2025 INTERNATIONAL SEAPERCH CHALLENGE

PRESENTATION SCHEDULE | SATURDAY, MAY 31, 2025

Date	Time	Location	Team ID & Team Name
Saturday, May 31, 2025	**11:00 AM**	Room 1100 | Cambridge Community Center	027 Team Poseidon 317 Moonstar 406 Dandruff 517 The Sharknadoes
		Room 1111 | Cambridge Community Center	201 SITHS Special Operations 303 Enchanted Tuna 407 Team Drop-Off 921 YellowJackets
		Room 1205 | Cambridge Community Center	204 Enforcers 515 BASA Team 1 546 Phobia 925 The Tortas
	1:30 PM	Room 1100 | Cambridge Community Center	203 Salvatores 405 OceanPerch 502 Sustainable Cyclones 724 Blackbeard Pirates
		Room 1111 | Cambridge Community Center	004 ATIS Megalodons Y 028 Whirlpool Robotics 202 Triton 552 Umbra
		Room 1205 | Cambridge Community Center	001 BLUE TECH 101 Mt. Ararat Serpents 307 Goofy Guppies 726 Team Vader
	2:30 PM	Room 1100 | Cambridge Community Center	013 RovSeekers 021 Flood Dragon 305 Team America 504 Alibaba
		Room 1111 | Cambridge Community Center	003 AISHUJAE KW 010 Team Dream Rong Zhen 322 Mechanical Manatees 910 ECH Science
		Room 1205 | Cambridge Community Center	011 Hanghang 719 AnglerFish 723 Gum Gum Pirates 730 Narwhalic Endeavors
	3:30 PM	Room 1100 | Cambridge Community Center	029 Guangdong Overseas Chinese Middle School 401 Team Jelliver 503 Charybdis 906 Sliced Bread II
		Room 1111 | Cambridge Community Center	008 Team Tahi 304 The Piranhas 550 Coral Crusaders 918 Hydro Homies
		Room 1205 | Cambridge Community Center	554 Reef Renegades 709 Sushi Farmers 721 Stingrays 919 Pickle Perch

2025 INTERNATIONAL SEAPERCH CHALLENGE

PRESENTATION SCHEDULE | SUNDAY, JUNE 1, 2025

Date	Time	Location	Team ID & Team Name
Sunday, June 1, 2025	**9:30 AM**	Room 1100 | Cambridge Community Center	012 Killer Whale 210 Bionic Bulldog Team 22198 516 BASA Team 2 553 Terminator
		Room 1111 | Cambridge Community Center	501 Rehobeth NJROTC Team B 510 Sandalwood Dolphins 718 Katzilla 2.0 904 ProtoKnights 1
		Room 1205 | Cambridge Community Center	511 The Gummy Sharks 548 Blingrays 725 Team Fluorescence 729 Oceanus Robotics
	10:30 AM	Room 1100 | Cambridge Community Center	022 Blocky Shark 314 Chesapeake Crew 518 Thunderbolts 710 Panthrix 905 ProtoKnights 2
		Room 1111 | Cambridge Community Center	018 Naiades 215 Sea Challenger 547 Here Comes the Boom 902 Supernova & Co.
		Room 1205 | Cambridge Community Center	019 Wavecrest 519 Rehobeth NJROTC Team A 903 Hawaii Coral Crusaders 914 Water Wiggles

Saturday, May 31 | 11:00 AM
Room 1100 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-2A

027 | Team Poseidon
Hackley School | Tarrytown, New York, USA

Our ROV, Trident, is unique because of its compact frame and two custom tools we designed ourselves: Triton's Talon, a hook for grabbing and pulling, and Poseidon's Grasp, a rubber-tipped claw that gently picks up delicate items like coral or jellies. We were inspired by how real ROVs are used in coral reef research and rescue, and we wanted ours to model that kind of careful work. We reused materials from past years, kept our budget low, and learned a lot about design and teamwork along the way. Trident reflects both our creativity and our passion for engineering and ROVs.

317 | Moonstar
Unity Reed High School | Manassas, Virginia, USA

What makes your ROV unique from others in the competition? Our ROV is shaped like a bus, inspired by the movie Mean Girls. We thought using the bus from the movie would make our design fun and memorable while still being functional for the competition. The bus shape wasn't just for looks it also helped us build a strong, balanced frame that could handle underwater challenges. The thrusters are controlled with a modified PS4 controller. The PS4 controller was perfect because it's comfortable to hold and easy to use, especially for teenagers who are used to gaming.

406 | Dandruff
Clinton High School | Clinton, Michigan, USA

We are Team DANDRUFF, and our ROV is like none you've ever seen. Its bow has less than 10 square inches of surface area, and the top exceeds 20 square inches, ensuring unmatched agility and rotational stability. Our hooks are easily attachable and detachable thanks to a screw-on mechanism. The reel is designed for spinning to neatly roll up the tether, keeping everything tidy. Additionally, we minimize kinks with a biaxial braided tether, ensuring smooth operation.

517 | The Sharknadoes
Apollo Middle School | Hollywood, Florida, USA

No abstract submission.

Saturday, May 31 | 11:00 AM
Room 1111 | Cambridge Community Center

Team ID | Team Name
School/Organization | Location

Session P-2B

201 | SITHS Special Operations
Station Island Technical High School | Staten Island, New York, USA

Our ROV is unique because of its specialized hooks and colored elbows. With three inward curvatures, the Cross hook increases our chances of grabbing and transporting sensors, marine life, hanging corals, and octopuses. The T hook is designed to open the bio-bucket hatch despite imprecise movements. Both hooks use durable, lightweight PLA filament, reducing the risk of breakage. They are tilted downward, allowing the ROV to pick up samples without descending far, which reduces runtime. We also spray-painted the front and back PVC connectors with different neon colors for high visibility underwater to help controllers operate the ROV.

303 | Enchanted Tuna
Ideaventions Academy for Mathematics & Science | Reston, Virginia, USA

Our ROV is unique because of one main factor. We chose to use an alternative piping (PEX) instead of the traditional PVC that comes in the kit. This allowed us to take a more artistic approach to our design, resulting in a uniquely shaped cylindrical ROV. It also gave us the speed and lightness we needed for the mission and obstacle course that helped us succeed at the regional competition. We are glad we had the freedom to edit our designs and materials to give our ROV a unique edge over the competition.

407 | Team Drop-Off
Clinton High School | Clinton, Michigan, USA

Our ROV is unique because of its two points of design: backer rod floatation which we use to balance out the buoyancy of our ROV, and our special PVC hooks with paper clips which allow us to pick up anything in the competition. Our design is also unique because we adhere to the engineering design process when building our ROV which means we are constantly improving on our design. Finally our design is unique because of its outside of the box elements and how we used no tutorial for the design.

921 | YellowJackets
United States Naval Sea Cadet Corps | Running Springs, California, USA

No abstract submission

Saturday, May 31 | 11:00 AM
Room 1205 | Cambridge Community Center 1205

Team ID | Team Name
School/Organization | Location

Session P-2C

204 | Enforcers
Police Activities League of Egg Harbor Township and Atlantic County | Egg Harbor Township, New Jersey, USA

No abstract submission.

515 | BASA Team 1
Boynton Aerospace Science Academy (BASA) at Boynton Beach Community High School | Boynton Beach, Florida, USA

- "Reefense" of Florida Reefs: Our presentation will discuss the importance of "Reefense"(a term blending "reef" and "defense") and how the Sea Perch Project has helped us make a connection to innovative efforts to restore and protect coral reefs, especially in Florida, where reefs face major threats.
- Why it matters: Coastal Protection: Reefs act as natural breakwaters, reducing wave energy and protecting shorelines from erosion and storm surge. This is crucial for Florida, which is highly vulnerable to hurricanes.
- Biodiversity Hotspots: Florida's coral reefs support thousands of marine species, making them vital for ecological balance.
  Economic Value: Reefs contribute billions to Florida's economy through tourism, fishing, and recreation.
- Innovation in Reef Defense: Initiatives like the U.S. Army Corps of Engineers' "Reefense" project use hybrid reefs (natural + engineered) to enhance protection and ecological function. These projects often integrate living corals with artificial reef structures, aiming to create sustainable and resilient systems.

546 | Phobia
Charleston Charter School for Math and Science | Charleston, South Carolina, USA

Our ROV, SR-Bob, stands out for its unique triangular frame made from a flat PVC sheet—an uncommon choice in middle school stock class. This design reduced drag, increased speed, and improved maneuverability. We also created a front-mounted mechanical hook powered by elastic potential energy, allowing for more accurate pickups and drops without electronics. Every design decision was backed by testing and engineering research. Unlike traditional builds, SR-Bob was shaped by real data and problem-solving, resulting in a faster, more stable, and mission-ready ROV that reflects creativity, precision, and teamwork.

925 | The Tortas
Rialto High School | Rialto, California, USA

Our ROV is a short, compact frame allowing for quick and precise turns, which is responsible for our maneuverability. One of the unique assets of our seaperch is the 3D printed ball shaped nose, our ROV can carry and drop objects effectively. The additional 3D printed motor mounts placed fore and aft of our seaperch's center of mass allow our ROV to move in any direction improving the hydrodynamics of our seaperch. This topped off with additional air canisters which contribute to our seaperch's flotation and buoyancy.

Saturday, May 31 | 1:30 PM
Room 1100 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-3A

203 | Salvatores
Mt. Laurel Schools | Mt Laurel Township, New Jersey, USA

No abstract submission

405 | OceanPerch
Clinton High School | Clinton, Michigan, USA

Our ROV is unique compared to others in the competition because of its innovative design and efficiency. It features a fully 3D-printed frame that helps minimize the drag for navigation underwater. Our ROV also has a custom Arduino controller that uses pulse width modulation, making movements more responsive and allowing for a gradual increase and decrease of speed. Additionally, a wire harness ensures neutral buoyancy, which prevents the cord from interfering with the ROV's mobility. These features maximize performance to compete for both the Mission and Obstacle courses.

502 | Sustainable Cyclones
Carrollton School of the Sacred Heart | Miami, Florida, USA

Our ROV stands out with a truly unique design in shape, materials, and functionality. Unlike typical SeaPerch models, our frame mimics a ship's hull to boost buoyancy and mobility. Its compact dimensions allow for swift, precise movements during the obstacle and mission courses. We chose ¼" CPVC, smaller than the standard material, to reduce weight and build a smaller frame. This strategic decision enhances speed and control. Our custom hook design further sets us apart, allowing efficient object retrieval. Every aspect of our ROV was designed to maximize the speed and hydrodynamics of the ROV.

724 | Blackbeard Pirates
Washington Middle School | Albuquerque, New Mexico, USA

No abstract submission.

Saturday, May 31 | 1:30 PM
Room 1111 – Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-3B

004 | ATIS Megalodons Y
A'takamul International School| Sabah Al Salem, Kuwait

Our project is all about building a simple, reliable, and fast ROV for the SeaPerch competition. We worked as a team to design a lightweight frame, smart motor placement, and custom tools to help us complete tasks underwater. We also focused on clean cable management to keep things smooth during driving. Along the way, we learned a lot about engineering, teamwork, and how to solve problems when things didn't go as planned. This project wasn't just about building a robot—it was about growing together and having fun while doing something challenging and cool.

028 | Whirlpool Robotics
Whirlpool Robotics | San Diego, California, USA

Our ROV differs with its completely custom, CFD-optimized design and iterative engineering process. Unlike others, we created our own frame geometry and propulsion system, resulting in a 30% increase in thrust. It was all CAD-modeled, FEA-analyzed, and 3D printed for speed, efficiency, and modularity. Bidirectional ESCs and an integrated, light design provide us with better control and maneuverability in the water. Our precision claw system also improves performance. This combination of high-tech equipment, custom parts, and attention to detail in the design ensures that our ROV is specifically engineered for speed, precision, and reliability in each task.

202 | Triton
Mt. Laurel Schools | Mt. Laurel Township, New Jersey, USA

No abstract submission.

552 | Umbra
Oak Grove High School | Hattiesburg, Mississippi, USA

No abstract submission.

Saturday, May 31 | 1:30 PM
Room 1205 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-3C

001 | BLUE TECH
Kuwait National Robotics Competition – YPA | Kuwait, Kuwait

We connected our ROV to real problems like coral reef damage and underwater pollution. We were inspired by a Kuwaiti diving tool — the nose clip used by old pearl divers. Just like that tool helped divers work better underwater, we designed simple, useful parts for our ROV to help in ocean missions. Our robot can plant coral, collect samples, and place sensors. We also made it easy for people with disabilities to use. This shows how old traditions and new technology can work together to protect the sea.

101 | Mt. Ararat Serpents
Mt. Ararat High School | Topsham, Maine, USA

The MTA Serpents have created an extremely unique ROV this year. Rather than using standard PVC piping as the structure, the team bent PEX tubing to create a curved, all custom skeleton. As a result, the ROV achieved increased speed and maneuverability without sacrificing functionality in the mission course. Along with the unique frame, the team also designed multiple 3D parts customized for the ROV. These parts included custom motor mounts, a Y-fork tool and, because of the PEX's reduced weight, a secondary backup tool. Overall, creativity and functionality were equal in priority for this year's ROV design.

307 | Goofy Guppies
Chesapeake Math & IT Academy North High School | Laurel, Maryland, USA

Real World Uses for Remotely Operated Underwater Vehicle

On behalf of Team Illusion, the Goofie Guppies would like to make a presention during the International Seaperch Competition. We were approached a couple of years ago by a member of the Rotary and asked to look into the use of AI in hunting for and controlling invasive species. We noticed the inclusion of invasive species in the discussion of this year's challenge and determined that we would like to tell the community what we are working on in this regard. We would be talking about the CMIT Research Vessel Intrepid. It is a catamaran made of four one gallon water jugs, featuring two 1.2 kilgram thrusters, and an ArduPilot control system, tied to the open system QGroundControl. Our discussion will be on the addition of a submersible to the system as a remote data-gathering arm and how we intend to tie AI and underwater vision into the system. We would be bringing the Intrepid with us and showing how its control system operates.

726 | Team Vader
West Mesa High School | Albuquerque, New Mexico, USA

Our seaperch is unique because It utilizes a very "open" design, allowing water to easily flow through the chassis and aiding maneuverability significantly. The 1⁄8-inch acrylic sheets that make up our chassis are lightweight and could be cut into virtually any design using a laser cutter. Our buoyancy method of medical syringes makes for easy adjustability in competition. Our vehicle's "tie-fighter"-esque design is also unique, and was the main source of inspiration for our team name. We believe our seaperch has a cutting edge design that is very unique.

Saturday, May 31 | 2:30 PM
Room 1100 | Cambridge Community Center

Team ID | Team Name
School/Organization | Location

Session P-4A

013 | RovSeekers
Youth Science & Technology Center of Beijing Xicheng | Beijing, China

Core Idea: Pursue human-coral symbiosis. Design aims to reduce impact on coral reefs for harmony. Key Component Optimization:

1. Framework Materials - Use non-toxic PVC plastic. Reinforce ROV to prevent fragments from damaging coral reefs.
2. Zero-Buoyancy Cables - Select quality cables for precise control, enhance flexibility and strength to avoid interference.
3. Motor Ducts - Install proper ducts, optimize shape and size to cut water and sediment disturbance. Add flow guides to protect propellers.
4. Electric Claws - Make grasping parts with soft material. Treat surface to prevent harm to corals and marine life.

021| Flood Dragon
Pui Ching Middle School Macau | Macau, China

Leviathan, our competition ROV, stands out with three key innovations:

1. Microswitch Control Box – Enables instant motor reversal for agile navigation, with a backup system via 9-core aviation connectors for reliability.
2. Diamond-U Frame – A lightweight geometric design optimized for speed and hydrodynamics.
3. 3D-Printed Robotic Arm – Gear-driven by a reduction motor, featuring dual-gear precision for delicate object manipulation.

These features combine to deliver unmatched maneuverability and task performance.

305 | Team America
Loudoun County High School | Leesburg, Virginia, USA

No abstract submission.

504 | Alibaba
River City Science Academy Middle-High | Jacksonville, Florida, USA

The features that set our ROV apart are the air tube buoyancy devices, 3D printed motor cone, and our lighter cable sleeve. These modifications were best in reducing our drag while underwater, while improving our thrust-mass ratio. Our team utilized these 3D printed motor cones in order to balance the weight of the motor, since the motor cones are 3D printed. The printed cones are buoyant underwater. Additionally, our team found it beneficial to utilize air tubes because of our light frame, along with switching the cable sleeve so the sub didn't have to propel the heavy cable.

Saturday, May 31 | 2:30 PM
Room 1111 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-4B

003 | AISHUJAE KW
Kuwait National Robotics Competition – YPA | Kuwait, Kuwait

Our project is about designing an underwater robot called Harbor Sentinel for the 2025 SeaPerch Challenge. It is made to help inspect underwater parts of ports, bridges, and boats. We used simple materials, tested it many times, and made changes to improve how it moves and grabs objects. Our robot has strong lights, a gripper arm, and space for sensors. It's built to be useful not just for the competition, but also in real life. We hope it can help cities take better care of their marine areas while showing how students can build helpful technology.

010 | Team Dream Rong Zhen
Beijing Bayi School & C.S.O | Beijing, China

During the presentation, we plan to focus on the innovations and unique features of our ROV. At the beginning, we will give a brief introduction of our team. Then, we will highlight the key innovations of our ROV. In particular, we will emphasize the addition of a LEGO mechanical claw, which, combined with a geared motor, enables smooth opening and closing—making it easy to complete various tasks. Next, we will briefly introduce the new buoyancy material we used, as well as our application of special cold welding techniques and 3D printing. After that, we will explain the main features of our ROV. Finally, we will share our unique insights into this season's competition tasks.

322 | Mechanical Manatees
Nation Ford High School | Fort Mill, South Carolina USA

Our ROV is influenced by our experiences during the design, testing, and competitions from both this season and our previous season. Crucial features include: the claw, motor placements, size, and color. They enhance agility and maneuverability. From our previous season, we minimized the Manatee's base and added a larger "waffle" claw. Reconfiguring the position of our motors we improved mobility and accuracy; paint increased visibility. We applied the knowledge we gained to improve ROV functionality and efficiency. The cause and effect nature of the Engineering Design Process means that our robot and our team will continue to improve and impress.

910 | ECH Science
Asotin Lions Club | Asotin, Washington, USA

Our team was asked by our local port district to inspect doc pilings and collect water depths with our ROV. We decide to create a new R.O.V. that would need to be able to withstand the harsher environment of the Snake River (rather than a swimming pool.) We knew we needed to attach a camera to allow recording of underwater activity and permit real-time observation by the team on the dock. With this set-up we were able to inspect the dock pilings, making sure the bases were stable, as well as check for a possible gas leak around the docks.

Saturday, May 31 | 2:30 PM
Room 1205 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-4C

011 | Hanghang
The Aerospace City School of RDFZ | Beijing, China

The ROV adopts a vertical plate structure, which widens the distance between the floating center and the center of gravity, making the machine structure stable. The front end uses 90 ° angled PVC connectors to reduce resistance in water. The buoyancy material is a transparent bottle, with a pointed tip at the front end to reduce resistance. Adjusting the water volume in the bottle can regulate buoyancy. Use 3D printed parts to connect the motor, and extend the connecting pieces from the left and right motors to ensure appropriate rotation speed.

719 | AnglerFish
Mayport Coastal Sciences Middle School | Atlantic Beach, Florida, USA

Anglerfish focused on building an underwater Remote Operated Vehicle (ROV) for the 2025 Seaperch challenge. This report outlines their use of the Engineering Design Process (EDP), testing methods, and teamwork, while acknowledging the support of sponsors, coaches, school, and parents. Unique ROV features include:

- Adaptable Frame – A 3D-printed, thin rectangular prism for easy buoyancy and motor adjustments.
- Ultralight Design – A 1.1-ounce frame reduces drag.
- Adjustable Buoyancy – Lightweight bottles adjust pitch.
- Servo Gripper – A four-finger tool for reliable item handling.
- VPGC – Custom controller for motor precision.
- Collapsible Parts – Designed for compact storage and maneuverability

723 | Gum Gum Pirates
Washington Middle School | Albuquerque, New Mexico, USA

No abstract submission.

730 | Narwhalic Endeavors
East Early College High School, Houston Independent School District | Houston, Texas, USA

No abstract submission.

Saturday, May 31 | 3:30 PM
Room 1100 | Cambridge Community Center

Team ID | Team Name
School/Organization | Location

Session P-5A

029| Guangdong Overseas Chinese Middle School
Guangdong Overseas Chinese Middle School Aerospace Engineering Team | Guangzhou, Guangdong, China

Here are our takes, as we chose why our ROVs are different
This submersible utilizes a hybrid PVC framework combining rectangular upper/lower sections with hexagonal connectors, increasing torsional strength by 40% compared to uniform structures. Its central 3D-printed PETG mounting bracket achieves 0.08mm manufacturing precision and 0.5% water absorption for underwater stability. The 20cm linear rail adjustment system enables precise payload balancing. Brushed DC motors drive 39mm propellers through IP68-rated waterproof connectors, while hexagonal joints distribute hydrodynamic pressure across six axes to withstand 30m depths. The design integrates lightweight construction, environmental adaptability, and high-precision manufacturing. Modular architecture enhances maintainability through tool-free component replacement, achieving optimal balance between structural durability and operational flexibility in aquatic environments.

401 | Team Jelliver
Elkhart Lake - Glenbeulah Middle School | Elkhart Lake, Wisconsin, USA

While our ROV is similar in many ways to other Stock Middle School ROV's, the changes we made helped us stand out. The ROV features a smaller size, making it easier to handle. It features multiple colors, allowing it to stand out vividly in the pool. It includes 3-D printed parts that were custom designed by our team. Additionally, the product incorporates expandable foam within the pipes, providing added buoyancy to enhance performance. Finally, it is equipped with a specialized non-kinking cord, ensuring durability and ease of use during it's time in the water.

503 | Charybdis
River City Science Academy Middle-High | Jacksonville, Florida, USA

The features that set our ROV apart from others are the metal clamp mounts, internal foam, and lighter cable sleeve. These modifications reduce the drag in the water while keeping stability and solidity. We decided to integrate all these elements into a non-stock ROV that uses PEX pipes and CPVC in order to create a lighter and more hydrodynamic frame. We found that internal foam worked just as beneficial as external foam, but decreased the surface area propelled underwater,which decreased drag. The team used metal hose clamps replaced the stock zip tie mounts to more securely mount the motors.

906 | Sliced Bread II
Pacific Ridge School | Carlsbad, California, USA

Slice Bread Presentation Abstract We separate ourselves from the whole of the competition through our design approach and unique execution. Throughout the process of designing our vehicle, we intuitively thought of ways to tweak and bring functionality to our system rather than follow any guided parameters. This began in the complete reiteration of our initially unbalanced design and culminated in the use of simple devices to solve a myriad of potential issues. From creating removable PVC caps to drain excess water to allowing for detachable hooks and supports for mission utility and repairs, we managed to naturally separate ourselves from the status-quo.

Saturday, May 31 | 3:30 PM
Room 1111 | Cambridge Community Center

Team ID | Team Name
School/Organization | Location

Session P-5B

008 | Team Tahi
SAGE Engineering Club | Rotorua, Bay of Plenty, New Zealand

Our presentation is going to cover three unique aspects of our design; our method of object collection, changeable buoyancy, and motor mounting. For our object collection, we have modified a silicone hydraulic claw from MIT which gives us the freedom to be able to pick up any object regardless of their size and shape. We have also created a system which allows us to have variable buoyancy - we have a film canister with a water balloon in it. We can fill this with water when we need less buoyancy so that we can have slightly negative buoyancy so we can pick objects up and then we can take out the water once we have collected objects so that we have slightly positive buoyancy and are able to pick up and move heavier objects. Finally we have added in a motor which is connected to an axle that allows us to tilt our left/right motors to give us more freedom in the direction that we drive in, so that our ROV is more maneuverable.

304 | The Piranhas
Ideaventions Academy for Mathematics & Science | Reston, Virginia, USA

We built our team's ROV, the Piranha, to protect coral ecosystems. Our ROV was developed to tackle real-world problems including ocean acidification, coral bleaching, ocean pollution, and microplastics. Of these, microplastic surveying guided our design. The Piranha required good maneuverability, neutral buoyancy, and flexibility in unexpected conditions. Going forward, we would attach a PlanktoScope (an affordable, compact, digital microscope) to our ROV. It would use a pump, Raspberry-Pi 4, Pi camera, and multiple lenses to photograph and identify plankton to monitor microplastics. With our small build, it's simple to add this. Using the right engineering, ROVs can protect our reefs.

550 | Coral Crusaders
Lake Castle Slidell Private School | Slidell, Louisiana, USA

The team initially started with a rectangular frame. After testing on the two courses, the frame was redesigned into a pentagonal shape, enhancing its hydrodynamics. Additionally, the size was reduced, and the PVC tubes were sealed to provide buoyancy, eliminating the need for Styrofoam floats and thereby increasing speed.

918 | Hydro Homies
US Naval Sea Cadet Corps | San Diego, California, USA

No abstract submission.

Saturday, May 31 | 3:30 PM
Room 1205 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-5C

709 | Sushi Farmers
Shadow Creek High School | Pearland, Texas, USA

What makes our ROV unique is the unconventional placement of the vertical motor. The first iteration that included this feature started as an accident. The ROV pitched up and down instead of moving up and down. We doubled down on this mistake by purposely integrating this new control into the ROV. This addition made navigation faster as instead of stopping to go up or down, we could flawlessly glide through checkpoints like the obstacle course. The disadvantage of this is the inability to maneuver straight up or down. We will also discuss how we overcame this disadvantage.

721 | Stingrays
Mayport Coastal Sciences Middle School | Atlantic Beach, Florida, USA

Team Stingray's ROV has many components that make it exceptional. Not only is the 3D frame lightweight, thin, and can hold multiple attachments for maximum efficiency on the courses, but the team also turned ocean damaging plastic waste into recycled 3D filament to print the ROV frame components and parts like bottle caps, cable buoyancy, etc. The counter rotating propeller balances our horizontal thrust and coupled with our fin it helps our ROV drive straight during course runs. The ROV also has improved water proofing on its motors to make them lighter, more hydrodynamic and most importantly more reliable.

554| Reef Renegades
Lake Castle Slidell Private School | Slidell, Louisiana, USA

Our ROV utilizes a square shape. The PVC frame has been filled with spray foam to help the buoyancy. We only required two small styrofoam floats to achieve neutral buoyancy. The ROV has two PVC tubes which act as hooks to complete the mission course objectives.

919 | Pickle Perch
US Naval Sea Cadet Corps | San Diego, California, USA

No abstract submission.

Sunday, June 1 | 9:30 AM
Room 1100 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-6A

012 | Killer Whale
Beijing No. 35 High School & Guangdong Experimental High School | Guangzhou, Guangdong, China

The ROV robot we developed has played an important role in environmental protection. It is equipped with a robot arm module that can pick up items that accidentally fall into rivers and lakes. Installing sensors can detect environmental water quality, pH value, and dissolved oxygen value. It is also equipped with cameras, searchlights, and other auxiliary devices to observe fish schools. In the future, we plan to install a wireless control system that can overcome the limitations of cables and help it work better.

210 | Bionic Bulldog Team 22198
Our Lady of Mount Carmel School/Archdiocese of Philadelphia | Doylestown, Pennsylvania, USA

Our robot will pick up coral pieces, then divers will replant the coral using safe cement made from salt and water. Next, our robot will plant seagrass which absorbs CO_2 in low pH conditions. Finally, underwater speakers attached to coral mazes will mimic the sounds of thriving coral and fish to encourage coral growth.

Why?: Coral reefs support 25% of ocean life, making them vital to the ecosystem. Research from a documentary, "Chasing Coral" shows that the sound of healthy coral increases the chances of regrowth, even in bleached areas, and helps new coral thrive. This solution promotes a healthier ocean ecosystem and aligns with sustainability goals.

516| BASA Team 2
Boynton Aerospace Science Academy (BASA) at Boynton Beach Community High School | Boynton Beach, Florida, USA

No abstract submission.

553 | Terminator
Oak Grove High School | Hattiesburg, Mississippi, USA

No abstract submission.

Sunday, June 1 | 9:30 AM
Room 1111 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-6B

501 | Rehobeth NJROTC Team B
Rehobeth High School NJROTC | Dothan, Alabama, USA

No abstract submission.

510 | Sandalwood Dolphins
Sandalwood High School | Jacksonville, Florida, USA

The Sandalwood Dolphins are a first-time Seaperch Champion 2025 team representing the Sandalwood Engineering Academy. Through hands-on learning, they applied the full Engineering Design Process to design and build an ROV capable of completing all mission tasks. The team used creative solutions with household materials, emphasizing buoyancy control and functionality. Their journey reflects strong collaboration, critical thinking, and problem-solving skills. In addition to preparing for the competition, the team volunteers after school to mentor local middle school robotics teams. The Dolphins are not only ready to compete but also committed to sharing their knowledge and inspiring future engineers.

718| Katzilla 2.0
Beatriz Garza Middle School | Weslaco, Texas, USA

Our ROV was navigated through hoops at various angles and was guided into retrieving and relocating objects. These tasks simulated real-world applications, such as inspecting underwater pipelines or aiding in ocean cleanup. Our focus on environmental monitoring highlighted the need for ROVs to be designed to handle marine life delicately and avoid entanglement or malfunctions.
We also discovered the importance of equipping ROVs with cameras, as water currents distort human vision. Through testing, we gained insights into how science and technology collaborate to address challenges. The ROV made learning engaging and demonstrated the practical potential of robotics in real-world scenarios.

904 | ProtoKnights 1
Castle High School | Kaneohe, Hawaii, USA

Our ROV for this year's challenge is unique because we designed it to be a fully encased 3D shell verses a PVC frame. We also designed our manipulator to fold up so that it can become more hydrodynamic when running the obstacle course. We increase the size of our electrical wire to reduce voltage drop, and added wax, a hydrophobic substance to our shell reduce the friction from the water. We would like to share the changes we've made and what we learned from this season.

Sunday, June 1 | 9:30 AM
Room 1205 | Cambridge Community Center

Team ID | Team Name
School/Organization | Location

Session P-6C

511 | The Gummy Sharks
Calcasieu Parish School Board | Sulphur, Louisiana, USA

We would like to present what makes The Gummy Sharks so unique. Our ROV looks like a Gummy Shark representing our team. It has fins on each side representing shark fins. It also has five prongs unlike other bots who only have one to two prongs. Another thing that is unique about our robot is that we have a little tail that guides our robot from getting tangled. We love to pass out Gummy Shark candy to other people at our competitions. They smile and say, “This is cool, Gummy Sharks.” This helps lighten the mood of the competition and brings joy. This is what makes The Gummy Sharks special.

548 | Blingrays
Academic Magnet High School | North Charleston, South Carolina, USA

Our design uses custom 3D printed parts including a hook, motor casings, and frame structure. We went through various 3D-designed frames, deciding on a small cube frame that placed most of the ROV's elements towards the center of mass. This created easier acceleration and underwater buoyancy. The smaller frame lessens our mass and increases the robot's stability. Weight was also decreased with the use of PEX in place of PVC which was originally included. All of these decisions were made through multiple trials and tests, and through team brainstorming to create a well-refined, successful ROV.

725| Team Fluorescence
West Mesa High School | Albuquerque, New Mexico, USA

Our Seaperch is a fully custom-designed ROV that combines many advanced manufacturing processes like 3D printing and laser cutting. The chassis is resin 3D printed with FDM printed directional colored syringe markers. Our tool is laser cut out of 1/8 inch acrylic. Our left/right propellers have three blades and are oppositely pitched to rotate in opposite directions which eliminates torque issues. This ROV is shaped like a manta ray which uses syringes for buoyancy, hydrodynamic resin film canisters to waterproof motors, and a custom 3D printed tether spool. With a low drag profile, it’s optimized for performance.

729 | Oceanus Robotics
Oceanus Robotics | Sugar Land, Texas, USA

Our Nessie ROV features engineered components that optimize weight, stability, and maneuverability. Its lightweight frame, made from 77 grams of ¼-inch PVC, reduces mass and increases speed. A 12-gram 3D-printed PLA overhang raises the center of buoyancy, improving stability and preventing barrel rolls. A 3D-printed hook with an extended arm efficiently retrieves mission components. Custom 3D-printed motor attachments are more reliably waterproofed than wax. Three-gram spacers push motors outward, enhancing agility. The sill plate gasket provides slightly positive buoyancy. With even mass distribution and added rear weight, the center of mass is approximately 1.99 inches, ensuring balanced, high-performance operation.

Sunday, June 1 | 10:30 AM

Room 1100 | Cambridge Community Center

Team ID | Team Name
School/Organization | Location

Session P-7A

022 | Blocky Shark

Pui Ching Middle School Macau | Macau, China

Our team, Blocky Shark, designed and built Stingray, a wing-shaped ROV optimized for maneuverability and stability in the 2025 International SeaPerch Challenge. Featuring a custom mechanical claw for precise object handling, Stingray balances speed with functional efficiency. Through iterative design and testing, we addressed challenges like waterproofing, weight distribution, and control reliability. Our experiments informed the selection of optimal propeller size, enhancing performance in obstacle and mission courses. This project highlights our teamwork, engineering skills, and innovative problem-solving in underwater robotics.

314 | Chesapeake Crew

Patriot High School | Nokesville, Virginia, USA

Our SeaPerch is unique because it is small and nimble, yet stable and easy to control. The ROV measures seven inches wide and eight long, and resultingly, moves quite fast in the water. Our ballast and buoyancy positioning help keep the ROV upright, and our custom and ergonomic controller housing (designed from a PS5 controller 3D scan) make controlling the ROV much easier. Our tether sheathing has been replaced with cable sleave mesh to reduce "tether tug." Our navigation lights help us understand the ROV's orientation and position while competing.

518| Thunderbolts

Cypress Bay High School | Weston, Florida, USA

Our ROV has some new design elements to optimize performance. In our region, the government has promoted programs that ensure coral reef restoration in Key West and restoration of marine wildlife. Our ROV implement similar traits to what professional ROV require as minimum characteristics such as an adjustable control of buoyancy, extense hydrodynamic design in order to extend the range of missions as well as appendixes such as claws or hooks that could help rebuild and monitor coral reefs.

710 | Panthrix

South Early College High School | Houston, Texas, USA

PANTHRIX has improved the mobility of our ROV, Aquamarine 2.0, based on issues observed during the regional round. We simplified its design by reducing size, changing the color for better visibility, and addressing issues of drag and buoyancy. We also replaced worn-out components such as motors and batteries, and made modifications to its structure to increase speed and efficiency. The use of second-hand items in the original construction led to several problems, so in the new design, we invested in new materials. The improved Aquamarine 2.0 now boasts enhanced mobility, improved visibility, and increased efficiency.

905 | ProtoKnights 2

Castle High School | Kaneohe, Hawaii, USA

We will talk about what makes our ROV unique. Our ROV is 3D printed in a fully encased shell to hold our buoyancy, motors, and manipulator. We also tried to make it as small as possible. We increased the wire size, and coated our ROV with wax, a hydrophobic substance. We would like to share out what we learned in our first year in SeaPerch and what we design, built, and created to get to the International Challenge.

Sunday, June 1 | 10:30 AM

Room 1111 | Cambridge Community Center

Team ID | Team Name
School/Organization | Location

Session P-7B

018 | Naiades

CROEV School | Villalba, Puerto Rico, USA

Ocean acidification is a growing environmental issue caused by excess carbon dioxide in the atmosphere, which lowers the pH of water and affects ecosystems. We wanted to understand this problem and designed an ROV equipped with sensors to measure pH and temperature in local bodies of water. Using simple components, we collected data and observed how these factors change across different depths and locations. The results helped us see how vulnerable some ecosystems can be, and how technology can help monitor and protect them. This approach enhances local environmental monitoring and empowers student innovation in sustainable engineering.

215 | Sea Challenger

Danville Area High School | Danville, Pennsylvania, USA

No abstract submission.

547| Here Comes the Boom

South Carolina Governor's School for Science and Mathematics | Hartsville, South Carolina, USa

My name is Matthew Bodnar and I am the team captain of Here Comes the Boom SeaPerch. Here Comes The Boom SeaPerch is based out of Hartsville, SC. We are a first year team from an academically rigorous residential High School. We all live together here at South Carolina Governor's School for Science and Math. Our team met for the first time around October and got all of our materials around late January, which meant we only had about 1.5 months to build our SeaPerch robot and be ready for competition. I want to share our story of how we created TNT (Robot name) while surviving almost only college level courses while living on campus.

If we were selected to give a presentation these are the topics I would cover in order

1. Thanks for your time and the opportunity and introduce ourselves
2. What SCGSSM is and how our team was formed
3. Struggles getting materials ordered and timeline.
4. Talk about the design process of our robot
5. Challenge and successes
6. Outreach
7. Talk about how our only place to test until March 11th was a bathtub / tub.
8. North Charleston Regional
9. Since then and conclusion
10. Thanks again for opportunity

902 | Supernova & Co.

Highlands Intermediate School | Pearl City, Hawaii, USA

Our ROV, initially for coral restoration, can offer broader subsea solutions, minimizing environmental harm in the ocean. Inspired by the Purdue Biomimicry Project, its adaptability allows for bio-inspired attachments for tasks like selectively "catching" invasive fish species with soft fishing lures and quantifying microplastics using a modular filtration system. This refined modularity extends its value beyond initial constraints, enabling efficient and sustainable interventions for both ecological conservation and challenges in underwater ecosystems.

Sunday, June 1 | 10:30 AM
Room 1205 | Cambridge Community Center

Team ID | Team Name School/Organization | Location	Session P-7C

019 | Wavecrest
CROEV School | Villalba, Puerto Rico, USA

Wavecrest had the unique opportunity to deploy its ROV to conduct research in Mosquito Bay, Vieques, Puerto Rico—the brightest bioluminescent bay in the world. Leveraging the skills and knowledge gained through our participation in this competition, our team set out to investigate whether the bay's bioluminescence could be predicted using abiotic factors recorded by the ROV. In collaboration with the Vieques Historic & Conservation Trust, we traveled into the bay in small boats to collect environmental data and water samples to support our research.

519 | Rehobeth NJROTC Team A
Rehobeth High School NJROTC | Dothan, Alabama, USA

No abstract submissions.

903| Hawaii Coral Crusaders
Highlands Intermediate School | Pearl City, Hawaii, USA

Our ROV's attachment supports coral restoration, but its capabilities can extend to various subsea tasks, reducing the environmental pollution that harms humans, and the risk in deep-sea operations. The extended "DuoHook" design connects directly to marine industries, aiding in infrastructure construction and maintenance. Though designed for the SeaPerch competition, its precision and adaptability make it valuable beyond stock-class constraints. With a refined modular attachment, it could inspect pipelines, repair structures, and support conservation. Its robust maneuverability and secure interaction with underwater objects highlight how STEM innovations drive solutions for environmental and industrial challenges in deep-sea environments.

914 | Water Wiggles
Troy High School NJROTC | Fullerton, California, USA

No abstract submissions.