

## Student Competition — Remotely Operated Vehicles (ROV)



### MATE

#### Mission 2016 —

*From the Gulf of Mexico to  
Jupiter's Moon Europa:*

[ROV Encounters in Inner and  
Outer Space](#)

#### Gray's Reef Southeast Regional MATE ROV Competition:

April 30, 2016

Chatham County Aquatic Center  
Savannah, GA

#### MATE International ROV Competition:

June 23-25, 2016

NASA Johnson Space Center's  
Neutral Buoyancy Lab  
Houston, TX

*Explore the mission tasks for each  
competition class:*

- [EXPLORER Class](#)
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## Underwater Robotics Program Applies STEM Education Concepts

Gray's Reef National Marine Sanctuary is Georgia's national underwater park and is teeming with marine life. Boaters, fishermen and divers enjoy the wonders of the natural live-bottom reef, which is part of the critically endangered North Atlantic right whale's calving ground. Over 200 hundred species of fish are found there, in addition to sea stars, octopus, crabs, lobsters, soft coral, whelks, dolphins and thousands of other animals living among the ledges and slopes of Gray's Reef National Marine Sanctuary.

Gray's Reef uses underwater robotic technology (remotely operated vehicles or ROVs) to observe the natural resources found within the sanctuary and surrounding areas. Furthermore, ROVs are used to engage middle school, high school and college students in ocean-related

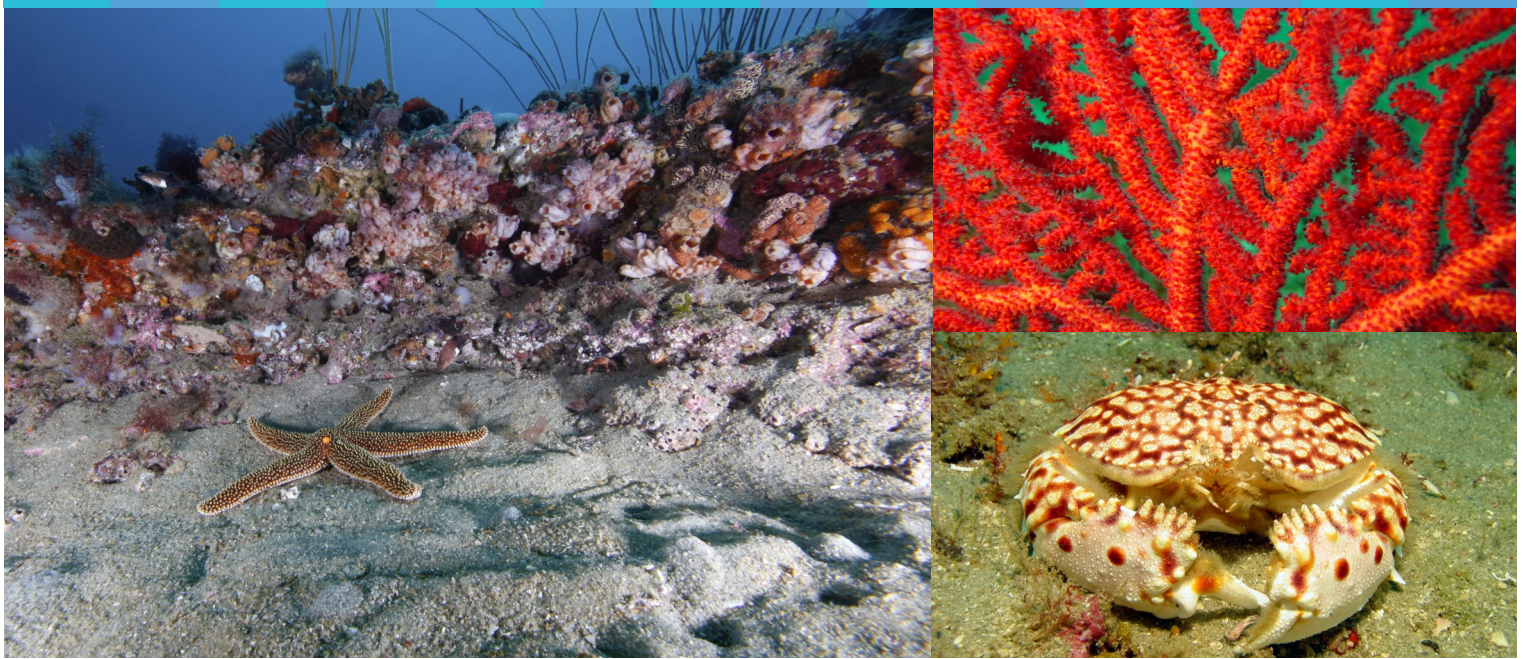
science, technology, engineering and math (STEM) concepts. Integrating STEM education content into a fun and challenging, hands-on engineering project and science mission develops the foundational skills that expand technical capabilities and offer inspiration through discovery.

Gray's Reef National Marine Sanctuary partners with the Marine Advanced Technology Education Center (MATE) to offer underwater robotics as a vehicle to apply STEM education, which prepares students for technical careers. MATE competitions are based on real-life exploration, rescue and research missions that occur throughout our global ocean, and specifically in NOAA's National Marine Sanctuary System.



Photo: Jody Patterson, GRNMS

Gray's Reef competition winners from Carrollton High School at MATE 2014 Internationals held at Thunder Bay NMS.



Gray's Reef National Marine Sanctuary is a near-shore, live-bottom reef that is home to an abundance of marine life, including sea stars, crabs, coral, whales and loggerhead sea turtles. The 22 square mile sanctuary is located 16 miles off the coast of Sapelo Island, Georgia, and averages 62 feet in depth. Photos: Greg McFall, NOAA

Working in partnership with the Marine Technology Society, 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, and;
- Provide maritime industries with skilled individuals that can fill workforce needs.

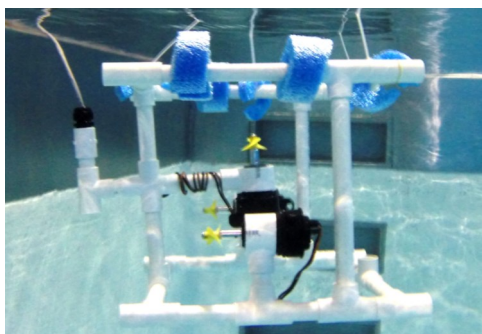
**MATE underwater robotics competitions** challenge K-12, community college and university students from all over the world to design and build ROVs to tackle realistic missions modeled after actual scenarios from ocean exploration and maritime industry services.

**For more information** about Gray's Reef National Marine Sanctuary's ROV workshops and regional competition, please contact our Education Event Coordinator.

**Contact:** Jody Patterson  
10 Ocean Science Circle  
Savannah, GA 31411  
912-598-2431  
[jody.patterson@noaa.gov](mailto:jody.patterson@noaa.gov)

**Find Us Online:**  
[graysreef.noaa.gov](http://graysreef.noaa.gov)  
[graysreef.marinetech2.org](http://graysreef.marinetech2.org)

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Workshop ROV. Photo: Sarah Webb



Competition ROV. Photo: Michael Tam



Commercial ROV. Photo: GRNMS

<http://graysreef.noaa.gov>