2011

Biology Department Newsletter, No.1

Sacred Heart University

page
01
issue no. 1
2011

Sacred Heart University

Biology Department Newsletter

issue no. 1
2011

Welcome to our new department newsletter!

It is our hope that this and future newsletters will keep faculty, staff, students and alumni connected with the program and with each other, and will highlight the many accomplishments of our students, staff and faculty. The focus of this first edition is on the many changes and advancements that are currently underway in our program. With these changes, the 2011–2012 academic year is shaping up to be an exciting one, as the pages below document. We always welcome input from former and current students for future editions of the newsletter, so drop us a line!

From the Chair's Seat

Since this is, (I believe) our first official "News Letter" the coverage could go back to the beginning of the department (well before my time), but I will confine my opening remarks to the point where the faculty of the department decided in the early 1990's that it was time to make a radical change and commit to establishing real scholarship in the biological sciences at Sacred Heart. They pursued this strategy in recognition of the undeniable fact that a quality undergraduate education in the life sciences must allow students the opportunity to participate in open-ended research projects under the supervision of faculty mentors. This change did not come easily and many of the first professors hired into the department to make this initiative a reality were limited in their ability to conduct research by lack of equipment, available funds and appropriate space. However, over the course of almost twenty years a gradual transformation has taken place. Under the leadership of four separate department chairs and an increasing commitment by the college and university, we have arrived at another turning point. With the completion of the renovations and modest expansion of the facilities on the second floor of the SC Wing of the Academic Building all tenured or tenure-track faculty now have appropriate dedicated space to engage undergraduate (and our first graduate) students in research. As a department, we are looking forward to this change bringing quality data and increased participation by our student researchers. To close, I would like to offer my thanks to all members of the Sacred Heart University community who worked to make this new beginning happen, and in particular, the three department chairs who preceded me: Carol Schofield, Shannon Brightman and Jennifer Mattei.

Sincerely,
Kirk Bartholomew

issue no. 1
2011

New and Renewed Space

Beginning with a great deal of noise and dust in May, the University committed to a major construction project on the second floor of the SC wing of the Academic Building. While the many unknowns inherent in renovating a 50 plus year old building made life adventurous at times, the project was a success and we were able to start teaching our labs on schedule this fall. Among the many improvements that resulted from this project are:

- A new Field Methods teaching lab and associated materials preparation space.
- A new Seminar and Technology classroom
- A new research lab devoted to environmental and ecological research
- A new research lab devoted to the study of water pollution and treatment
- Renovated lab space for organismal and molecular research
- Expanded preparatory space for our large *Concepts in Biology* courses.

We would like to thank all who worked together to make these plans a reality, but in particular those who played a central role in taking care of the day to day details that kept the project on track and moving forward: Mark Beekey (Biology Department), Mark Izzo (Facilities Management and Construction) and Joe Berenguer (Pavarini Construction).

An open house will be organized later in the semester after we have finished organizing, equipping, and moving into the renovated spaces—stay tuned for details.

The Biology Department's New Professional Science Master's Program

The department of Biology is pleased to announce a new Professional Science Master's program in Environmental Systems Analysis and Management (ESAM)! This program is beginning this fall semester, and offers an interdisciplinary master's degree that will equip graduates to confront the challenging environmental problems of the future. Grounded in the basic sciences, the curriculum prepares students to understand the complex interactions between the living and non-living portions of the environment and the dramatic role that human activity has on determining the ultimate nature of the environment in which we live. The ESAM program is designed for the full-time student, but also welcomes part-time non-traditional students, as the work they bring with them enhances the classroom learning environment. Starting this month the program's Co-Directors will be Jennifer Mattei and Kirk Bartholomew; other participating faculty members includes Eid Alkhatib (from the Chemistry Department), Mark Beekey, Barbara Pierce and our newest faculty member, Dr. John Rapaglia.

Concepts in Biology— New and (We Hope) Improved

A reform movement has been building with ever increasing momentum in the world of undergraduate biology education for at least the past ten years. As a department, we have made many changes in our courses and pedagogical approaches as new information and evidence of what constitutes "quality education" in our field came to light. However, beginning approximately three years ago, we began discussion of a wholesale revision of the course that enrolls around 30% of every incoming freshman class: Concepts in Biology I and II lecture and lab. This fall we took the plunge. While the revised courses cover much of the same material, we have made major changes including:

• Adoption as organizing principles, the core concepts promoted by the recent report from the American Association for the Advancement of Science and the National Science Foundation—Vision and Change in Undergraduate Biology Education: Evolution; Structure and Function; Information Flow, Exchange, and Storage; Pathways of Transformation of Energy and Matter, and Systems

• Selection of a new text that focuses more on concepts and less on detail.

• All new multi-week lab modules that focus on the process of science (including failure a scientists most frequent result).

• A new delivery format where students attend two 50 minute lectures/week in sections of 90 to 100 and one 75 minute discussion period devoted to mastery of the more critical concepts through the use of case studies an other interactive methods.

As you can imagine, this has been and continues to be a great deal of work, but the early indications are that the students are more engaged and we are hopeful that this will translate into improved performance as the first major assignments come due over the next few weeks.

Bio department annual BBQ

On September 15th we held our annual fall barbeque on the quad.
This year faculty and undergraduates were joined by some of the new ESAM graduate students.

Students and faculty enjoy food and cool fall weather at the annual Bio Dept barbeque.

Department Chair Kirk Bartholomew with Jenny Gazzero, one of our graduate students

Mark Jareb with students.

Tom Terleph mans the grill and eats a sandwich.

Students at the Bio Dept barbeque.

Coastal Habitat Restoration

Mark Beekey, Jennifer Mattei, and Barbara Pierce along with our newest faculty member John Rapaglia have started a new research project this year in conjunction with Connecticut Audubon focusing on restoring coastal dune habitats on Stratford Point. What was once a highly degraded site from human use will soon be breeding grounds for endangered plants and animals. This site, on the coast of Long Island Sound, will become an outdoor classroom for the graduate students in the ESAM program and undergraduate Biology majors interested in ecology and conservation.

Stratford Point habitat.

Meet our Newest Faculty Member

Dr John Rapaglia is a coastal oceanographer, and will be joining the Department of Biology and the new ESAM Master's program this January.

John completed his PhD at the Marine Science Research Center of Stony Brook University, NY in December, 2007. His research has taken place in diverse locations including: coastal lagoons in New York State, the Venice Lagoon and Lesina Lagoon in Italy, and Mauritius. During and after completion of his PhD work, John was employed by the National Research Council of Italy's Marine Science Division and the University of Venice. During this time, he was also supported in Venice by a prestigious Fulbright Scholarship. His research has focused on groundwater-seawater interactions and groundwater as a source of chemical contamination in the coastal lagoons. In 2005, he published the first paper concerned with this phenomenon in Venice, which has brought to light many of the problems associated with groundwater in Venice. He has subsequently authored or co-authored 10 papers on this phenomenon. In April 2008 he organized a workshop at UNESCO Venice on the use of Radium and Radon isotopes in environmental research.

Following his time in Italy, John joined the 'Future Ocean Excellence Cluster in Kiel, Germany' At present John continues to be employed by the research group 'Coastal Risks and Sea Level Rise' of the Institute of Geography. Herein he is the primary investigator in two diverse research projects. The first investigated the impact of large ships' pressure, or Bernoulli,

New faculty member John Rapaglia enjoys work and play in a variety of settings

wakes on sediments and contaminant remobilization. He and co-workers found that these wakes were a major cause of erosion and remobilization in the Venice Lagoon. The second project involves an attempt to build a global salt water intrusion model based on future sea level rise predictions and aquifer recharge scenarios, and is currently in progress. John also enjoys baseball, cooking, writing, and traveling.

Project *Limulus* Goes to Hong Kong!

Jennifer Mattei poses with a horseshoe crab at the meeting in Hong Kong.

Mark Beekey in Hong Kong harbor examining juvenile Asian horseshoe crabs (*Tachypleus tridentatus*).

Jennifer Mattei and Mark Beekey were invited to speak about their research at the International Workshop on the Science and Conservation of Horseshoe Crabs held in Hong Kong, in June 2011. Asian horseshoe crab populations are in decline due to a combination of habitat degradation and over harvest. The status of all three species of horseshoe crabs in Asia is uncertain. Mark and Jennifer showed the participants of the workshop how involving the local community members will result in more data on the presence and distribution of the three Asian species. Researchers at the City University of Hong Kong and the University Malaysia Terengganu are utilizing *Project Limulus* as a conservation model and have started tagging programs. The workshop participants included scientists, conservationists, and educators from Hong Kong, Taiwan, mainland China, Japan, Malaysia, Singapore, India, and the U.S. It was hosted by the Hong Kong Wetland Park and supported by the Ocean Park Conservation Foundation Hong Kong, the Hong Kong Agriculture, Fisheries and Conservation Department, and the City University of Hong Kong.

Mark and Jennifer just received notification that their research entitled ***Project Limulus: A Community Research Program*** will be supported by a contribution from the Disney Worldwide Conservation Fund in the amount of $24,450.00.

SHU Hosts the 65th Annual Eastern Colleges Science Conference

On April 2, 2011, 302 undergraduates and professors from 21 regional colleges and universities descended onto campus for the 65th Annual Eastern Colleges Science Conference. Organized by Biology faculty members Mark Beekey and Suzanne Deschênes and assisted by an interdisciplinary committee of faculty, this conference was an opportunity for schools throughout the Northeast to showcase their students' research in the sciences. Throughout the day, student researchers in the disciplines of biology, chemistry, engineering, mathematics, psychology and economics presented their work through platform talks or posters, impressing judges with their numerous achievements. We are proud of all SHU students who presented at the conference, in particular Biology majors Jo-Marie Kasinak '11 (platform), Brittany Hartman '11 and James Roberts '11 (poster), and Joseph Lugo '11 (poster), who won Awards of Excellence for their presentations. Ira Flatow, host of public radio's "Talk Of The Nation: Science Friday®", was the keynote speaker and he was welcomed enthusiastically by both students and professors. Between amusing anecdotes from his long career in science journalism, Flatow encouraged students to use their talents to educate the lay public about science. The day ended on a high gustatory note with a banquet and awards ceremony at the Trumbull Marriott.

We are grateful to the Offices of the President, Provost, and Dean of the College of Arts and Sciences and SHU's Student Government for providing the financial support that helped to make ECSC 2011 a success in the eyes of attendees and organizers alike.

Students and faculty at the awards dinner.

Ira Flatow, host of public radio's "Talk of the Nation: Science Friday."

Recent Faculty Publications

J.H. Mattei, M.A. Beekey, A. Rudmann, A. Woronik (2010). Reproductive behavior in horseshoe crabs: does density matter? *Current Zoology* 56(5):634-642.

J.H. Mattei, M.A. Beekey, H.R. Potter, C.S. Bond, A.R. Woronik, J.A. Roberts, K.A. Smith (2011). Estimation of short-term Tag-induced mortality in horseshoe crabs *Limulus polyphemus*, *Transactions of the American Fisheries Society*, 140(4): 954-958.

A. Jurczyk, N. Roy, R. Bajwa, P. Gut, K. Lipson, C. Yang, L. Covassin, W. J. Racki, A. A. Rossini, N. Phillips, D.Y.R. Stainier, D.L. Greiner, M.A. Brehm, R. Bortell, and P. diIorio (2011). Dynamic glucoregulation and mammalian-like responses to metabolic and developmental disruption in zebrafish. *General and Comparative Endocrinology* 170: 334–345.

T. A. Terleph (in press, *Behaviour*). A comparison of prairie vole audible and ultrasonic pup vocalizations and attraction to them by mated adults of each sex.

J. Jeong, T.A. Terleph, K. Burrows, L.A. Tremere, and R. Pinaud (2011). Expression and Rapid Experience-Dependent Regulation of Type-A GABAergic Receptors in the Songbird Auditory Forebrain. *Developmental Neurobiology*, 71(10): 803-17.

Newsletter editor: Thomas A. Terleph
Designer: KLN Editions
Cover illustration: Katie Hjort ’08
Photo credits: page 3: Nicole Roy; page 5: Sue Deschênes; page 8: Jennifer Mattei and Mark Beekey