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Biology professor Gleason will board research vessel for expedition to Gray's Reef

JUNE 7, 2007

It's a few days before he boards his favorite ship for another summer cruise, and Daniel Gleason is making sure he has everything he needs to make the most of what he hopes will be nine glorious days on the Atlantic Ocean.

Sunscreen? Check.

Camera? Check.

Tools needed to capture and identify benthic invertebrates? Check.

Obviously, Gleason is not your typical tourist, but then again, the Nancy Foster is not your typical cruise ship.

An associate professor in the Department of Biology at Georgia Southern University, Gleason has a special interest in marine life. For the past six years, he's been conducting research at Gray's Reef National Marine Sanctuary off the Georgia coast.

Meanwhile, the Nancy Foster is part of the National Oceanic and Atmospheric Administration (NOAA) fleet. The 187-foot long ship and its 21-member crew are charged with facilitating research on the Atlantic and Gulf coasts of the U.S. and in the Caribbean.

The Nancy Foster is preparing to transport Gleason and 13 other scientists to Gray's Reef and several adjacent reefs for a research expedition. The ship and its human cargo will depart from River Street in Savannah on the morning of Tuesday, June 12, and return on Thursday, June 21.

'Gray's Reef is a great place for marine biologists to gain new knowledge,' Gleason said. 'Compared to tropical coral reefs, we know very little about what species are there, how these species might respond to human-induced damage, or how they might change over time.'

'Our hope is that our research will fill in some of these knowledge gaps and allow the National Marine Sanctuary Program to better manage the resource for compatible uses such as sport fishing and scuba diving.'

This will be Gleason's fifth cruise aboard the Nancy Foster, which began its career as a torpedo test craft for the Navy. In 2001, the ship was transferred to the NOAA, converted into a research vessel and rechristened in honor of a scientist who devoted many years of service to marine research.

Gray's Reef is located between Savannah and Brunswick, about 17.5 nautical miles east of Sapelo Island. Submerged some 60 feet beneath the surface, the reef contains many places for invertebrates to grab hold, and for fish to hide. The result is a dense 'carpet' of living creatures that in some places completely covers the reef.

For this reason, Gray's Reef has become a preferred destination for scientists like Gleason. He will be joined on the cruise by Georgia Southern graduate student Leslie Bates, plus University alumni Hampton Harbin, Rob Ruzicka and Stephanie Schopmeyer. The team of scientists will also include representatives from the Skidaway Institute for Oceanography, the University of Georgia, the South Carolina Department of Natural Resources, the Reef Environmental Education Foundation, and the Gray's Reef staff.

In addition to Gray's Reef, the scientists will explore several nearby reefs, including J-Reef, the R-2 Tower and Snapper Banks, all of which are familiar locations to local fishermen and divers.

Once the Nancy Foster arrives in the appropriate waters, Gleason and company will use scuba gear to make three or four dives each day. They will gather information for three different projects that Georgia Southern researchers have been conducting.

In a project that began in 2002, Gleason and associate professor Alan Harvey are putting together an interactive Web-based guide to the benthic invertebrates and cryptic fishes of Gray's Reef. Benthic invertebrates are bottom-dwelling creatures such as sponges, corals, urchins and sea squirts.

'Our research is resulting in a Web-based field guide that is being used by sport divers, scientists and educational groups,' Gleason said. 'During this cruise, we will continue to fill in as many gaps as possible by targeting species where we lack either photographs or specimens.'

'We will also continue the collection and in situ photography of conspicuous benthic macro invertebrates that are not presently represented in our collection to expand the breadth of the Web-based guide.'

In addition, the scientists will continue sampling small invertebrates by suspending buffer pads – the same kind that are used to polish floors – slightly above the reef substrate so that the tiny animals will settle in them.

Finally, the researchers will collect and redeploy a series of 10 PVC tube traps that are spread out over three separate reefs. Each tube is two inches in diameter and 10 inches long.

The second project, which began in May 2004, involves the study of benthic invertebrates on J-Reef and Gray's Reef. Specifically, the scientists are looking at the factors that lead to the dispersal and establishment of the creatures on different parts of the reefs.

'This project has practical implications for the management of Gray's Reef because it will provide baseline information that can be used to assess what short- and long-term impacts might result from user-induced damage to the benthos, such as from anchor damage or trawling," Gleason said. 'Invertebrates that colonize the bottom provide critical habitat for fish, and so damaging these habitats could have indirect effects on fish populations."

The third project is looking at the dynamics of the benthic invertebrate communities on the reefs.

'The goal of this project is to determine if established communities of non-mobile benthic invertebrates such as sponges and corals on individual hard-bottom reefs vary both spatially and temporally," Gleason said. 'We also want to determine if sediment is a major factor determining the structure of these communities."

Preliminary observations indicate that the invertebrates in question vary over small spatial scales, such as a few meters, and that they vary temporally on scales that range from seasonal to annual.

'Monitoring of the populations in this system must be conducted over temporal scales that allow seasonal variation to be differentiated from longer-term patterns," Gleason said. 'In the absence of such monitoring, our ability to predict trends and effectively manage the system is compromised."

Many of the scientists on board the Nancy Foster will be contributing to a blog that chronicles their activities and observations during the cruise. For more information, visit <http://sanctuaries.noaa.gov/missions/welcome.html> .