State University of New York
College at Brockport

Department of

Environmental Science and Biology

www.brockport.edu/envsci/ 585-395-5975 Spring, 2006

From the Department Chair's Office
Dr. James Haynes

Welcome to the spring semester of 2006. As you will see below, many exciting things are happening for students in the ES&B Department. Our proposal for a new Master of Science degree in Environmental Science and Biology has been approved by SUNY and is scheduled to accept the first students in the fall of 2007. We plan to hire a new faculty member next year to help get the new program off to a great start. Many of your fellow students are engaged in exciting research and internship activities on and off campus. Currently, there are over 100 undergraduate Environmental Science majors and 22 graduate students are working with ES&B faculty members. A number of the undergraduates are working as field and lab assistants on the graduate students' thesis research projects. If you are interested in a research or internship opportunity, many are available. See one of your ES&B professors and check out the bulletin boards on the first floor of Lennon Hall. Have a great semester!

Master's Degree in Environmental Science and Biology to Begin in 2007

The Master of Science program in Environmental Science and Biology builds on a rich, 30-year tradition of environmental education and research at SUNY Brockport. The goal of the proposed program is to develop in its students an advanced understanding of ecosystem structure and function, and how environmental stressors affect ecological systems. Graduates will be trained in modern scientific methods, including environmental chemistry and toxicology, statistical and computational methods, field biology and ecology, and related disciplines. The interdisciplinary nature of the program will facilitate interaction among students and faculty with different areas of expertise, both at SUNY Brockport and across a broad range of academic, governmental and non-governmental organizations in the Great Lakes region. The program will encourage students to design and conduct innovative thesis research projects, and to develop strong communication skills through presentations at professional meetings and submission of manuscripts to peer-reviewed journals.

Graduates of the program will be "well rounded specialists." They will have a solid scientific background with a specialty in one of four disciplines: Environmental Chemistry, Earth Sciences, Terrestrial Ecology or Aquatic Ecology. The curriculum will ensure high levels of technical expertise and will help students acquire up-to-date knowledge of environmental issues. Fieldwork, internships, seminars, and environmental problem-solving courses are distinguishing characteristics of the proposed program. Graduates of the program will have the strong scientific and analytical skills essential for solving current and future environmental problems.

MS degree candidates will take at least 30 semester hours, with a minimum of 17 semester hours at the 600-level or above. In addition to producing a defended thesis based upon original research, students must pass an oral comprehensive exam.

Natural Resource Center and Aquarium for Port of Rochester?

Dr. Joseph Makarewicz, Distinguished Service Professor, Department of Environmental Science and Biology, has been working tirelessly for four years to initiate a research center on Lake Ontario. A front page article in the February 1 issue of the Rochester Democrat & Chronicle newspaper suggests that the Center may become a reality.

$150,000 of federal funds are being used to plan for the long-awaited building. "The College thought long ago that there was an opportunity to explore this concept. We built a development committee and made federal funding for this project our number one priority", says Dr. Makarewicz.

The Center will help individuals who want to learn more about the Great Lakes while helping the community and businesses in the region. This Center will house research labs for Brockport and visiting faculty and classrooms for college and K-12 students. An added attraction may be an aquarium open to the pubic.

Stay tuned for progress on this great educational and cultural opportunity for residents of and visitors to Western New York!

Academic Successes of ES&B Students

Environmental Science and Biology students have once again proved their academic ability and dedication in pursuit of careers in Environmental Science – one of the fastest growing job areas in the United States – by being named to the fall 2005 Presidential Scholar or Dean's Lists. Congratulations to the following honored students.

Presidential Scholars

Patrick Emblidge
Kory Merritt
Hollee Schwingel
Casey Pealo

Dean's List

Garry Coles
Patrick Emblidge
Amy Funke
Patrick Herbert
William Hershey
Emily Kridel
Adam Lotyczewski
Stephanie Neubert
Casey Pealo
Renee Pszyk
Coral Reina
Nicole Reuss
Jessica Rositano
Timothy Royce
Hollee Schwingel
Sara Stio
Ryan Stotz
Starr Vella
Kathryn Wieczorek

Ever Thought of a Career in Ecology?

"Ecology from the Greek *oikos* =house (place we live) and *logos* =(study of)"

Like being outdoors?
Curious about how the world works?
Want to make a contribution to society?

The Department of Environmental Science and Biology offers concentrations in Terrestrial and Aquatic Ecology/Biology which allow students to pursue careers in the field of Ecology. Mark Norris and Christopher Norment and are the department's experts in terrestrial ecology and advise students in that concentration. James Haynes and Joseph Makarewicz do the same for aquatic ecology students.

The field of Ecology is the scientific study of organisms and their environment addressing:

- The distribution and abundance of

organisms
- How living things interact with each other and their environment
- The fluxes of matter and energy through the living world.
- The full set of relationships between organisms and their environment, for example: the ecology of a tropical rainforest or the malaria mosquito.

Ecology is a discipline, a profession, and a scientific community to which you can belong!

NEW ENV Course in Fall '06
Terrestrial Ecosystem Ecology

If the above article on a career in Ecology interests you or if you want to take a course in Ecology that surveys major terrestrial ecosystems of the world – Terrestrial Ecosystem Ecology is the one. This new ENV course will be taught in the fall of 2006 by Dr. Mark Norris, and will cover the following:

- *Survey of major terrestrial ecosystems of the world and stresses they face.*
- *Effect of global change such as rising CO_2 levels, global warming, loses of biodiversity, invasive species and elevated N deposition.*
- *Compare and contrast major characteristics such as vegetation, energy flow, and nutrient input and cycling.*

For more information on this course, please email Dr. Norris at mnorris@brockport.edu.

Memories of the 2005 Bahamas Course

ENV major Patrick Herbert reports: "Great time enjoyed by everyone. Spent the mornings and afternoons snorkeling/scuba diving three different marine habitats of San Salvador and reviewed the day during evening class sessions. The class also took several hikes learning about the geology and history of the island. Two of the hikes included cave explorations. After a week of studying five marine habitats, the students focused attention collecting data for their individual research projects. Sharks were the highlight for most people who encountered these amazing creatures (reef, bull, hammerhead, spotted eagle ray!) The scuba divers lucked out with good weather, getting in 8 dives – three of which were off the "wall" referring to the almost 90 degree vertical drop off into the depths of the Atlantic ocean. Mostly work and some play but a great experience for everyone. Thank you, Dr. Haynes from SUNYBrockport and Professor Harris from Onondaga Community College!"

Interested in this opportunity? The next Bahamas class is scheduled for January 2007. Contact Dr. Haynes, jhaynes@brockport.edu, for information.

Gary Neuderfer, NYSDEC
ES&B Lecturer

After Aquatic Inverts last spring, ***I AM BACK!!*** This time, we will use aquatic invertebrates (and fish) to detect toxins in water in Aquatic Toxicology, ENV 495/BIO 595.

Life after Aquatic Invertebrates last spring semester has been hectic. Most of my work revolved around NYSDEC's sea lamprey control programs on Seneca and Cayuga Lakes, and Lake Champlain. It started in June with a week on Seneca Lake with a sea lamprey control treatment in Catherine Creek, a major tributary that enters the Lake at Watkins Glen, New York. I am happy to report that the sea lamprey are indeed dead, and the non-target aquatic critters are alive – YAHOO!

In June, I hired a SUNYBrockport Environmental Science graduate, Pat Brown '05, to go swimming in the Allegheny River and Olean Creek near Olean, New York. Ok, the primary objective was not a nice cool swim on a hot summer day. We collected 200+ pocketbook and fluted shell freshwater mussels for non-target toxicity tests with lampricides. Lampricides are those EPA Registered Restricted Use Pesticides used to kill immature larvae of the parasitic sea lamprey before they have a chance to feast on trout, salmon and other freshwater game fishes. Later in the summer, we went seining for young-of-year quillback in a tributary of Lake Erie and electrofishing for margined madtoms in Sacandaga River and American brook lamprey in St.

Lawrence County. Pat and I then spent 6 weeks in our mobile lab in picturesque Rome, New York, testing the effects of lampricides on these critters. The objective of this unending project, now 5 years old, is to develop treatment strategies that kill sea lamprey while minimizing effects on non-target organisms.

This fall I have been working on completing an EPA Grant Project looking at contaminant levels in sediment and biota of the Rochester Embayment of Lake Ontario. This project is part of the USGS/ USFWS Lake Sturgeon restoration effort in the lower Genesee River, and collecting data for, hopefully, delisting of use impairments in the Rochester Embayment Area of Concern – Remedial Action Plan process with NYSDEC and EPA. And yes, more sea lamprey stuff, like starting the NEPA (National Environmental Protection Act) review process for Seneca and Cayuga Lake sea lamprey control program. We want the option to use Federal $$ for this project, so we have to complete a NEPA Review. (*Editor's note*: Learn how to do this by taking **Environmental Impact Analysis**, ENV 488/BIO 588, from **June 26-July 8, 2006**. Contact Dr. Haynes for more information, jhaynes@brockport.edu).

On a more fun note, my family and I spent a week in Wellfleet, Cape Cod, Mass – I LOVE THAT PLACE. I went Charter Fishing twice for stripers and blues in Cape Cod bay – once with my future son-in-law, and later in the week with my son and his friends. What a blast! We caught stripers to 48" long until our arms were about to fall off. My wife Judi and I also spent a long weekend in West Virginia at a family reunion. What a beautiful state, and a great state park system. Yes, WV is more than coal!

I am excited to be back teaching at Brockport. Stop by Room 115 late Tuesdays and Thursdays and say hello.

Highlights of Undergraduate Study at SUNY Brockport
ENV Major – Ross Abbett (BS '05)

Ross Abbett graduated with a degree in Environmental Science in December 2005. Here he summarizes highlights of his time at Brockport.

What I came away with from my undergraduate studies at Brockport.
"I now have a background to approach environmental problems scientifically and to determine their causes. I have a well rounded understanding of aquatic ecology. Brockport involves undergraduate students in research. This provided me with invaluable work experience, and contacts within the NYSDEC and USFWS. My advisor at Brockport was frank with me early on in my undergraduate career. I had a working knowledge of what was necessary in order for me to reach my goals. My time management skills are vastly improved since I began at Brockport."

Highlights

Research opportunities help "undergraduates gain experience and working knowledge in their areas of interest. Work on faculty and graduate student research projects is available for motivated students, and Brockport has recently updated some of its aquatic sampling equipment, making these opportunities comparable to professional fieldwork. Brockport's size affords the professors and advisors time to give students individual, personal attention, something that helped me decide on a career path. Brockport's Environmental Science professors are "published" professors that continue doing field research and analysis. These professors stay on the cutting edge of environmental science by continually being immersed in the field. Brockport's aquatic ecology program itself is thorough, with a good core knowledge delivered to the student, and the elective courses offered allow students the flexibility to focus on their passions. Brockport's involved professors continually evaluate the classes they offer and amend classes offered to reflect current professional trends. GIS classes have recently been offered to reflect the importance of GIS in the representation of environmental data. Brockport also works with NYSDEC biologists, two of whom currently teach three elective classes, bringing professional practice and attitudes into the classroom."

Future Plans

"My future plans are to earn a Masters degree from SUNY Brockport in fisheries, building toward my ultimate goal of being a fisheries or aquatic biologist in the northeastern United States."

Concentrations Offered in Environmental Science and Biology

Thinking about majoring in ENV but unsure what concentration to choose? This may help!

Aquatic Ecology/ Biology—prepares students for graduate school or employment in limnology and oceanography (physical, chemical and biological processes in freshwater and marine systems), marine biology, fisheries, water pollution studies, environmental analysis, etc.
Terrestrial Ecology/ Biology—prepares students for graduate school or employment in wildlife ecology and management, conservation biology, plant ecology, terrestrial vertebrate biology, animal behavior, etc.
Environmental Chemistry—prepares students for graduate school or employment dealing with chemical analysis for pollution assessment, pollution prevention methods, development of remediation methods, environmental safety and health issues, toxicity testing, etc.
Earth Sciences—prepares students for graduate school or employment dealing with the geosphere (soils, erosion) and atmosphere (processes, pollution), watershed and wetland studies, environmental geochemistry, geographic information systems, etc.

Student News

Ian Conboy – Ian received a BS in Marine Biology from the University of South Carolina-Columbia in May 2005. His undergraduate research dealt with meiofauna (microscopic animals living in the spaces between sediment particles) and zooplankton, including travel to the Russian Arctic to study portunid crab zoea larvae. He also went to the University of Alaska Southeast on a national student exchange and took marine biology courses. "At South Carolina I definitely learned a lot about some of the small organisms that inhabit the sea. SUNY Brockport will be my chance to study larger marine organisms, specifically fish and corals," Ian says. He plans to conduct thesis research at San Salvador in the Bahamas. After completing the MS degree, Ian wants a job dealing with fish and coral research, but teaching is another interest.

Daniel White (BS '02), graduate student, continues his work with Drs. Makarewicz and Noll studying water/sediment interactions and phosphorus fluxes/ storage in the deep-water sediments of Irondequoit Bay. During Dan's education at Brockport, he "achieved a strong foundation in aquatic ecology, water quality, limnology and biogeochemistry". In addition, Dan has presented his research at conferences of the Geological Society of America and the Great Lakes Research Consortium. "My education at SUNY Brockport has prepared me to enter the workforce as a professional," says Dan.

Patrick Emblidge (BS, 05). Patrick graduated from SUNY Brockport in December with an ENV degree in terrestrial ecology. In January, he began an internship at Yellowstone National Park working for the Yellowstone Ecological Research Center. Patrick is identifying coyote pack composition, territory boundaries, and movement patterns by use of radio collars and visual surveys. In the spring, he will identify and locate denning sites of the alpha coyotes and study coyote interactions with sympatric carnivores (wolves). Patrick plans on attending graduate school in the fall.

Sarah (Wasson) Halbrend (BS, 04). Sarah is diligently working on her thesis project looking at pharmaceuticals and personal care products (PPCP) in water. Since the late 1980s, pharmaceuticals have been found emerging untreated from sewage treatment plants and in local waterways. The US Geological Survey sampled 139 US streams in 1999; 80% were contaminated with PPCPs, but no research has been conducted in the northeastern US or New York state. Sarah's goal is to determine if Lake Ontario and its tributaries are contaminated with

common PPCPs (e.g., Ibuprofen, Aspirin, and hormones).

Adam Goodine (BS 05). Adam has first hand experience in dealing with Hurricane Katrina. Adam is currently living in Houma, Louisiana; which suffered major damage inHurricanes Katrina and Rita. Adam explained in an email to Dr. Norment the terror people experienced and felt during Hurricane Katrina. Adam wrote in his email about not only the environmental destruction that took place during the storms but also the human side of the ordeal. In spite of enormous losses the people of Louisiana suffered, Adam makes note of the "little island in the inland sea", of good leadership regardless of color or politics, and of caring people working together.

Scott Wells (MS '06). Scott lead sampling crews into the field 48 times from May to September. Dr. Haynes has a grant from the NYDEC to determine the status of longear sunfish (*Lepomis* megalotis) a state-listed threatened species, in two western New York streams. Volunteers Patrick Herbert and Coral Reina, Environmental Science under-graduates, played key roles. Sampling with the College's 18-foot electro-fishing vessel in lower Tonawanda Creek near Amherst, NY23 native longear sunfish were caught at 11 sites, more than the total caught in the past 30 years in western New York. Longear sunfish were found only in a 5.6-km section of lower Tonawanda Creek and the nearby Erie Canal, but not in the Johnson Creek, Oak Orchard and Salmon Creek watersheds. One other rare fish, the redfin shiner (*Lythrurus umbratilis*), was sampled in the lower reaches of Johnson and Tonawanda Creeks. Over 50 species and 33,000 fish were captured and identified. A total of 27 persons assisted field sampling, including Native Americans from the Tonawanda Nation in Basom, New York. Scott's thesis is focused on predicting fish assemblages from physical habitat features at the many stream sites surveyed. In December, as a result of his high score on last year's Civil Service Exam, Scott took a job as a Fisheries Biologist with the DEC office in Stamford, NY, one of the four fisheries biologist hires made by DEC this year. Congratulations, Scott!

Fall Class Schedule *2007*

ENV 201/202	Env. Sci.	1:15-2:15 MWF
ENV 400/	Plant Div.	4-5:30 TR
BIO 500	Lab	2:30-5:30 W
ENV 406/	Wildlife Ecol.	9:45-11:15 TR
BIO 506	Lab	1:15-5:00 F
ENV 419/	Limnology	6-9:15 T
BIO 519		
ENV 421/	Limnol. Lab	12-5:00 R
BIO 521		
ENV 427/	Animal	1:15-2:45 TR
BIO 527	Behavior	
ENV 457/	Marine Bio./	3:45-5:15 MW
BIO 557	Geo.-Bahamas	
ENV 490/	Fish Tech/ID	12-5:00 T
BIO 590		
ENV 495/	Terr. Ecosyst.	11:30-1:00 TR
BIO 595	Ecology	

ES&B Faculty and Staff

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We would love to hear your suggestions or comments about this newsletter.

Alumni: please send an email about what you are doing to ddilker@brockport.edu. Thank you!