Deep-C Consortium
Studying deep sea to coastal communities in the northeastern Gulf of Mexico

This research was made possible by a grant from BP/The Gulf of Mexico Research Initiative to the Deep-C Consortium. Deep-C member institutions: Florida State University (lead), Dauphin Island Sea Lab, Georgia Institute of Technology, Nova Southeastern University, Louisiana State University, Florida Institute of Technology, University of West Florida, University of South Florida, Woods Hole Oceanographic Institute.

Deep-C members are involved in exciting outreach activities, both in the classroom and out in the field. Outreach activities include open houses; research publications; social networking; and the teaching of ocean science to high school and college students.

Deep-C internships offer participants the unique opportunity to conduct research in various fields of science, as well as gain real-world experiences working with scientists on projects that support the Consortium's mission.

Also in this issue:

Gulf of Mexico Public Opinion Survey
Deepwater Horizon debris as likely source of new oil shears

Deep-C's Summer 2013 Interns
An Experiment in Matchmaking!

This year, the Deep-C Consortium introduced a flexible internship program aimed at carefully matching undergraduate students, graduate students, and teachers with hands-on research opportunities at one of our member institutions. And the experiment appears to be going well!

Scientists involved in Deep-C research and willing to mentor were encouraged to offer an opportunity geared toward teachers and students interested in STEM (Science, Technology, Engineering or Mathematics) fields. The duration, format, and focus of each internship was closely tailored to meet actual project needs, ensuring that research experiences would be beneficial to the scientists and interns alike.

We advertised the internships to educators and student groups interested in these types of hands-on learning opportunities, explains Meredith Field, Assistant in Research and Education and coordinator of the Deep-C Internship Program. “As a result, we were able to match 12 individuals to Deep-C scientists: 10 are interning over the current semester and two will intern in the fall.”

The 2013 interns have been blogging about their individual experiences, which have ranged from conducting laboratory experiments to field work (including research cruises in the Gulf of Mexico and on-shore expeditions collecting oil spill samples along Gulf Coast beaches). And they have contributed nearly 50 posts to date on the Deep-C web blog!

We asked some of our interns about their experiences thus far. Below are their responses.

What advice have you received from your mentor that has been particularly helpful?

“Basically, I’m learning more than typical lab techniques. I’m learning how to succeed in the biological field.” — Chelsea McCarty, a junior undergraduate attending and interning at the University of South Florida

“It helps me stay positive and confident when Patrick reminds me to do what I can with what I have.” — Lauren Reddy, senior undergraduate attending and interning at the University of Miami

“I spoke with my mentor... we discussed my future goals and I got some valuable insight into the job market that fit my interests.” — Taylor Byers, senior undergraduate attending North Carolina State University and interning at Florida State University

What advice can you give to future interns?

“Break your project into smaller, more manageable problems, and then approach those one at a time.” — Anghie Combé, PL student attending and interning at Florida State University

“Just work hard and be yourself and you are bound to get on very well here.” — Becky Rosen, graduate student attending the University of South Florida and interning at Florida State University

Public TV airs amazing episode on “Creatures of the Deep”

WPBT 2 — In the cold, deep waters of the Gulf of Mexico, little-known animals spend their entire lives in near darkness, for removed from our human world. Until now.

Little research has been conducted on these creatures of the deep, keeping much of their lives a mystery. Now, scientists from the Deep-C Consortium conduct regular research in the area. You can watch this episode of CHANGING SEAS on the WPBT 2 website or at http://www.wpb.org/
Gulf of Mexico Public Opinion Survey
Understanding the perceptions and information Florida residents have about the Gulf

Editor’s Note: Becca Koons is a graduate student studying Marine Science Policy and Management at Emory University and is completing her internship at Georgia Tech. She has already shared a little bit about her research project and outreach activities before heading back to Florida State University.

By Becca Koons
Deep-C Summer Intern

As part of my Deep-C internship and Master’s thesis, I am examining the perceptions and information Florida residents have about the 2010 Deepwater Horizon oil spill, the Gulf of Mexico, environment, and the scientific research taking place in the region. My ultimate goal is to help develop effective strategies for communicating in ways that engage and inform public dialogue. But in order to do so, more needs to be known about what members of the public are currently aware of (or believe) when it comes to the oil spill and the Gulf of Mexico.

Surveying Public Opinion
In order to gauge public interest and understanding of issues related to the oil spill and the Gulf, I have constructed a public opinion survey. The information I got from survey responses will help guide Deep-C education efforts moving forward.

If you are reading this article and would be willing to take a few moments to help inform our efforts, please complete the online survey at: https://www.surveymonkey.com/s/GulfofMexicoPublicOpinionSurvey

Any “eureka!” moments during your internship?

While filtering samples, I forgot to dump the water container so we could define the source. This is an amazing opportunity to work at the cutting edge of strategies for communicating in the Gulf region about new and significant scientific findings by Deep-C researchers and others. I was excited to contribute my artistic abilities to the process and designed several graphics now being used as part of the Deep-C “Love the Gulf!” campaign. I couldn’t resist bringing a British bulldog spirit to the campaign with one of our slogans: Keep Calm and Love the Gulf.”

What mistakes have you made in your research?

I realized after our first growth experiment that the pH of the water was critical. We realized after our first growth experiment that the pH of the culture medium was decreasing over time, so we started buffering the medium.

Another aspect of my internship has been to be involved in the development of a public awareness campaign that will alert the general population of the Gulf region about new and significant scientific findings by Deep-C researchers and others. I was excited to contribute my artistic abilities to the process and designed several graphics now being used as part of the Deep-C “Love the Gulf!” campaign. I couldn’t resist bringing a British bulldog spirit to the campaign with one of our slogans: Keep Calm and Love the Gulf.”

You can find these materials (posters, facts sheets, and even a screen saver) in the Education and Outreach section of the Deep-C website (www.deep-c.org).

Any “eureka!” moments during your internship?

I thought it was done at time management, but was in for a shock when I started research.

— Dean Field, a high-school science teacher interning at Florida State University

What mistakes have you made in your research?

We realized after our first growth experiment that the pH of the medium was decreasing over time, so we started buffering the medium and was a huge increase in bacterial growth.

— Salta Rizzi, senior graduate student of Florida State University interning at Georgia Tech

“I thought I was defeated at time management, but was in for a shock when I started research.

— Christina Belokos, graduate student interning at Florida State University

For more information about the Deep-C Flexible Internship Program visit www.deep-c.org/internships.

Study identifies Deepwater Horizon debris as likely source of new Gulf of Mexico oil sheens

From July 16, 2015 media release from Woods Hole Oceanographic Institution (Photos courtesy of Chris Reddy)

A chemical analysis of oil sheens found floating recently on the ocean’s surface near the site of the Deepwater Horizon disaster indicates that the source is pieces of oil trapped within the wreckage of the sunken rig. Both the Macondo well and natural oil seeps common to the Gulf of Mexico were confidently ruled out.

Researchers from Woods Hole Oceanographic Institution (WHOI) and the University of California, Santa Barbara (UCSB) used a recently-patented method to fingerprint the chemical makeup of the sheens and to estimate the location of the source based on the extent to which gasoline-like compounds evaporated from the oil sheens to the earth. This method was published in Environmental Science & Technology.

The oil sheens were first reported to the United States Coast Guard by BP in mid-September 2012, raising public concern that the Macondo well, which was capped in July 2010, might be leaking.

It was important to determine where the oil was coming from because of the environmental and economic dimension of the sheens. First, the public needed to be reassured that the leak was not coming from the Macondo well, but beyond that we needed to know the source of these sheens and how much oil is supplying them so we could define the magnitude of the problem.

The lead scientists Chris Reddy and Valentine Valentine, who have worked on the Deepwater Horizon for much of the last three years, investigating a range of problems from the composition of the oil, detection of subsea flumes, the breakup, radiation of the oil, the fate of the dispersant, and the chemical transition from floating oil slicks to random tar balls.

This research analyzed 14 shown samples they skimmed from the sea surface during two trips to the Gulf of Mexico. Using comprehensive two-dimensional gas chromatography (GCxGC), a technique developed in Reddy’s lab, the researchers first confirmed the sheens contained oil from the Macondo well. But the sheens also contained traces amounts of “olefins”—industrial chemicals that are used in drilling operations—compounds that were absent from the samples taken directly from the Macondo well. The presence of “olefins” provides a fingerprint for the sheens that the researchers could compare to the library of samples they had analyzed over the past three years.

The “olefins” are not found in crude oil and their uniform distribution in the sheens indicated the Macondo well was the likely source. This research, go to www.whoi.org to read the entire release and other information about WHOI’s oil spill research, go to www.whoi.org/page.do?pid=53004&tid=3622&cid=171549

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