

Research team sets sail for Antarctica to conduct predatory crab research

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Research biologist Maggie Amsler, left, and Ryan James, biology graduate student, before departing from UAB for their voyage.

The University of Alabama at Birmingham's Antarctic marine research team set sail today from Punta Arenas, Chile, for a research expedition to the White Continent. During the next four-plus weeks, the team will

be traveling south aboard the National Science Foundation's ship Laurence M. Gould to document populations of deep-sea king crabs that could have significant influence over the ecology of the Antarctic seafloor communities.

Maggie Amsler, UAB research biologist in the College of Arts and Sciences Department of Biology, is traveling with graduate student Ryan James on this voyage. This is UAB's third cruise in which a team has studied crab populations in the Antarctic region, and Amsler has participated in each. This year, the UAB team will be partnering with a researcher from Florida Institute of Technology.

The UAB experts will first cross the Drake Passage on their way to a brief stop at the U.S. Palmer Station on the central western Antarctic Peninsula, before sailing south to Marguerite Bay off the western coast of the scenic peninsula. Palmer Station is where much of the UAB team's previous Antarctic research has been conducted.

Once the team arrives in Marguerite Bay, they will be using a remotely operated submarine towed by the ship along 1-kilometer transects up the Antarctic slope and on to the shelf. The submarine will be imaging the seafloor to document populations of deep-sea king crabs that appear to be on the move into shallower Antarctic waters as polar seas are warming under rapid climate change.

Because of the immensity of the seafloor being sampled, images with crabs in them can be few and far between, so with tens of thousands of images being taken the team will have its work cut out for them. "On our two previous cruises, a unanimous cheer erupted both times the first crab image beamed up from the depths," Amsler said. "I look forward to that short-lived celebration again soon, as well as the subsequent days and months of carefully reviewing each and every image that is stored after our brief on-board peek at them."

These predatory crabs have the potential to dramatically influence the ecology of the seafloor communities of Antarctica. A unique feature of the shallow Antarctic communities is the absence of crushing predators—the fishes are weakly jawed and there are clawed lobsters or crabs. As a partial consequence, hard-shelled organisms like snails and clams are not heavily fortified to protect against crushing.

"The fear is that a predator that can overcome the relatively frail, undefended critters could dramatically change the community dynamics," said Jim McClintock, Ph.D., co-investigator of this research and professor in UAB's Department of Biology. "Our team will be documenting the crabs' patterns of abundance, foraging and reproduction so that we have better insight into what the future of the Antarctic deep-sea communities might hold."

Through their imaging, the research team will be examining whether the crabs are advancing up the continental shelf to shallower waters or remaining deep on the seafloor. The cameras will snap stereo images every six seconds for transects approximately 10 miles in distance. The team has plotted numerous such transects at depths starting around 400 meters on the continental shelf and progressing in similar fashion down the slope to depths of 1,500-2,000 meters.

If these deep-water [crabs](#) do move up the slope and into shallow coastal waters, they could wreak havoc. The southern continent may be a barren desert on land, but the coastal waters are incredibly rich and support lush communities akin to kelp forest on the Pacific Coast.

Provided by University of Alabama at Birmingham

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