our schedule our Event Page.
seaperch.org

DIGITAL SCHEDULE

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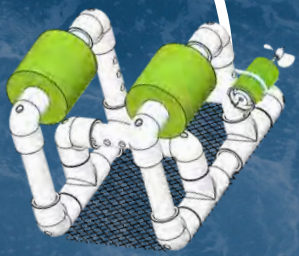
Deep Sea Exploration

With NOAA: Ocean Exploration Cooperative Institute



2024 Theme: Deep Sea Exploration

We're diving into the perilous and enigmatic world of Deep Sea Exploration and hydrothermal vents! Exploration is key to increasing our understanding of the ocean, so we can more effectively manage, conserve, regulate, and use ocean resources that are vital to all of our lives. The International SeaPerch Challenge offers students a unique opportunity to delve into the world of maritime technology and witness firsthand how scientists employ it to tackle real-world challenges.

ROV Fun Facts

Remotely Operated Vehicles (ROVs) have enabled scientists to conduct research at depths previously thought unreachable, unlocking a trove of discoveries.

ROVs were first tested in the 1960's by the U.S. Navy to retrieve sunken data. In 1966, the Navy successfully recovered an atomic bomb that went missing off the coast of Spain.

ROVs can be the size of a small computer or as large as a small truck. Larger ROVs are very heavy and need special equipment to deploy them off of a ship and into the ocean.

While ROVs are controlled via a remote and tether by humans, AUVs (Autonomous Underwater Vehicles) drive themselves, following pre-programmed instructions. This autonomy allows AUVs to explore vast areas of the ocean with minimal human intervention, making them ideal for mapping and surveying tasks. Ready for the next step in maritime robotics and want to build an AUV? *Visit robosub.org*

Hydrothermal Vents

Hydrothermal vents form at locations where seawater meets magma.

These subaquatic chimneys, spewing forth mineral-rich fluids at extreme temperatures, have long intrigued scientists and explorers alike. The discovery of these vents in 1977, during the Galapagos Rift expedition, marked a pivotal moment in our understanding of deep-sea ecosystems. ROVs have revolutionized our ability to study these extreme environments with greater precision and safety. Equipped with high-definition cameras and sampling tools, they allow researchers to navigate the intricate terrain around hydrothermal vents, unveiling a world teeming with bizarre creatures and geological formations.

Hydrothermal vents are the result of seawater percolating down through fissures in the ocean crust in the vicinity of spreading centers or subduction zones (places on Earth where two tectonic plates move away or towards one another). The cold seawater is heated by hot magma and reemerges to form the vents. Seawater in hydrothermal vents may reach temperatures of over 700° Fahrenheit.

AWARDS

Middle School Class

- Class Champion
- Obstacle Course
  - 1st, 2nd, 3rd
- Mission Course
  - 1st, 2nd, 3rd
- Technical Design Report
  - 1st, 2nd, 3rd

High School Class

- Class Champion
- Obstacle Course
  - 1st, 2nd, 3rd
- Mission Course
  - 1st, 2nd, 3rd
- Technical Design Report
  - 1st, 2nd, 3rd

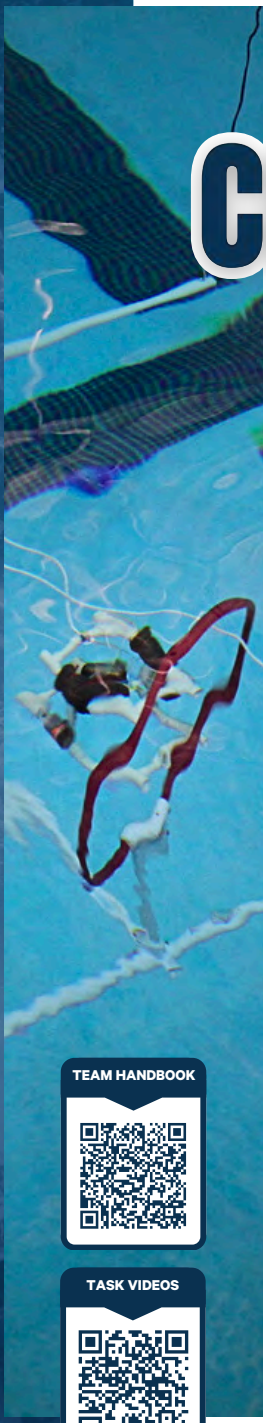
Open Class

- Class Champion
- Obstacle Course
  - 1st, 2nd, 3rd
- Mission Course
  - 1st, 2nd, 3rd
- Technical Design Report
  - 1st, 2nd, 3rd

Special Awards

- Community & Outreach
- Sportsmanship
- Resiliency & Grit
- Ingenuity
- Real-World Innovation
  - 1st, 2nd, 3rd
- Fan Favorite - Real World Innovation
  - Middle School
  - High School

OUR 2023 CHAMPS



THE 2024 COMPETITION

POOL COURSES

Teams have 20 minutes total to complete pool courses.

Obstacle Course:

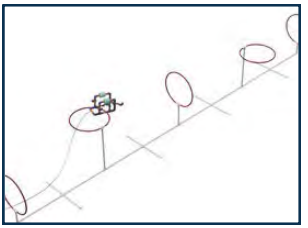
The Obstacle Course tests high-speed maneuverability and requires the SeaPerch ROV to navigate the course as quickly as possible.

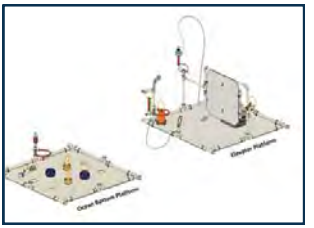
- Teams may attempt up to two (2) runs.
- Each run is limited to four (4) minutes maximum.

Mission Tasks:

This course simulates the tasks and environment that an ROV might encounter while exploring the harsh environments that surround hydrothermal vents.

- Teams may attempt one (1) run.
- The mission course time limit is eight (8) minutes maximum.





OTHER COMPETITION ELEMENTS

Technical Design Report

(Required)

A Technical Design Report (TDR) succinctly describes a team's unique SeaPerch ROV and the engineering design process, providing insight into the iterative design process and allowing for data analysis that supports the final ROV design.

Real-World Innovation Poster

(Optional)

Teams are invited to identify a real-world issue and design a SeaPerch ROV to address the issue. To present their project, teams will create a virtual poster. These posters may include anything from a conceptual design to a full project conducted in the real world.

Community Outreach Project

(Optional)

Whether teams volunteer their time in their community, or teams find a way to connect and offer support online, teams have the opportunity to highlight their outreach efforts.

Team Presentations

(By Invitation - Optional - Not Scored)

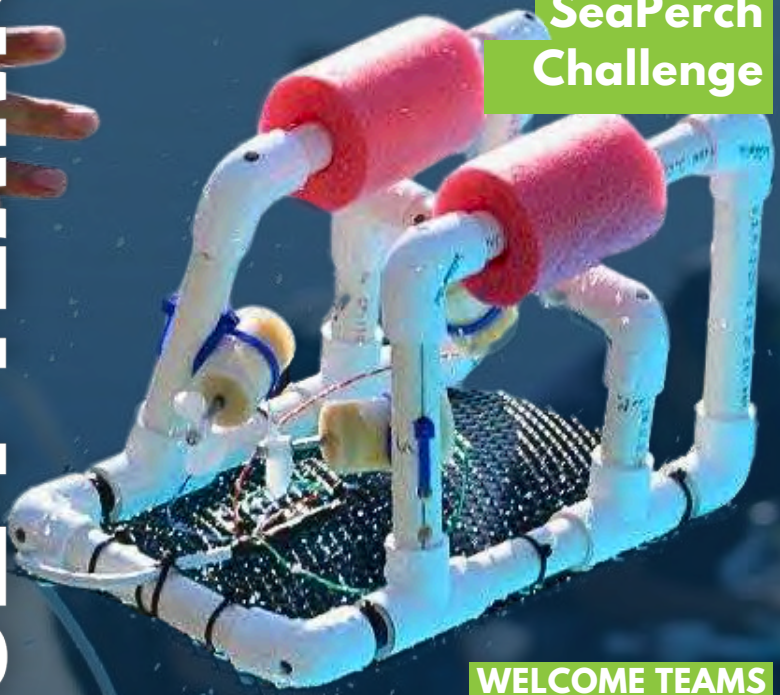
Presentations are a great opportunity for teams to share their SeaPerch experience and practice their academic presentation skills. Seventy-one teams were selected to present based on a short abstract the team submitted that provided a high-level overview of what their presentation would cover.

TEAM HANDBOOK

TASK VIDEOS

YOUR 2024 TEAMS

2024 International SeaPerch Challenge



WELCOME TEAMS FROM AROUND THE WORLD

SeaPerch Teams are converging and ready to test their ROVs in the water at the University of Maryland in 2024!

SeaPerch teams traveled to Maryland from all over the world including 4 different continents and 33 states across the United States.

MEET THE TEAMS

Visit our website to get a better look at each team! Find out what inspires each team, check out their school and team logos, and visit their social media pages. This is your chance to get to know the SeaPerch Challenge 2024 Teams!

MEET THE TEAMS

2024 TEAMS

MIDDLE SCHOOL STOCK CLASS

- AD Henderson University School, ADHUS SeaKings (501) | Boca Raton, Florida, USA
- AD Henderson University School, ADHUS Seagulls (505) | Boca Raton, Florida, USA
- AD Henderson University School, ADHUS SunRays (504) | Boca Raton, Florida, USA
- Aldo Leopold Community School, Safety Fish (400) | Green Bay, Wisconsin, USA
- American School for the Deaf, Ornament Head (718) | West Hartford, Connecticut, USA
- Bonneville School, Shark Fang's (725) | San Juan, Puerto Rico
- Buddy Taylor Middle School, Manta Rays (514) | Palm Coast, Florida, USA
- Charleston Charter School for Math and Science, Phobia (534) | Charleston, South Carolina, USA
- Clinton Middle School, Team Drop-Off (407) | Clinton, Michigan, USA
- Crestwood Middle School, Crestwood Seagles (503) | Royal Palm Beach, Florida, USA
- CSO & BEIJING BAYI SCHOOL, TEAM DREAM RONG ZHEN (021) | Beijing, China
- Danville Middle School, Sea Star Robotics Inc. (211) | Danville, Pennsylvania, USA
- Discovery Canyon Middle School, Floating Rubber Duckies (810) | Colorado Springs, Colorado, USA
- Discovery Canyon Middle School, Michael B Jordan (805) | Colorado Springs, Colorado, USA
- Discovery Canyon Middle School, Subway Surfers (806) | Colorado Springs, Colorado, USA
- East Central Middle School, Sea Hornets (521) | Moss Point, Mississippi, USA
- Egg Harbor Township Police Activities League, Enforcers - MS (309) | Egg Harbor Township, New Jersey, USA
- eSchool National Hills, ESchool Virtual Waterbots (003) | Augusta, Georgia, USA

2024 TEAMS

CONTINUED

MIDDLE SCHOOL STOCK CLASS

- Experimental School of Beihang University, Blue Seaperch (022) | Beijing, China
- George Washington Middle School, Murray Eels (006) | Alexandria, Virginia, USA
- George Washington Middle School, Team Skeleton (008) | Alexandria, Virginia, USA
- Grant County 4-H (Arkansas), Wet Willies (527) | Sheridan, Arkansas, USA
- Guangzhou No.2 High School, Y·Z·R (038) | Guangzhou, China
- Henry James Memorial School, Team Atlantic (107) | Simsbury, Connecticut, USA
- Henry James Memorial School, Team D.E.K. (106) | Simsbury, Connecticut, USA
- IEEE Suez RegionE, RE.Marine3 (032) | Suez, Egypt
- Ideaventions Academy, Manatee (312) | Reston, Virginia, USA
- Ideaventions Academy, The Whale (314) | Reston, Virginia, USA
- Lake Castle Slidell Private School, Heat Risers (507) | Slidell, Louisiana, USA
- Lake Castle Slidell Private School, Hydro Warriors (538) | Slidell, Louisiana, USA
- Lexington Junior High, Lexington Lion Pride (900) | Cypress, California, USA
- Macau Pui Ching Middle School, Mosasaurus (041) | Macau, China
- Madison County 4-H (Arkansas), Submarine Crew (530) | Huntsville, Arkansas, USA
- Manchester Township Middle School, Manchester Shorebot Lobsters (206) | Manchester, New Jersey, USA
- Marshall Elementary School, Mustang Bots (908) | San Bernardino, California, USA
- Martinsville City Public Schools, The Bulldogs (317) | Martinsville, Virginia, USA
- Mayport Middle School, Team Anglerfish (519) | Atlantic Beach, Florida, USA
- Memorial Middle School, Circuit Breakers 1 (709) | Tulsa, Oklahoma, USA
- Memorial Middle School, Circuit Breakers 2 (710) | Tulsa, Oklahoma, USA
- Mixed: Grovetown School, Riverlands School, Springlands School, Correspondence School, BumbleBots (020) | Marlborough, New Zealand
- Mosside Middle School - Gateway School District, HydroDynamics (200) | Monroeville, Pennsylvania, USA
- Mosside Middle School - Gateway School District, Magical Mermaids (203) | Monroeville, Pennsylvania, USA

2024 TEAMS

CONTINUED

MIDDLE SCHOOL STOCK CLASS

- Motatau School, Taikirau (015) | Northland, New Zealand
- Myrtle Grove Christian School, Baby Yodas (316) | Wilmington, North Carolina, USA
- Nativity Catholic School, Nativity Stars - Team C (308) | Burke, Virginia, USA
- Odyssey Academy Bay Area, OABA SeaBots (001) | El Lago, Texas, USA
- Oneida Middle School, The Pool Sharks (208) | Schenectady, New York, USA
- Oromahoe School, Olympic (014) | Northland, New Zealand
- Palmer Elementary School, Hydro Hunters (701) | Missouri City, Texas, USA
- Parkview School, G.T.K (Good Tasting Kelp) (913) | El Monte, California, USA
- Rogue Robots of 4H, Bronze Beasts (111) | Claremont, New Hampshire, USA
- Saint Helena School Blue Bell, Tiger Sharks (210) | Blue Bell, Pennsylvania, USA
- Sonoran Science Academy – East, Golden Eagles (705) | Tucson, Arizona, USA
- STEMA Center Development and Training Center, SeaDivers (028) | Dubai, United Arab Emirates
- Stevenson Middle School, Bizarre Barnacles (413) | Melrose Park, Illinois, USA
- Stone Mountain Middle School, Extraordinary Underdogs (539) | Stone Mountain, Georgia, USA
- Stephen F Austin Middle School, Underwater Odyssey (721) | Bryan, Texas, USA
- The Aerospace City School of RDFZ, HangHang (024) | Beijing, China
- U.S. Naval Sea Cadet Corps, Team Seals (919) | Walnut, California, USA
- U.S. Naval Sea Cadets, The Otters (924) | Pomona, California, USA
- US Naval Sea Cadet Corps, USS Enterprise (906) | San Diego, California, USA
- Unity Junior High School, Phoenix (405) | Cicero, Illinois, USA
- Unity Junior High School, Poseidon (406) | Cicero, Illinois, USA
- Washington Island, Fast and Furious (401) | Washington Island, Wisconsin, USA
- Washington Middle School, WMS 1 (716) | Albuquerque, New Mexico, USA
- Washington Middle School, WMS 2 (717) | Albuquerque, New Mexico, USA
- Wewahitchka Jr./ Sr. High, Sea Skedaddle (512) | Wewahitchka, Florida, USA
- Wagner Middle School/GISD, Inflatables (722) | Georgetown, Texas, USA
- Walton Middle School, Warrior 3 (510) | DeFuniak Springs, Florida, USA
- White Pine STEM Academy, Creative Birds (804) | Idaho Falls, Idaho, USA
- William A. Diggs Elementary School, Diggs Lion Fish (307) | Waldorf, Maryland, USA

2024 TEAMS

HIGH SCHOOL STOCK CLASS

- Academy of Health Science Professional & STEM, Barnacle Boys (706) | La Joya, Texas, USA
- Academy of Health Science Professional & STEM, Mermaid Men (708) | La Joya, Texas, USA
- Academic Magnet High School, AMHS Krakens (533) | North Charleston, South Carolina, USA
- American Community School of Abu Dhabi, Vipers Bada v1.0 (029) | Abu Dhabi, United Arab Emirates
- American School for the Deaf, ASD Grimace (719) | West Hartford, Connecticut, USA
- Baldwin High School, The Silly Gooseters (202) | Pittsburgh, Pennsylvania, USA
- Bethlehem High School, Wet Techs (509) | Bonifay, Florida, USA
- Bonneville School, Hammer Heads (027) | San Juan, Puerto Rico
- Bonneville School, The Mighty Coquis (726) | San Juan, Puerto Rico
- Burns Sci-tech Charter School, Bunsen Burnsers (515) | Oak Hill, Florida, USA
- Cape Henlopen High School, JABE (116) | Lewes, Delaware, USA
- Carrollton School of the Sacred Heart, Sustainable Cyclones (543) | Miami , Florida, USA
- Carl Wunsche Sr. H.S, Wunsche Phoenix Fire (703) | Spring, Texas, USA
- Centro Residencial Oportunidades Educativas de Villalba, Aurora (025) | Villalba, Puerto Rico
- Centro Residencial Oportunidades Educativas de Villalba, Watatsumi (026) | Villalba, Puerto Rico
- Clements High School, Oceanus Titans (702) | Sugar Land, Texas, USA
- Clinton High School, DANDRUFF (409) | Clinton, Michigan, USA
- Colts Neck HS NJROTC, Colts Neck Marlins (205) | Colts Neck, New Jersey, USA
- Downsville Community Charter School, FISH (513) | Downsville, Louisiana, USA
- East View High School, The Big Cheese (724) | Georgetown, Texas, USA
- Egg Harbor Township Police Activities League, Enforcers HS (310) | Egg Harbor Township, New Jersey, USA
- Fremont High School, Messinators (800) | Ogden, Utah, USA
- Fremont High School, The 3 Seahorsemen (801) | Plain City, Utah, USA
- Florida Atlantic University Schools, Deep Seakers (544) | Boca Raton, Florida, USA
- Georgetown High School, Team 2 (723) | Georgetown, Texas, USA

2024 TEAMS

CONTINUED

HIGH SCHOOL STOCK CLASS

- Grant County 4-H (Arkansas), Deep Water Vanguard (529) | Sheridan, Arkansas, USA
- Guangdong Experimental High School, GDSYZX (023) | Guangdong, China
- Highland Prep High School, Narwhals (720) | Surprise, Arizona, USA
- Highland Prep West, Team Ghostie (909) | Avondale, Arizona, USA
- John T Hoggard High NJROTC, VIKINGS (315) | Wilmington, North Carolina, USA
- Kerby Academy Homeschool, The Nautilus (201) | French Lick, Indiana, USA
- Kickapoo Area School District, Team Tortuga (404) | Viola, Wisconsin, USA
- Lacey Township High School, BAArden Bellas (204) | Lanoka Harbor, New Jersey, USA
- Los Fresnos High School, Falcons (707) | Los Fresnos, Texas, USA
- Macau Pui Ching Middle School, Robo Reversal (040) | Macau, China
- Maranatha High School, Maranatha Seaperch Team A (914) | Pasadena, California, USA
- Maritime Academy, Just Torpedo (511) | Panama City, Florida, USA
- Martin Luther King High School NJROTC, Sea Wolves (915) | Riverside, California, USA
- Mt. Ararat High School Science Club, Mt. Ararat Serpents (100) | Topsham, Maine, USA
- Newsome High School, SEAWOLVES (524) | Lithia, Florida, USA
- Northshore High School, Swim Shadies (506) | Slidell, Louisiana, USA
- Noor Language School, Sovereigns (033) | Cairo, Egypt
- Northeast Lauderdale High School NJROTC, Northeast Lauderdale NJROTC (542) | Meridian, Mississippi, USA
- Odyssey Academy, Odyssey (727) | Galveston, Texas, USA
- Patriot High School, Angry Crabs (306) | Nokesville, Virginia, USA
- Patriot High School, Chesapeake Crew (305) | Nokesville, Virginia, USA
- Pukeroa Oruawhata - Rotorua School, Blue Magic (018) | Rotorua, New Zealand
- Reeths-Puffer Schools, Reeths-Puffer Robotics (HS) (410) | Muskegon, Michigan, USA
- Paloma Valley High School, Axolotl (901) | Menifee, California, USA
- Park Vista High School, Cobra Robotics (500) | Lake Worth, Florida, USA

2024 TEAMS

CONTINUED

HIGH SCHOOL STOCK CLASS

- Pine High School Robotics, Octonauts (537) | Franklinton, Louisiana, USA
- Rice Robotics, PBJ (110) | Rochester, New Hampshire, USA
- Rehobeth High School, Rehobeth High School NJROTC (536) | Dothan, Alabama, USA
- River City Science Academy, Aquarius (518) | Jacksonville, Florida, USA
- River City Science Academy, Ladies in Pink (525) | Jacksonville, Florida, USA
- Rapides High, Boy and Sea (541) | Lecompte, Louisiana, USA
- SAGE Engineering, Team Tahi (019) | Rotorua, Bay of Plenty, New Zealand
- South Glens Falls Oliver W. Winch Middle School, Team Seaweed (209) | South Glens Falls, New York, USA
- Springfield High School, Springfield Sea Cougars (212) | Springfield, Pennsylvania, USA
- Sponsored by Sempro, USS Atlantic (917) | Airway Heights, Washington, USA
- Skyline Gila River, Skyline Gila River (704) | Chandler, Arizona, USA
- The Piney Woods School, Archimedes (522) | Piney Woods, Mississippi, USA
- Troy High School NJROTC, Sea Monkeys (922) | Fullerton, California, USA
- U.S. Naval Sea Cadet Corps, David G. Ouellet Division (115) | Gloucester, Massachusetts, USA
- Union Grove High School, SpeedPerch (416) | Union Grove, Wisconsin, USA
- Union Grove High School, The Wave Sharks (415) | Union Grove, Wisconsin, USA
- Union Pines High School, Midlife Crisis (318) | Cameron, North Carolina, USA
- Unity Reed High School, Sea Lions (303) | Manassas, Virginia, USA
- Unity Reed High School, VITMN Sea (304) | Manassas, Virginia, USA
- USNSCC - Massachusetts Bay Division, Team Humpback (109) | Franklin, Massachusetts, USA
- USNSCC - Massachusetts Bay Division, Team Marlin (105) | Franklin, Massachusetts, USA
- U.S. Naval Sea Cadet Corps, The Olympians (926) | San Diego, California, USA
- West Haven High School, Swamp Devils West Haven (108) | Connecticut, USA
- West Mesa High School, WMHS 3-2 (714) | Albuquerque, New Mexico, USA
- Zeta Phi Beta Sorority Incorporated - Sigma Kappa Zeta (SKZ), SKZ Archonette Youth Group (009) | Brooklyn, New York, USA

2024 TEAMS

OPEN CLASS

- Academic Magnet High School | AMHS H2Go (532) | North Charleston, South Carolina, USA
- The American Baccalaureate School, Wildcats Engineering (030) | Kuwait, Kuwait
- Castle High School | ProtoKnights 1 (902) | Kaneohe | Hawaii, USA
- Castle High School | ProtoKnights 2 (904) | Kaneohe | Hawaii, USA
- Clinton High School | Ocean Perch Clinton (408) | Michigan, USA
- Grant County 4-H | Aquanauts (528) | Sheridan, Arkansas, USA
- Lacey Township High School | Diplodocus Divers (207) | Lanoka Harbor, New Jersey, USA
- Margaret Brent Elementary School (313) | S.C.U.D Stafford | Virginia, USA
- Mayport Coastal Sciences Middle School | Mayport Stingrays (728) | Atlantic Beach, Florida, USA
- Mayport Coastal Sciences Middle School | The Strawfish Pirates (520) | Atlantic Beach, Florida, USA
- Naselle Grays-River High School | Naselle Bubble Heads (911) | Naselle, Washington, USA
- New Bern High School | TarHeels (301) | New Bern | North Carolina, USA
- Oak Grove High School | Wet Warriors (523) | Hattiesburg, Mississippi, USA
- Orion Jr High | Terentatek (803) | Ogden, Utah, USA
- Orion Jr High | Tide Pods (802) | Ogden, Utah, USA
- Patriot High School, Killer Krabs (004) | Nokesville, Virginia, USA
- San Bernardino High School | SBHS Johnny Cardinal (910) | San Bernardino, California, USA
- San Gabriel School for the Deaf, Water Flash (101) | San Juan, Puerto Rico
- ShadowCreek High School | Liopleurodons (713) | Pearland, Texas, USA
- Spanish River High School | Sharktastics! (502) | Boca Raton, Florida, USA
- STEM-UP Program @ Temple University (213) | Philadelphia, Pennsylvania, USA
- Troy High School | NJROTC | Water Wizards (905) | Fullerton, California, USA
- Troy High School NJROTC | Water Wiggles (916) | Fullerton, California, USA
- Union League Boys and Girls Clubs Dolphins (412) | Chicago, Illinois, USA
- U.S Naval Sea Cadet Corps | Hydro Homies (925) | San Diego, California, USA
- U.S. Naval Sea Cadet Corps | Yellowjackets (923) | Rancho Cucamonga, California, USA
- West Mesa High School | WMHS 2-4 (715) | Albuquerque, New Mexico, USA
- Wahkiakum High School | Mecha Mules: Bermuda (912) | Cathlamet, Washington, USA

The 2024 International SeaPerch Challenge would not have been possible without support from the broader SeaPerch Community including regional coordinators, local advocates, parents, and educators, onsite volunteers, virtual volunteers, sponsors and partners.

- 1st Annual Vanguard Academy Aquatic Triathlon - Pharr, TX, USA
- 2024 Great Southwest SeaPerch Challenge - Albuquerque, NM, USA
- 2024 Houston-Galveston SeaPerch Challenge - Galveston, TX, USA
- 2024 SeaPerch Macao Regional Competition - Macao
- Alvin ISD District Meet - Alvin, TX, USA
- Arkansas 4-H SeaPerch Challenge - Little Rock, AR, USA
- Big Bend of Florida Regional Competition - Tallahassee, FL, USA
- CTEEA/Waterford High School Connecticut SeaPerch championship - Waterford, CT, USA
- Cathlamet SeaPerch Qualifier 2024 - Cathlamet, WA, USA
- Central Region 4-H SeaPerch Challenge - Alexandria, LA, USA
- Charleston Challenge - North Charleston, SC, USA
- Charles County MD Regional - Waldorf, MD, USA
- China SeaPerch 2024 - Beijing, China
- CT/NY Regional SeaPerch Competition - Neptune, NJ, USA
- Deaf/HH SeaPerch Challenge - Simsbury, CT, USA
- Discovery Canyon High School Competition - Colorado Springs, CO, USA
- Discovery Canyon Middle School Competition - Colorado Springs, CO, USA
- Eastern Idaho Regional Competition - Idaho Falls, ID, USA
- FPL BrowardSTEM SeaPerch Competition - Davie, FL, USA
- FPL TCI SeaPerch Invitational #1 - Boca Raton, FL, USA
- FPL TCI SeaPerch Invitational #2 - Boca Raton, FL, USA
- GISD Regional SeaPerch Competition - Georgetown, TX, USA
- Greater Jacksonville SeaPerch Challenge - Jacksonville, FL, USA
- Greater Philadelphia SeaPerch Challenge - High School Division - Philadelphia, PA, USA
- Greater Philadelphia SeaPerch Challenge - Middle School Division - Philadelphia, PA, USA
- Highland Prep Academy SeaPerch Regional - Surprise, AZ, USA
- Honolulu SeaPerch 2024 Regional - Honolulu, HI, USA
- Illinois TSA 2024 SeaPerch Competition - Bloomington, IL, USA
- Inland Empire Regional SeaPerch Competition - Riverside, CA, USA
- Intermountain SeaPerch Challenge - Ogden, UT, USA
- Lake Mary High School SeaPerch - Lake Mary, FL, USA
- LATAM Competition - Lima, Perú
- Los Angeles Regional SeaPerch Competition - Fullerton, CA, USA
- Louisiana SeaPerch Competition - Baton Rouge, LA, USA
- Maryland Regional SeaPerch Challenge - Annapolis, MD, USA
- Mass Bay Sea Cadets SeaPerch Competition - Cambridge, MA, USA
- Michigan Regional SeaPerch Challenge - Clinton, MI, USA
- Mississippi Gulf Coast Regional SeaPerch Challenge - Biloxi, MS, USA
- MMI Challenge - Marion, AL, USA
- Naarm/Melbourne Cup - Officer VIC, Australia
- NAVY TALENT ACQUISITION GROUP HOUSTON SEAPERCH - Houston, TX, USA
- Navy Great Lakes Regional SeaPerch Competition - Lake Forest, IL, USA
- North Carolina Regional SeaPerch Competition - New Bern, NC, USA
- North Coast Marine Manufacturing Alliance's SeaPerch Regional Competition - Ashwaubenon, WI, USA
- Northland Te Taitokerau - Whangārei, New Zealand
- Northshore Regional SeaPerch Competition - Bogalusa, LA, USA
- Northwest Florida Regional Competition - Pensacola, FL, USA
- Northern New England SeaPerch Challenge - Bath, ME, USA
- Northern Virginia's Regional SeaPerch Challenge (AM Session) - Manassas, VA, USA
- Northern Virginia's Regional SeaPerch Challenge (PM Session) - Manassas, VA, USA
- NSWC Dahlgren Division Regional SeaPerch Competition - Fredericksburg, VA, USA
- NYC Capital Region - Schenectady, NY, USA
- NRSC Deaf and Hard of Hearing ROV Competition - Austin, TX, USA
- Poseidon's Trident - Mission, TX, USA
- Pittsburgh Regional SeaPerch Competition - Monroeville, PA, USA
- Puerto Rico SeaPerch Challenge 2023-2024 - Villalba, Puerto Rico
- Region 5 SeaPerch Challenge - Lake Charles, LA, USA
- Richmond NZAB - Richmond, New Zealand
- River City Regional - Jacksonville, FL, USA
- SCILS Region 8 LaSTEM Center SeaPerch - Ruston, LA, USA
- SeaPerch North Africa Challenge - Heliopolis, Egypt
- SeaPerch San Diego Regional Competition - San Diego, CA, USA
- SeaPerch West Asia Challenge - Sharjah, UAE
- Seacoast SeaPerch - Durham, NH, USA
- Shelby County SeaPerch - Memphis, TN, USA
- South East Texas Super Regional - Houston, TX, USA
- Southern California SeaPerch Challenge - Fullerton, CA, USA
- SW Wisconsin Regional - Viola, WI, USA
- St. Croix SeaPerch Underwater Robotics Competition - Christiansted, St. Croix, U.S. Virgin Islands
- St. John SeaPerch Underwater Robotics Competition - Charlotte Amalie, St. Thomas, U.S. Virgin Islands
- Syracuse Area Regional SeaPerch Competition - Syracuse, NY, USA
- Tulsa Regional SeaPerch Competition - Jenks, OK, USA
- U.S. Naval Sea Cadet Corps - SeaPerch Training Command - Lake Arrowhead, CA, USA
- USNSCC Inland Empire Regional - Temecula, CA, USA
- USNSCC LA Regional - Fullerton, CA, USA
- USNSCC San Diego Regional - San Diego, CA, USA
- Wilmington Regional SeaPerch Competition - Wilmington, NC, USA

ROBONATION

PROGRAMS

MARITIME

SeaPerch
Underwater ROV program and competition for K-12 students and those beginning their robotics journey.

SeaGlide
Underwater glider kit to build a non-tethered robot

RoboSub
Autonomous Underwater Vehicle (AUV) competition for high school and postsecondary school students.

RoboBoat
Autonomous Surface Vehicle (ASV) competition for high school and postsecondary students.

Imagine an extra large SeaPerch that thinks for itself...welcome to RoboSub. If you're ready to dive back under water and switch to autonomous mode, visit robosub.org to learn how to take the next step.

GROUND

IGVC
Autonomous ground vehicle competition for postsecondary teams.

AERIAL

SUAS
Autonomous aerial competition for high school and postsecondary students.

IARC
Aerial robotics competition that challenges postsecondary students with an impossible mission.

Fancy yourself a surfer? Try out RoboBoat. This Autonomous Surface Vehicle Competition challenges you to build a self-driving boat. Visit roboboat.org to learn more.

VIRTUAL

Virtual RobotX (VRX)
Open-source simulation environment and competition centered around the RobotX vehicle.

VPerch
Virtual robotics program building on tools and skills from SeaPerch.

SENSING

GoSense
Environmental sensing program and kits for use in real-world projects.
Coming in early 2025.

MULTI-DOMAIN

RobotX
Starting with a common platform, students develop a multi-domain Autonomous Maritime System (AMS) promoting advanced ocean exploration and research.

Maybe you're ready to soar like a bird...no, a super hero...no, a plane! At SUAS, your team builds an unmanned aerial vehicle (UAV), with the design choice between a fixed wing or multirotor.
To learn more, visit suas-competition.org

robonation.org

seaperch Bingo

Get to know your fellow SeaPerch teams by playing bingo! Visit **other teams** and find somebody who meets the prompts. Have the team sign their **team name** on the prompt. Bring your completed bingo card by the RoboNation booth on Friday or Saturday to be entered into a drawing to win a special prize. Winner to be announced at the Awards Ceremony on Saturday afternoon. **Must be present at the Awards Ceremony to win.**

Team:

FIND SOMEONE WHO...

Has the letter "X" in their name	Wants to be a marine biologist	Likes to read	Wants to become a naval architect	Can say at least 10 numbers in π *(Hint: It's hidden in the program 😉)*
Knows how to skate board	Is the driver of their team's ROV	Knows the entire Periodic Table of Elements	Lives in a different country than you	Has been to the International SeaPerch Challenge before
Is graduating middle school or high school this year	Traveled more than 250 miles to get here	FREE SPACE	Can play a musical instrument	Plays a team sport
Speaks more than one language	Wants to go to trade school or do an apprenticeship after graduation	Has been on a ship or boat	If you've visited the RobotX or RoboSub team	Has a birthday this month
Is left-handed	Has been in a school play or musical	Wants to be an engineer	Has a pet *(cat, dog, horse, lizard, etc)*	Can code

seaglide™ Win a kit!

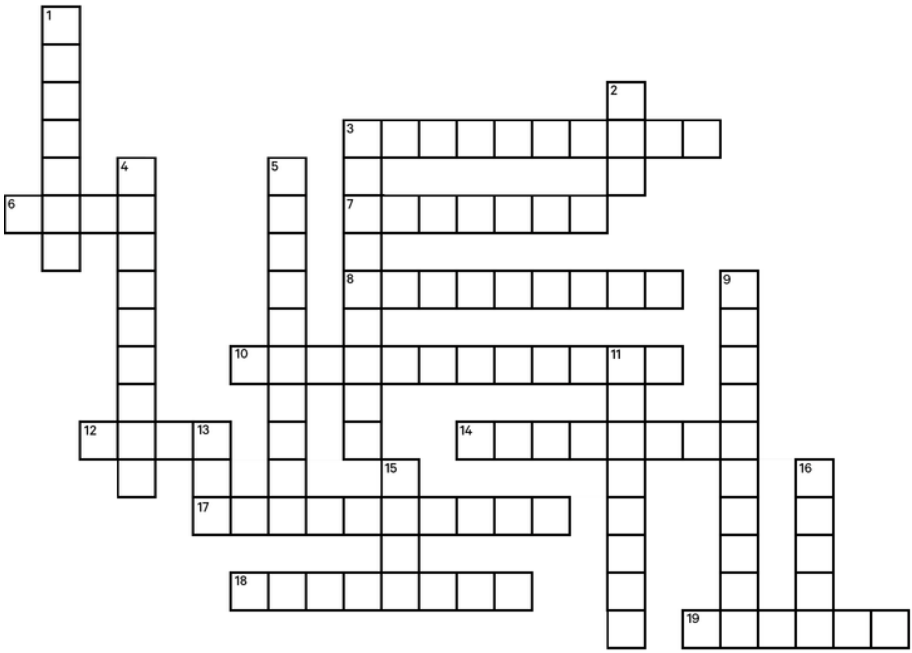
DRAW YOUR OWN seaperch

Tag @robonation on Instagram to have your drawing featured on our stories!

TAG @ROBONATION!

seaperch CHALLENGE

CROSSWORD PUZZLE



ACROSS

3. T in STEM

6. Quantity of continents represented at the 2024 International SeaPerch Challenge.

7. Next level SeaPerch.

8. Process used for joining metal parts to form a mechanical or electrical bond.

10. Name of the UMD dining hall.

12. Apprenticeship program with DoN labs.

14. UMD Mascot

17. Hands on ROV mover.

18. You get two runs on this course.

19. ROVs were first tested by them.

DOWN

1. Quick fix station for ROVs on the pool deck.

2. A remotely operated vehicle.

3. Makes ROV move.

4. Mechanical device with revolving shaft and two or more broad blades.

5. SeaPerch is one of this organization's 9 programs.

9. Self-driving

11. Your uncrewed submarine.

13. Abbreviation of "polyvinyl chloride."

15. ____ OECI

16. Hydrothermal vents form at locations where sea water meets _____.

**Answers on seaperch.org*

WORD SEARCH

R J V U R Q M H A C Q A P S S K T H X N
O S R S A A J I W R N S K P O O L B L O
S A L W X E I O U L C R W N H S I R G I
N V K C A S I D Y O O M L H C K K T W T
E S P S U T U Y W W E T V V N R Y C X A
S P S U R B U L H D S C H O I O N C S T
E B C H D M J T U B R Y N P D W O O N N
R Z I F O G A W M F U R O E M D I Z O E
U A T X D M C T S W O D I N D I O N I M
T T O I S D C R K X C V T C Q L O O P U
A T B L T O J O V H N L A L T O V A M C
R G O A E E K X F C O V N A T S R A A O
E G R N M O Q R K R I X O S L D Y Y H D
P J E O S A D N T E S G B S T S N W C N
M H U R K D I O L P S C O O T B U V S G
E G L D P U D S A A I O R E D S H M S I
T J B Y H Z G D X E M D B K T C N J A S
O N S H O R E Y A S V N M I C L W T L E
U D J M K S R T H I C E O U D F H A C D
H E L E V A T O R D O O R Z X B U B B A

WORD LIST:

BLUE ROBOTICS
CLASS CHAMPIONS
DESIGN DOCUMENTATION
DODSTEM
ELEVATOR DOOR
HYDRONALIX
MATHWORKS
MISSION COURSE
NOAA
OECI
ONR
ONSHORE
OPEN CLASS
POOL
ROBONATION
SEAPERCH
SOLID WORKS
TDR
TEMPERATURE SENSOR
UMD

WORD SCRAMBLE

E E S R H P C A
S E A P E R C H

ESHAOTENSPRHE _____
BELU MONECOY _____
ICTPOITMNOE _____
ENNSGERIE _____
EXOTARLPON _____
IRGT _____
TMAHRLRHDOYE TVNE _____
YIUNNGTIE _____
INITVONNOA _____
OECAN _____
CESIRLNYEI _____
OIRCOTB _____
ISSIESCNTT _____
NSISPSAOTHPUR _____
TCOCETIN PLTAE _____
EDANTWEUR OLSCANOEV _____

DID YOU KNOW?

Your SeaPerch uses a CAT 5 Ethernet Cable to transmit power & control your vehicle. Below, the eight-kilometer-long steel cable that connects remotely operated vehicle Seirios with NOAA Ship Okeanos Explorer. This tether, which is unspooled from a storage drum within the ship, brings electrical power & signals to the while returning live video feeds to the ship.

seaperch CHALLENGE

COLORING PAGE

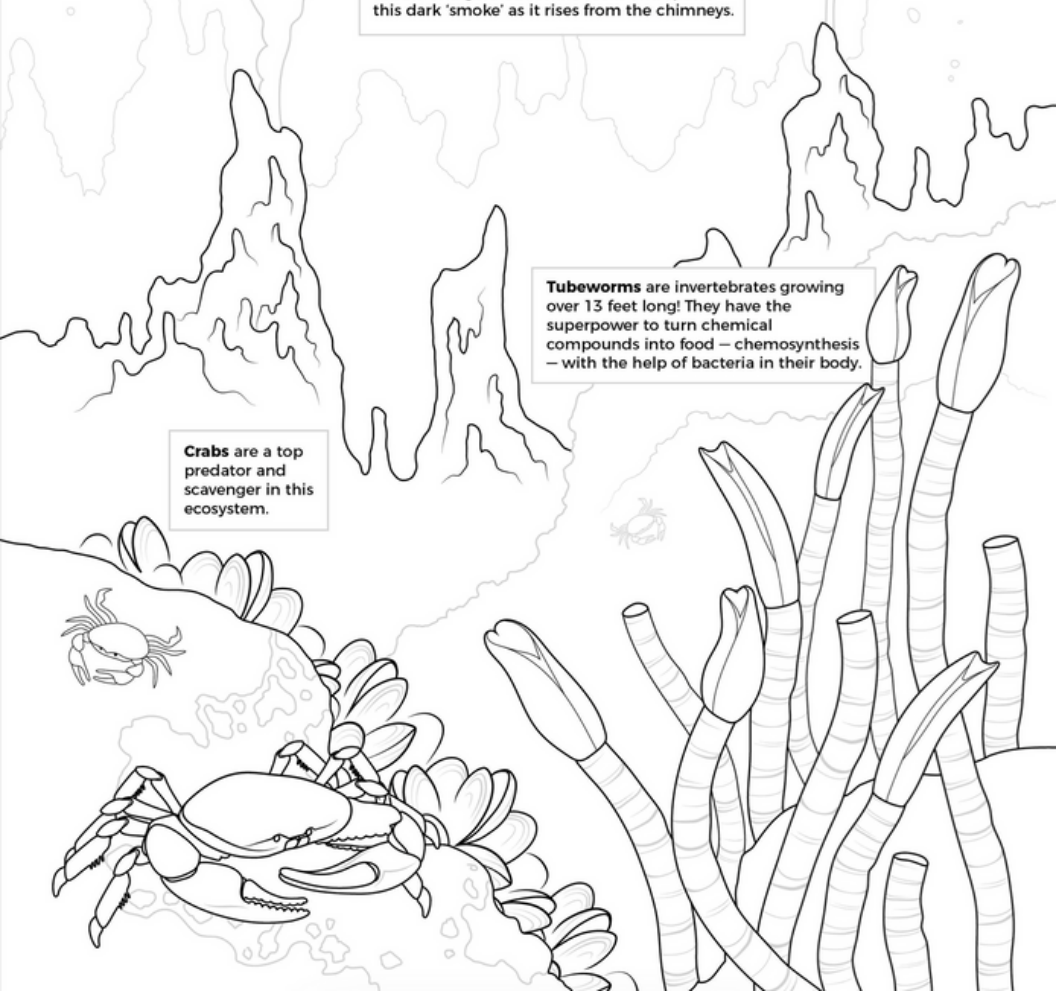
Vents Coloring Page

Hydrothermal vents form in volcanically active, divergent and convergent plate boundaries when water enters deep cracks in the seafloor and rises out superheated, powering ecosystems in the darkness.

Hot water dissolves minerals like copper, zinc, cobalt, and gold out of the rocks and spews this dark 'smoke' as it rises from the chimneys.

Tubeworms are invertebrates growing over 13 feet long! They have the superpower to turn chemical compounds into food — chemosynthesis — with the help of bacteria in their body.

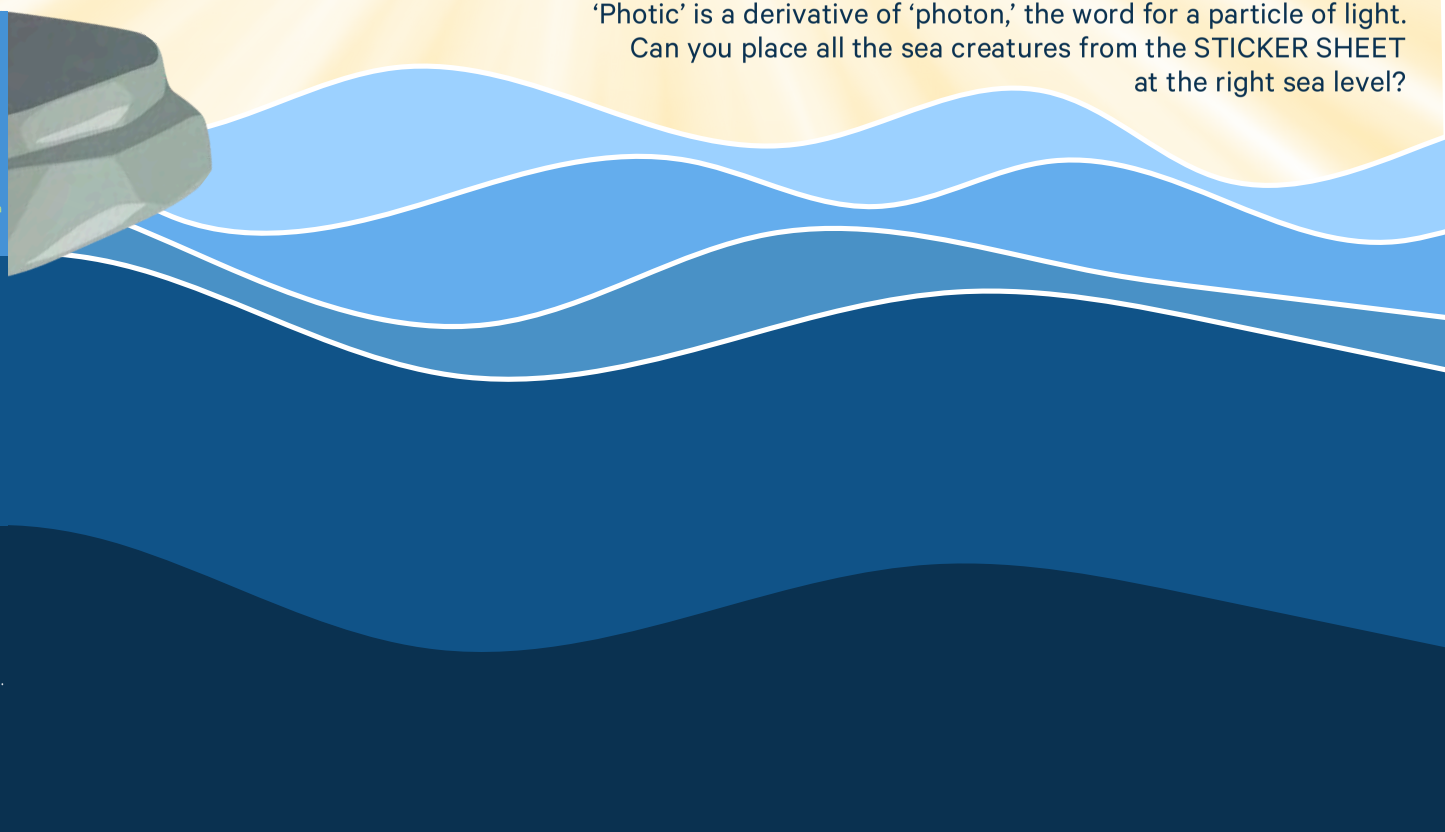
Crabs are a top predator and scavenger in this ecosystem.



HOW FAR DOES LIGHT TRAVEL IN THE OCEAN?

Light may be detected as far as 1,000 meters down in the ocean. The ocean is divided into three zones based on depth and light level.

Although some sea creatures depend on light to live, others can do without it. 'Photic' is a derivative of 'photon,' the word for a particle of light. Can you place all the sea creatures from the STICKER SHEET at the right sea level?



SEA LEVEL

EUPHOTIC ZONE

(Sunlight)

Sunlight rarely penetrates beyond this zone.

Corals, Hammerhead Shark, Jellyfish, Mackerel, Sea Lions, Sea Turtles, Sting Rays, Tuna Fish

200 METERS

DYSPHOTIC ZONE

(Twilight)

Sunlight decreases rapidly with depth. Photosynthesis is not possible here.

Crabs, Octopus, Shrimp, Sperm Whale, Sponges, Swordfish

1000 METERS & BELOW

APHOTIC ZONE

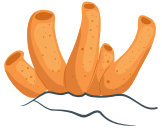
(The Dark Ocean)

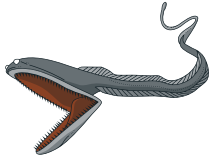
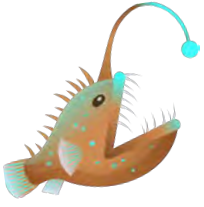
Sunlight does not penetrate. This zone is bathed in darkness.

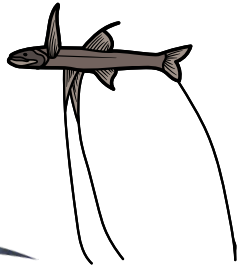
Anemone, Angler Fish, Brittal Star, Giant Squid, Gulper Eel, Rattail Fish, Tripod Fish

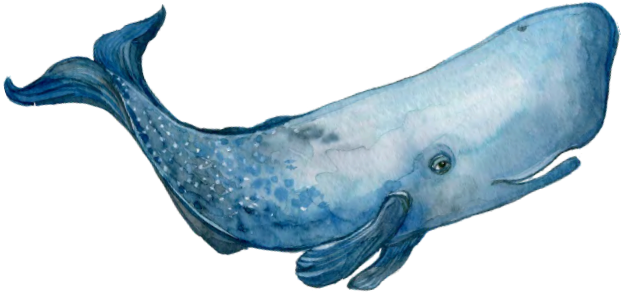
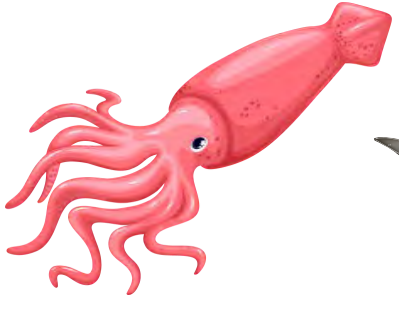
SEA CREATURES

STICKER SHEET





seaperch™

INTERNATIONAL CHALLENGE

University of Maryland | May 31 - June 1, 2024

@robonation @robonationinc @robonation @robonationinc seaperch.org

Connect Your Challenge Team with ROV Pilots At-Sea!

Join Ocean Exploration Trust for a live event from Exploration Vessel Nautilus at the team explores hydrothermal vents offshore of British Columbia, Canada!

NAUTILUS LIVE
OCEAN EXPLORATION TRUST

JUNE 12, 2024

9 AM PACIFIC — 12 PM EASTERN

Chat with deep sea experts and bring your ROV questions from this season's SeaPerch course challenge!

Register to attend: bit.ly/3UZGM0n