

Antarctic research and king crabs connect the climate change dots

July 29 2015, by Erin Fox



Laurence M. Gould

Biological science student and antarctic researchers shipped out this past winter to the wilds of the Antarctic in pursuit of rare and valuable data as part of the bi-annual SeaScience Expedition. The Antarctic is a place of extremes, relatively untouched by man and an ideal location to research

the impact of climate change.

Florida Tech's research team was selected by [biological sciences](#) professor, Dr. Richard Aronson, who has spent many years going pole-to-pole studying [climate change](#) factors. "Climate and climate change are about long-term averages and trends. How has the average temperature changed over the past few decades? Is rainfall more variable now than it used to be? These are the trends climate scientists are watching, and so far many of their predictions are coming true," says Dr. Aronson.

Funded by a National Science Foundation grant and a partnership with the University of Alabama, the mission of the trip was to research [king crab](#) ecology. Since king crabs are a top predator in the area, they are likely to migrate as food sources fluctuate. This movement, coupled with their eating and living habits will provide scientist with new insight into how warming waters effect these patterns.

Florida Tech's team included undergraduate biological sciences major, Michelle Deal as well as biological sciences Ph.D. students, Daniel Ellis and Jessie Schiferl. Overseeing the team was post-doctoral candidate, Dr. Kathryn Smith. Each of them boarded the research vessel, Laurence M. Gould, for four and a half weeks with specific research objectives.



Dan deploying XBTs

Antarctic research sets sail

One of the team's first assignments was to collect temperature data for Scripps Institution of Oceanography while they were sailing through the Drake Passage. As the boundary between the Atlantic and Pacific oceans, it is home to very rough seas and currents.

For the duration of the trip, the researchers relied on one of the most important tools of the expedition, the SeaSled. This rugged underwater camera was towed behind the ship capturing [sea floor](#) images and other data points like temperature, salinity and depth. Once king crabs were spotted by SeaSled, the team would deploy their crab traps and analyze

their contents.

For every king crab spotted, Jessie would collect longitude and latitude data to create species distribution models. "My aim is to not only assess the environmental factors that influence the spread and distribution of king crabs, but to determine the potential impacts king crab invasion may be having on the Antarctic ecosystem," says Jessie.



King crab in trap

Once the traps were onboard, Dan assessed the amount of trace pollutants present on the sea floor to assess the extent of pollution affecting the global ecosystem. Each team member worked in shifts to ensure research was being conducted at all times. "You have to be prepared to work around the clock, do labor-intensive tasks, and, in

some cases, give up some everyday luxuries. However, you meet a lot of amazing people and see a lot of amazing things," says Jessie.

One of the highlights of the trip for the team was a visit to Palmer Station, an island research station with a glacier in its backyard. "We were able to take a zodiac out to one of the islands and see Adélie penguins and fur seals," says Michelle.



Palmer Station

Science can surprise

Warmer than expected temperatures was a surprise to many on the team,

but a bigger surprise awaited them at the bottom of the ocean. As the SeaSled scanned the sea floor, a rarely seen image emerged from the lens: A natural whale fall. A whale carcass can support a normally barren marine eco-system a substantial nutrient-rich source of energy for up to 50 years. "Before this cruise, there had only been a few natural whale fall discoveries; now there have been eight, and sighting them was a major rush," says Jessie. The seventh documented whale fall was discovered during last year's expedition.



Natural whale fall

"Trips like these are so important to the scientific community because the data collection that takes place makes any future publications or scientific discovery possible," says Jessie.

Undergraduate researcher, Michelle, advises students interested in going on similar research trips to start early. "Get involved with research labs and reach out to professors whose research interests you. Take the initiative to form your own projects and participate in meetings and conferences early on," she says.

Provided by Florida Institute of Technology

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