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Biology Newsletter

Biology Department

2013

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Sacred Heart University

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page

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Sacred Heart University

Biology Department Newsletter



Coastal Ecology of Ireland

Professors John Rapaglia and Mark Beekey offered the first Biology Department course for the SHU in Dingle Program this past May. Six SHU students along with seven students from other URI, Fairfield University, and McGill University spent two weeks studying the coastal ecology of the Dingle Peninsula. Students visited a tidal marsh, sandy beach, and rocky intertidal habitat as well as toured commercial fishing vessels, seined, and fished for Pollack. As part of the program, the students also had the opportunity to visit the Blasket Islands, tour the Ring of Kerry, as well as see a number of archaeological sites. The Biology Department and SHU are partnering with Oceanworld Aquarium in Dingle to offer semester long biology courses as well as expand our short-term course offerings. This January, John Rapaglia will offer Oceanography of Ireland. [↗](#)

Welcome to our latest department newsletter!

This year's Biology Department newsletter focuses on some of the activities that faculty and students have been engaged in this past summer.

Students still smiling on a cold and wet day



Biology major
Nicole Mieczkowski ('14) holding
the Pollack she caught



Biology major Samantha Abel ('15),
Marisa Caruso ('15) and Stephanie Palermo ('15)
counting organisms in the tidal marsh.

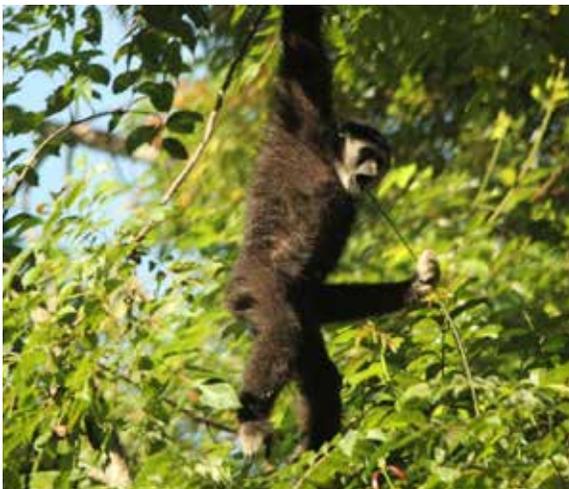
Gibbon Studies in Thailand

In June and July Tom Terleph began a new project, studying the calls and songs of gibbons in Thailand. This research project was made possible thanks to the generous support of a SHU University Research and Creativity Grant. Dr. Terleph is collaborating with Dr. Ulrich Reichard of Southern Illinois University

Carbondale and Dr. Suchinda Malaivijitnond of Chulalongkorn University, Bangkok.

White-handed, or lar gibbons (*Hylobates lar*) are Southeast Asian apes known for their large and complex vocal repertoire. In the past few years Dr. Terleph and his students have been studying

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Top left: Tom Terleph recording gibbons; Top right and bottom left: a subadult and adult gibbon, respectively; Bottom right: sign at the park's headquarters.



**Left: Dr. Terleph enjoying his morning coffee, as an elephant drops by for breakfast;
Right: a gibbon feeding.**

(continued from the previous page)

the calls and songs of this species at The LEO Conservation Center in Greenwich. It was this work that gave him the idea to initiate a project on the vocalizations of a free-living population, and to seek collaborators with expertise in gibbon ecology. The study site where Dr. Terleph and his collaborators worked this past summer is in Khao Yai National Park, a UNESCO World Heritage Site consisting of mostly tropical moist evergreen forest in rugged mountain terrain, approximately 130 Kilometers northeast of Bangkok. The goal of the project is to document how long-term changes in social status affect the vocal behavior of this threatened species. As such, it will require recording from the same groups of animals over multiple field seasons. Despite rainier than usual conditions this past summer (and plenty of leeches!) Dr. Terleph was able to record approximately

100 song duets from mated pairs, often from directly underneath the trees in which the gibbons were calling. Recordings were made from 14 different groups, a population that includes more than 50 animals. Over the next few years Dr. Terleph hopes to bring SHU research students with him to Thailand to help with the project.

The gibbon data will provide valuable information on the vocal behavior of this threatened species, a close relative to humans. The study is focused on developmental and functional aspects of gibbon vocalizations, and as such can help to answer questions concerning the specific ways in which calls and songs give rise to and maintain intergroup spacing, pair bonding, and other social behaviors, information that can be used to inform conservation efforts for gibbons, and for related species. [👉](#)



Cities by the Sea: Managing Coastal Environments

In July of 2013, John Rapaglia led the inaugural “Cities by the Sea” study abroad program to Venice, Italy and Kiel, Germany. The course was attended by four undergraduates in the Biology department: Matt Cole, Sarah DeWolf, Christina Giglio, and Jocelyn Rivas, and one graduate student in the new program in Environmental Science & Management program: Alison Marchione. In addition to the students, Carley Grant, a former ESM graduate student received a Federal Teachers Union grant to assist the program.

The “Cities by the Sea” study abroad program was an overall success. This was the first marine science study abroad program given by any university to the cities of Venice, Italy and Kiel, Germany. The program combined academic rigor, experiential learning, transformative-life experiences, and the development of hard skills in a seamless package.



Jocelyn, Alison, Matt, John, Sarah, and Christina on the Ponte degli Alpini over the Brenta River in Bassano del Grappa

With the aid of various connections in both Venice and Kiel, the students' experience was unique and exciting and the logistical development of the program was better than expected. In short, the students learned both theory and applied practice of coastal management, gained an introductory level of knowledge in the use of Geographical Information System software, gave introductory and final presentations to outside audience members, and experienced the culture of two unique and beautiful cities.

Coastal protection and management is one of the most pressing issues of our time. With more than 60% of the world's population living in the coastal zone, much of which is threatened by sea level rise, it is imperative that a better understanding of coastal zone management is developed. As witnessed by Hurricane Sandy and the devastation it laid upon NYC, this topic is of increasing importance. The purpose of this course was three-fold: 1. To describe processes which are currently impacting the coastal zone in both Venice, Italy and Schleswig-Holstein, Germany. 2. To teach students how to collect and analyze data in light of a coastal management issue. 3. To teach students how to use geographic information systems software. Indeed an underlying theme of this course was to learn about the culture of both Italy and Germany. Indeed, John Rapaglia received an award from the Deutsche Akademischer Austauschdienst (German Academic Exchange Service) for the design of this course, reducing the individual student costs by \$1,000 per student.

In Venice students were hosted by the National Research Council of Italy's Marine Science Institute. This institute, which is housed in the Arsenal of Venice, includes a suite of state-of-the-art facilities. Herein students had both access to both boats and equipment and worked directly with leading researchers at the institute.

On July 5th, the group had the unique opportunity to visit the world famous and very controversial MOSE project. This is Venice's response



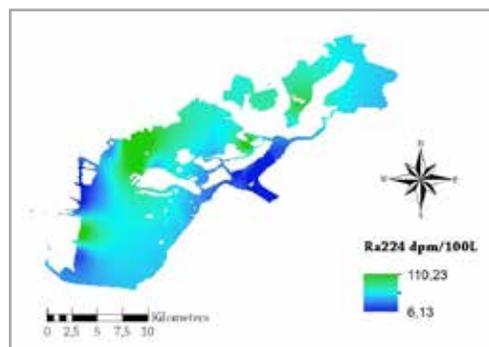
Carley, measuring Radon activity in the canals of Venice



The group in construction gear about to visit the MOSE Project



Our hotel in Austria



A map of the distribution of short-lived radium activity produced by Sarah, Alison, and Jocelyn from data collected in the northern Venice Lagoon, Italy. Radium is a proxy for groundwater discharge.

to the problem of flooding associated with sea level rise. The group was taken by boat to the construction site where they were given a private behind-the-scenes tour of the works by the lead engineer.

While in Venice, the students collected data for two important and relative research projects. These data will be used in long term monitoring of both sediment dynamics in the canals of Venice and groundwater associated pollutant inputs into the lagoon. On July 18th, the group left Venice and traveled by train through the Alps. After spending a night in the beautiful town of Kufstein, Austria, the Group continued on by train to Kiel, Germany.

In Kiel, a short, intense GIS course was given, after which the student were able to analyze their data within the GIS to come up with some important initial conclusions on the state-of-the Venice Lagoon. These data were presented to researchers at Christian Albrechts University in Kiel.

Several field trips associated with the program were also well attended including a trip to the beautiful city of Bassano del Grappa (see above photo) where students learned the technical process of distilling grappa. The group then decided to escape the heat of summer and went to the high plains of Asiago. After visiting a small artisanal cheese maker and playing with many animals, the group traveled through the high plains to the base of the Monte Verena, where they spent the night in a rustic lodge.

Our final trip was to the windswept North Sea island of Sylt, Germany. Sylt is a large barrier island, marked by large dunes on the west side of the island and an expansive tidal flat to the east. One of Germany's most popular (and rich) tourist destinations, Sylt is ever in a battle against rising sea levels. Here, we explored the island by bike, visiting the famous red cliffs and went for a long swim in the North Sea.

The trip was a magnificent success and produced lifelong memories, we will never forget the summer of 2013! [↗](#)



Alison, Christina, and Matt recovering from the long walk up Monte Verena



The view from the Red Cliffs



Kiel: Germany's city of sailboats

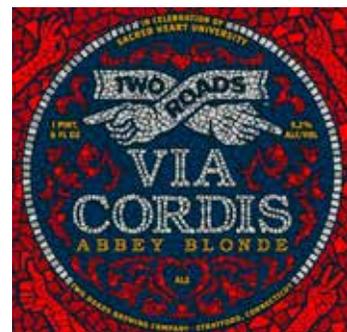
Horseshoe Crab and Coastal Restoration Projects



Project Limulus Co-directors Jennifer Mattei and Mark Beekey were recently awarded a third year of funding from Disney Worldwide Conservation Fund for their research and conservation efforts on the American horseshoe crab. This past summer their grant funding supported research experiences for 6 undergraduates and 3 graduate students (Pictured below). With additional funding from the National Fish and Wildlife Foundation, they hired an adjunct professor and SHU Biology alumnus, Adam Rudman, as Outreach Coordinator for the project.

This past year, Jennifer Mattei, Mark Beekey, John Rapaglia and LaTina Steele have been working on a coastal restoration research project at Stratford Point. They have partnered with the DuPont Corporation and CT Audubon Society taking a whole ecosystem approach to prevent coastal erosion and expand estuarine habitats. In July, Mattei and Beekey met with Commissioner Daniel Esty of the CT Department of Energy and Environmental Protection to garner support for the project, which involves installing a shellfish reef, salt marsh, coastal dune, and upland grass/woodland mosaic. [↗](#)

SHU and Two Roads Brewery collaborate to produce *Via Cordis Abbey Blonde Beer* !



Dr. Stopper and Dr. Bartholomew have struck up a fruitful research and internship relationship with a local brewery in Stratford, CT—Two Roads Brewing Company. The brewery opened in December 2012, and is the largest brewery in Connecticut.

Now Sacred Heart and Two Roads have collaborated to produce a Sacred Heart Beer called Via Cordis (Road to the Heart). This beer celebrates the working relationship between Sacred Heart's Biology department and Two Roads. It also celebrates the many historical connections between the Catholic tradition and education, and the Catholic tradition and brewing. Finally, it is timed perfectly to celebrate the University's 50th Anniversary! Red's held a release party on Friday, September 13. It has been made available to the general public, so it can now be found at other bars and in 22 oz. bottles at beer retailers. It is a limited release, so get it while you can!



Dr. Stopper and Dr. Bartholomew collaborated with the brewery to craft the recipe, which is fermented with a yeast strain from an active Catholic monastery brewery in Belgium. The label design alludes to the art within the recently-built Chapel of the Holy Spirit at Sacred Heart University.

This project builds on an ongoing collaboration between Two Roads and Sacred Heart's Biology Department. The two are pursuing common interests in applied microbiology. The brewery has a very active and dedicated microbiology lab that keeps the yeast healthy and keeps other microbes out of the beer. The brewery has previously hosted two Sacred Heart Biology students as interns: Nick Soubry and James Proulx. James was recently hired as a full-time employee of the brewery. Senior biology student Andrea Barone is starting an internship in the brewery lab this semester.

Sale of the beer will raise money for student scholarships at Sacred Heart.



Brewing photos, left and right: Sacred Heart University photo by Tracy Deer-Mirek; Release party photos: Sacred Heart University photo by Mark F. Conrad

**Jean Foley is the new Administrative Assistant for the Biology department!
She is taking over for Sharon Cavaliere, who retired over the summer. Feel free to drop by
the Biology department and say hello to Jean!**



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