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The Gray's Reef National Marine Sanctuary Foundation presents the 16th Annual



Innovations for Inshore ROV Operations in Rivers, Lakes, and Dams



May 11, 2019 • Chatham County Aquatic Center • Savannah, GA

graysreef.materovcompetition.org/

UNDERWATER ROBOTICS COMPETITIONS

Gray's Reef National Marine Sanctuary (GRNMS) is a federally protected nearshore reef that is the best example of those typically found off of Georgia's coast. Gray's Reef, along with 14 other marine protected areas in the continental US, Hawai'i and American Samoa, operates under the umbrella of Office of National Marine Sanctuaries, National Oceanic and Atmospheric Administration (NOAA).

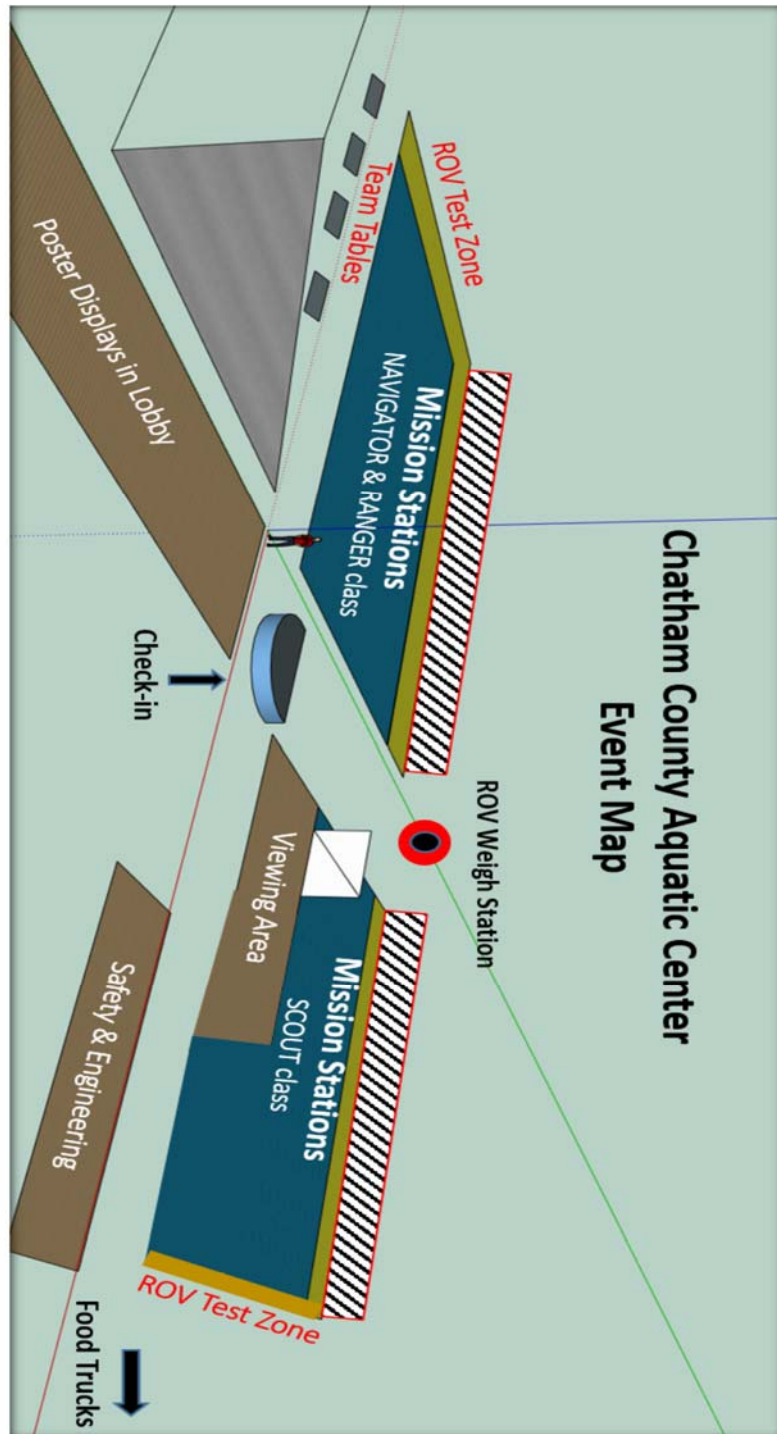
Each of these national underwater treasures employs different technologies to explore and research their underwater resources. One of the effective technologies for underwater exploration is remotely operated vehicles (ROVs). Beginning in 2004, GRNMS partnered with the Marine Advanced Technology Education Center (MATE Center) to offer underwater robotics as a means to teach science, technology, engineering, and math (STEM), which prepares students for technical careers. ROVs conduct exploration, research and rescue missions everyday in ocean environments across the globe, including national marine sanctuaries, and MATE's annual ROV competition simulates these real-world applications for an engaging hands-on learning experience. Working in partnership with the Marine Technology Society ROV Committee, MATE created the ROV competition as a way to:

- Engage students in STEM and expose them to science and technology careers
- Encourage students to develop and apply technical, teamwork, and problem solving skills
- Provide funds, materials, and technical expertise to support student learning
- Provide Industry with skilled individuals who can fill workforce needs

The MATE competition challenges K-12, community college, and university students from all over the world to design and build ROVs to tackle missions modeled after scenarios from the ocean workplace. The competition's class structure of beginner, intermediate, and advanced complements the education pipeline by providing students with the opportunity to build upon their skills—and the application of these skills—as they engineer increasingly more complex ROVs for increasingly more complex mission tasks.

In addition to engineering their ROVs, the students are required to prepare technical reports, poster displays, and engineering presentations that are delivered to working professionals who serve as competition judges.





FACILITY MAP

PARTICIPATING ROV TEAMS

Ranger Class

- CEC Underwater Preservation—*Central Education Center, Newnan, GA*
- North Paulding Robotics—*North Paulding High School, Dallas, GA*
- Poseidon Industries—*Georgia Southern University, Statesboro, GA*
- ROV Think Tank—*Georgia Southern University, Statesboro, GA*
- Team Aurora—*North Paulding Jr. High School, School, Dallas, GA*

Navigator Class

- Carrollton Aquatics Inc.—*Carrollton Junior High, Carrollton, GA*
- Carrollton Oceaneers—*Carrollton Junior High, Carrollton, GA*
- Coral Crawlers—*Sammy McClure Middle School, Dallas, GA*
- Eagle Cruise—*Georgia Southern University, Statesboro, GA*
- Mechanical Makos—*Sammy McClure Middle School, Dallas, GA*
- S.U.R.F. ROV—*The STEM Academy @ Bartlett, Savannah, GA*

Scout Class

- Oceanics—*Sammy McClure Middle School, Dallas, GA*
- Poseidon Tech—*Sammy McClure Middle School, Dallas, GA*
- Richmond Hill Gold—*Richmond Hill Middle School, Richmond Hill, GA*
- Team Black—*Carrollton Middle School, Carrollton, GA*
- Team Gold—*Carrollton Middle School, Carrollton, GA*

Friday, May 10

5:00 PM - 8:00 PM—Safety Inspections

Saturday, May 11

8:00 AM—Team arrival & Check-in

9:00 AM—Competition begins - All classes

(refer to specific class schedules on following pages)

12:00 PM - 12:30 PM—Lunch break*

(Food Trucks will be in the parking lot from 11:30am - 1:30pm)

***Competitors, Coaches and Volunteers:**

Please complete a survey to receive your lunch ticket

4:00 PM—Awards Ceremony

(assemble teams in the center bleachers)

Meet Our Featured Roboticist Ed Williams!

Ed Williams is an underwater robotics designer and the owner of Robo Nautica LLC. He has been building underwater robotics for over 20 years. Ed and Robo Nautica have received two Small Business Innovation Research (SBIR) awards to support the development of a low-cost, high performance, minimally invasive, bottom-crawling ROV system for monitoring benthic environments. He is lending his expertise to today's competition as our Technical Reports Judge.



SCHEDULE OF EVENTS

RANGER COMPETITION SCHEDULE

RANGER class schedule				
Time		Mission Station 1	Mission Station 2	Engineering Interview
8:00 AM	Team Arrival / Check-in			
9:00 AM		Team 1	Team 2	Team 3
10:00 AM		Team 4	Team 5	Team 1
11:00 AM		Team 3		Team 2
12:00 PM	Lunch Break			
1:00 PM		Team 2	Team 1	Team 5
2:00 PM		Team 5	Team 3	Team 4
3:00 PM			Team 4	
4:00 PM	Awards Ceremony			

NAVIGATOR class schedule				
Time		Mission Station 1	Mission Station 2	Engineering Interview
8:00 AM	Team Arrival / Check-in			
9:00 AM		Team 1	Team 2	Team 3
10:00 AM		Team 4	Team 5	Team 1
11:00 AM		Team 3	Team 6	Team 2
12:00 PM	Lunch Break			
1:00 PM		Team 2	Team 1	Team 4
2:00 PM		Team 5	Team 3	Team 6
3:00 PM		Team 6	Team 4	Team 5
4:00 PM	Awards Ceremony			

NAVIGATOR COMPETITION SCHEDULE

SCOUT COMPETITION SCHEDULE

SCOUT class schedule				
Time		Mission Station 1	Mission Station 2	Engineering Interview
8:00 AM	Team Arrival / Check-in			
9:00 AM		Team 2	Team 3	Team 1
10:00 AM		Team 1	Team 4	Team 2
11:00 AM		Team 5	Team 2	Team 3
12:00 PM	Lunch Break			
1:00 PM		Team 3	Team 5	Team 4
2:00 PM		Team 4	Team 1	Team 5
3:00 PM				
4:00 PM	Awards Ceremony			

COMPETITION JUDGES

Jason Ball (*Mission Judge*) is a Licensed Professional Engineer specializing in port and navigation engineering and is the President of Ball Maritime Group in Savannah.

Rebecca Chastain (*Mission Judge*) is an Educator at the Tennessee Aquarium. She develops programs for underwater robotics and helps teachers prepare to start underwater robotics teams along with helping spark a passion for nature and conservation through education.

Raegan Dillon (*Engineering Judge*) is a STEM Instructor in the Savannah-Chatham County Public School System.

Niels Froelicher (*Mission Judge*) is the Immigration and Credential Coordinator at the Savannah College of Art and Design. Prior to joining SCAD, Niels was a Consular Affairs Officer at Consulate General of Switzerland in Atlanta.

Dr. Daniel Gleason (*Mission Judge*) is the Director of the James H. Oliver, Jr., Institute for Coastal Plain Science and Professor of Biology at Georgia Southern University. His research has been conducted in and around Gray's Reef National Marine Sanctuary and is directed toward gaining a better understanding of the ecology of the sessile invertebrate fauna that dominate the hard-bottom reefs.

Dr. Kania Greer (*Poster Judge*) is the coordinator of the Institute for Interdisciplinary STEM Education at Georgia Southern University.

Willie Haynes (*Mission Judge*) teaches engineering and technology and coordinates the Career Technical Program at Hubert Middle School. He was a SCCPSS Teacher of The Year Finalist in 2014.

Aiden Hintz (*Weights and Dimensions Judge*) is a student at Savannah Arts Academy.

Dr. Chris Hintz (*Mission Judge*) is an Associate Professor of Marine and Environmental Sciences at Savannah State University. He received his BS and MS in Chemical Engineering and his PhD in Marine Sciences.

Dr. Ken Hintz (*Mission Judge*) is a Professor of Electrical and Computer Engineering at George Mason University. Although not a traditional oceanographer, he has been involved with the George Mason University Center for Field Studies for over 20 years and is a current/active American Academy of Underwater Sciences diver with 250+ logged dives.

Madison Hoeger (*Mission Judge*) is a student at Metter Middle School.

Theresa Luciano (*Engineering Judge*) is a STEM Instructor at Oglethorpe Charter School. She has attended several ROV training workshops at the MATE Center in Monterey, CA.

COMPETITION JUDGES (CONTINUED)

Ashley Misiaszek (*Poster Judge*) is a public relations intern at GRNMS. She is a Public Relations major at Georgia Southern University with a double minor in Marketing and Communications.

Dr. Scott Noakes (*Mission Judge*) is a marine scientist and engineer and is a Senior Research Scientist at the University of Georgia's Center for Applied Isotope Studies. Dr. Noakes is also the Director and Diving Safety Officer for the University System of Georgia Scientific Diving Program. He conducts research within GRNMS and is a member of the GRNMS Sanctuary Advisory Council.

Susan Noakes (*Poster Judge*) is a retired middle school physical science teacher at Malcom Bridge Middle School in Athens, GA. In addition to teaching, she also led the schools robotics program.

Todd Recicar (*Safety Inspector and Mission Control*) is the Vessel Captain and Marine Operations Supervisor for University of Georgia Marine Extension and Georgia Sea Grant.

Hannah Schroeder (*Engineering Judge*) is a graduate student in Marine Biology at Savannah State University.

Karen Spence (*Engineering Judge*) is an Educator at the Tennessee Aquarium. Karen works closely with visitors of all ages to inspire them to understand and explore waterways and the surrounding wildlife. Karen is helping build the underwater program within Chattanooga.

Dr. Lauren Stefaniak (*Mission Judge*) is an Assistant Professor of Marine Science at Coastal Carolina University. Her areas of expertise include oceanography, ecology, and marine biology.

Jessica Thaler (*Mission Judge*) is a student at Metter Middle School.

Mary Thaler (*Mission Judge*) is the senior administrative assistant at the Institute for Interdisciplinary STEM Education at Georgia Southern University.

Ruth Weimer (*Engineering Judge*) has over 20 years of experience in telecom, and is currently implementing IT Security & Compliance Programs in AT&T's Big Data division. Ruth is a trustee of the GRNMS Foundation and is the lead for OCEARCH's Savannah Expedition.

Theresa Wexel (*Engineering Judge*) is a civil engineer. She is a consultant in private practice in Savannah.

Jody Patterson (*Safety Inspector*) GRNMS Event & Volunteer Coordinator/Chief Rules Judge

COMPETITION STAFF AND VOLUNTEERS

Event Coordinators

Jody Patterson GRNMS Event & Volunteer Coordinator/Chief Rules Judge
Luke Roberson GRNMSF Competition Coordinator/Outreach

Dive Support

Colby Peffer is a University of Georgia graduate student working on a master of science in Marine Science. She is also an active AAUS scientific diver and has assisted with research at GRNMS

Dan Bromstad *Financial Advisor, Wells Fargo Advisors; Trustee, GRNMS Foundation*

Elliott Lam *GRNMS State Program Manager*

Kimberly Roberson *GRNMS Research Coordinator and Unit Diving Supervisor*

Randy Rudd *NOAA Team OCEAN Diver, 2011 GRNMS Volunteer of the Year*

Erin Arneson is a biology graduate student in the James H. Oliver, Jr., Institute for Coastal Plain Science and at Georgia Southern University. She is also an active AAUS scientific diver and has assisted with research at GRNMS

Media Communications

Lisa Huenke *Marketing and Events Manager, GRNMSF Volunteer*

Ashley Misiaszek *GRNMS Public Relations Intern*

Michelle Riley *GRNMS Communications and Public Outreach Coordinator*

Cathy Sakas *GRNMS Foundation Board of Trustees Founding Chair*

Onsite Operations

Peter Allen *Savannah College of Art and Design—Drone Camera Pilot*

Amy Collings *Retired, Former Communications Officer for the New Jersey Department of Environmental Protection, GRNMS Volunteer*

Paulette Hamilton *Retired Business Owner, GRNMS Volunteer*

Mandy Harvey *2016 GRNMS Volunteer of the Year—Scorekeeper*

Elliott Lam *GRNMS State Program Manager*

Becky Shortland *GRNMS Resource Protection Coordinator, Acting Superintendent*

Murray Stern *Retired Health Care Attorney, GRNMS Volunteer*

Annie Westmoreland *Savannah College of Art and Design —Environmental Documentary Filmmaker*

Competition Prop Construction

Georgia Southern University Think Tank ROV team members

Dr. Kania Greer *Coordinator of the Georgia Southern University Institute for Interdisciplinary STEM Education*

Luke Roberson GRNMSF regional competition coordinator



**For more information
please contact:**

*Jody Patterson
Events & Volunteer Coordinator*

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Photos courtesy of NOAA
Gray's Reef National Marine
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#MATEROV



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