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Environmental Science and Ecology

Fall 2010

Newsletter Fall 2010

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Fall 2010

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The College at Brockport

Environmental Science and Biology

From the Chair's Desk— Dr. James Haynes



Welcome back for what I hope will be another productive and exciting year for students and faculty members. Thanks to recruiting efforts led by department secretary Deborah Dilker, we have record numbers of undergraduate majors (130+) and entering graduate students (14).

Our new 3+2 combined BS/MS program was approved and the first student (Aaron Heminway—see article on the last page) will enter the program soon.

I spent a fabulous 10 weeks in the South Pa-

cific last summer, where I taught courses in Fiji and Australia (the photo in the upper right is at an ancient Aboriginal site) and did fisheries consulting in remote Indonesia. Snorkeling, diving and underwater photography on the Great Barrier Reef and in the Coral Triangle was incredible.

The Fiji and Australia courses focus on sustainability and biodiversity. They are offered through Brockport's Office of International Education and will run again in June-

July 2011. In 2012, I will offer a new Coral Reef Ecology course in Indonesia.

Last, welcome to Jason Townsend, Ph.D. candidate at SUNY ESF, who is teaching Wildlife Ecology this fall.

Dr. Christopher Norment is on sabbatical leave in the Death Valley region of California and Nevada. Please join Dr. Norment as he describes some of his research and other experiences in a blog dealing with evolution, ecology and conservation of endangered and rare species in the area. Blog access is:

<http://fotsabbatical.blogspot.com/>

FOT = Fullness of Time. Enjoy!

Combined BS/MS Degree now available in Environmental Science and Biology

We are pleased to announce that students are now able to apply for the combined 3+2 BS/MS degree in Environmental Science and Biology. Admission is selective, restricted to students with exceptional records, and subject to the availability of a faculty member able to serve as a thesis advisor. Students with a cumulative GPS of 3.4 or better by the end of the first semester of the junior year (defined as having completed at least 75 credits), and who will

complete the ENV undergraduate core curriculum by the end of the junior year, may apply for admission to the combined program. Transfer students may be considered for the BS/MS program after taking 15 credits of course work at the College at Brockport. Students must maintain a GPA of at least 3.0 and continue to meet the academic requirements for the MS program, which includes making

satisfactory progress toward completing graduate coursework, the oral comprehensive exam, and thesis research. For a complete description of the program visit our website at :

www.brockport.edu/envsci



Exciting Internship Opportunities = Employment through Experience

There is an old saying "**you have to give something to get something.**" In the Department of Environmental Science and Biology, this comes in the manner of internships. Here are a few that our students undertook in the summer of 2010.

Alyssa Novarro (BS '11) testing soil samples to determine the seed bed at Nissequogue River State Park.



Kristin Burns (BS '11). Kristin did a summer internship at the Northern Montezuma Wildlife Management Area in Savannah, NY working with America Kestrels. In the picture below, Kristin is banding a Kestrel. Kristin also worked in Sodus Bay with the Eastern Spiny Soft Shell Turtle, which is an endangered species. **"The hands-on experience I have obtained from being out in the field is overwhelming, and I recommend every student give it a shot to see if they**



really enjoy their field of study!"

Mandi Caldwell (BS '12) and Robert Cornish (BS '11). Mandi and Rob had an internship with the DEC working on a freshwater pearly mussel project with two wildlife biologists. The purpose of the project is to develop an understanding of where the freshwater mussels in the Southern Lake Ontario watersheds are. These mussels are important because they filter water, which helps maintain high water and habitat quality. **"This internship was a great opportunity to get a lot of experience in the field, which is very valuable."**



Clump of freshwater mussels collected by Mandi and Rob.

Kaitlyn Wauhkonen (BS '11). Kaitlyn was an intern at Hawk Creek Wildlife Center where injured, orphaned, and abandoned animals of all kinds are taken in. Kaitlyn was able to work with a variety of animals, learning the proper care and techniques that are applied in everyday and emergency situations. Hawk Creek is also a Barn Owl (see cover photo) breeding project site that helps the species' recovery efforts. Kaitlyn was also part of several educational programs teaching the public about the animals that were brought to various locations and providing information about the center. **"During this internship, I learned a lot through the many challenges and opportunities I experienced. This was anything but a clean job, but it was totally worth it."**

Rebecca Bernacki (BS '12) Working with Dr. Norris and supported by a competitive grant from the Brockport Foundation, Becca investigated beech bark disease (BBD) and hemlock woolly adelgid (HWA) in an old growth forest. Becca's field site was Gosnell Big Woods Preserve in Webster, where beech and hemlock are two of the dominant species. BBD and HWA will have significant effects on this forest. Becca's research involved a forest composition survey, a replacement survey and GIS mapping. Becca continues to do research with soil sampling to determine soil respiration.



Alana Becker (BS in progress). Funded by the Great Lakes Innovative Stewardship through Education Network (GLISTEN). Alana did her internship as an Undergraduate Student Liaison with

the Monroe County Soil and Water Conservation District. Activities included re-vegetation projects and environmental education about Great Lakes watersheds.



Katie Cappiello (BS '12) Katie was employed at the Seneca Vegetable Research facility as a Biological Science Technician this past summer. She performed hybrid development, which included pollinating corn and melons. Katie did field work with Dr. Walter Whitwood on different varieties of corn.

Christopher Titus (BS '08, MS '11) Chris spent the summer working for the Upper Susquehanna Coalition (USC/Americorps as a habitat intern. Chris worked to enhance habitat in areas where coal skinks were found and to create new habitat in areas adjacent to known populations. Chris continues to fulfill his duties as a student representative for the Northeast Partners in Amphibian and Reptile Conservation steering committee.



Editor's Note: During the 2009-2010 academic year, far more announcements of internship opportunities were received and distributed to ENV majors than ever before. Most were paid opportunities—look for more this year. Internships and summer research with a faculty member are the best ways to stand out in the crowd when applying for jobs!

ENV Graduate Student Thesis Research Activities

Thirty-two students from many colleges are pursuing the Masters degree in Environmental Science and Biology at Brockport. Here is some of their thesis research:

Jeff Chichester (BS Geneseo). Jeff studies the Emerald Ash Borer to determine what effects it may have on soil nitrogen levels. Using the point quarter sampling method and seed bank analysis, he will determine the species of tree that will replace ash trees after they succumb to the Emerald Ash Borer.

Mellissa Winslow (BS Clarkson). Mellissa's thesis focuses on the Black Creek watershed, using water quality testing to identify point and non-point sources of pollution to reduce pollution in the future. Her research is funded by the US Department of Agriculture and the NYS Center for Environmental Information.

Bradley Mudrzynski (BS '07, MS '10). Brad's research determined which habitat characteristics birds select during their fall migration stopovers at the Iroquois National Wildlife Refuge. His results will be sent to the

US Fish and Wildlife Service to help them make habitat management decisions at various refuges. Brad will now serve as Project Coordinator, working with Dr. Douglas Wilcox, on a monitoring program that will survey about 100 coastal wetlands along the Great Lakes.

Justin Rogers (BS '05). Justin's thesis focuses on non-native species invasion in Cobb's Hill Park in Rochester, New York. Justin is analyzing forest composition, seed rain, seed bank, competition and germination success.

Nathan Grosse (BS '09, MS '11). Nate's thesis is titled "Area Effects Removed: Vegetation Characteristics and Grassland Bird Abundance in a Western New York Field." The purpose of Nate's thesis research is to provide management recommendations that will benefit grassland birds in the Northeast.

Coral Reina (BS '07). Coral is collecting riparian and in-stream habitat data and minnows in Sandy Creek. She will correlate species distributions with habitat conditions.

Ariel Kirk (BS St. John Fisher). Ariel's thesis project will focus on developing a management plan at Fort Drum to encourage the continuation of nesting Henslow's Sparrows, a threatened grassland bird in New York State. Fort Drum has one of the largest populations of these birds in New York and possibly all of the Northeastern United States. The management plan will include evaluations of established habitat, as well as suggestions to recover lost grassland habitat that has been overgrown with shrubs. Along with this, she will be incorporating habitat modeling for the Sedge Wren, another species of bird threatened by habitat loss. Both species are elusive and difficult to monitor, as neither have high nesting site fidelity. This study may give insight into both habitat preferences and general biology of these two species. Environmentally, discovering the preferred habitat for these birds will allow management organizations to target their efforts specifically for grassland habitat growth or maintenance.

Taking Stock of the Environmental Profession

Despite the economic down-turn since 2009, the number of employment opportunities for environmental professionals is expected to increase in the coming years. In 2008, the Bureau of Labor Statistics (BLS) reported an expected 25% increase in employment of environmental scientists from 2006 to 2016. A recent BLS update predicted around 83% growth overall for environmental jobs and 28% for environmental scientists between 2008 and 2018.

- Expect an overall increase in professional/business and jobs for technical, scientific, water-wastewater and waste management treatment remediation.
- Professional and business service employment opportunities are expected to increase 2.3% over the next year. Positive job growth is expected primarily in the private sector.
- Job sectors expected to grow most include environmental scientists, industrial ecologists, climate change sciences, biological/environmental health, and environmental restoration and water/wastewater engineers.

- Want to know what's happening in your state or region: Navigate to www.usatoday.com/money/economy/2009-02-06-new-jobs-growth-graphic.
- It's important to prepare for anticipated changes affecting the environment. Take stock of where you are in your career; do your research and project ahead; develop a plan; and build your network to help you direct your course and professional growth.

C. Chitwood, CEP August 2010
Academy of Board Certified Environmental Professionals

News from the Department

Rhonda Hudgins (MS '10). Rhonda is employed with the United States Department of Agriculture in the Animal and Plant Health Inspection Service. Rhonda works on plant protection and the Plum Pox virus.

Marc Chalupnicki (BS '03, MS '06). Congratulations to Marc on being hired full-time permanent by the US Geological Survey's Tunison Aquatic Lab in Cortland, NY. Marc is busy publishing articles on rainbow smelt and walleye in Owasco Lake, NY.

Ian Wagner (BS '14). Congratulations to Ian for being named 2010-11 O'Reilly Scholarship recipient. This scholarship is awarded to a promising incoming freshman major.

Ben Geiger (BS '07). Scout Ranger at Camp Massawepie owned by Seneca Waterways Council Rochester, NY and NYS easement funds.

Matt Nowak (BS '09). Entered a MS program at the SUNY College of Environmental Science and Forestry in Syracuse, NY. Matt gives his thanks to Dr. Makarewicz for the opportunities in his lab and the recommendation.

Natalie Pilakouta (BS '10) - Entered the Ph.D. program in Ecology at Yale. Received Department Scholar, SUNY Chancellor's Student Excellence and School of Science and Mathematics Undergraduate Awards in 2010.

Patrick Emblidge (BS '05). Biology Technician with the USGS in Southern Nevada. Successfully defended his thesis "Gila monster habitat modeling and natural history in southwestern Utah" Central Washington University

Blake Snyder (MS '11). Presented at the 2010 World Aquaculture meeting in San Diego, California on his research thesis.

Bobby Geroux (MS in progress), Ed Wesolowski (BS '10). Presented a paper and poster, respectively, at the 140th American Fisheries Society meeting in Pittsburgh, PA.

Amanda Alexander (BS'06, MS '10). Now a fisheries biologist with the US Fish and Wildlife

Why Brockport?

Undergraduate and Graduate Student Profile: Nate Gross

"I graduated from FLCC in 2006, planned to go to either ESF or Brockport to complete my bachelors. I choose Brockport because of the atmosphere. I liked the Village and campus, as well as the atmosphere of the department. Once my bachelors was done, I enjoyed my time here so much I stayed to get my masters. The professors all are doing meaningful and important work; however, none act as they are above their students. ESB is a very positive place to pursue your degree. There are high expectations here, but the professors still take into account that we have lives outside the classroom and lab. Why recommend Brockport? As stated above, Brockport provides a positive, relaxed atmosphere to pursue your degree. The more relaxed atmosphere, however, does not mean a "relaxed" degree. I feel that the education and opportunities I received here are equal to any larger university. Overall, Brockport a great place with a great down-to-earth department."

Undergraduate Student Profile: Jeff Meyer

"My story began after high school in 2000. I wanted to go to college but was undecided on what my career path was going to be. I decided to attend MCC and study business administration. While going to college, I continued to work at a local auto repair facility. Two years went by, and I officially had my associates degree. I was torn, however, because I wanted to continue to work outside and with my hands. I lamented the idea of working behind a desk in a cubicle all day long. So, I continued my career as a mechanic and earned several ASE certifications along the way. I ended up working as a mechanic for another 8 years. I loved working on cars, but I also knew I couldn't continue doing it for another 30+ years. This brought me to the notion of going back to college and studying something that would allow me to make more money and still not have to work at a desk. I choose Environmental Science with a dual concentration in aquatic and terrestrial biology/ecology. Going back to college after 8 years has been quite an eye-opening experience. I realized very quickly that I was not 18 anymore. This, however, proved to be a blessing in disguise. Instead of partying and slacking on my work, which I would have done in my earlier years, I worked diligently, received a 4.0 my first semester, and had nearly the same result the second semester. I hope to continue this trend in my final year of college. I recently completed the AUIP summer program in Fiji and Australia, where I earned 9 credits. All I can say is it was an amazing experience that I recommend to anyone who has a desire to learn more about the world, biodiversity and sustainability. The trip changed my life. I plan on working in the area of water resource management with my degree when I complete school.

I got married in 2009 just before school started to a woman I was friends with for 3 years. She teaches elementary special education at Marcus Whitman Elementary School in Gorham. I love the Boston Red Sox and Ford Mustangs. I traded my 2008 Jeep Wrangler in for a Honda Civic weeks after taking Dr. Haynes' Environmental Science class. That class was the single most influencing class I have taken yet."

Graduate Student Profile: Blake Snyder

"Since my childhood, I have always had an interest in the natural world and how it works. As time progressed, I became most interested by the aquatic world and came to the realization that I would like to somehow incorporate it into my career. However, I was not certain of what aspect I would like to concentrate on, as I was interested in fish and monitoring water. After completing my BS at LeMoyne College in Syracuse, I opted for a graduate program where I could explore my interests and attain personal goals. I chose The College at Brockport's Environmental Science and Biology program because it offered classes that would give me the opportunity to do this. Class work has been hands on and allowed me to develop many different skills from fieldwork to laboratory techniques. Class sizes are small and the professors are helpful and easily accessible.

While attending Brockport, I have gained experience in the scientific world by conducting my own research. My M.S. thesis research has focused on lake trout nutrition, specifically dealing with the effects of dietary highly unsaturated fatty acids (HUFAs) on their growth and survival. I have conducted two feeding experiments in the aquaculture lab located on campus. The first used *Artemia nauplii* (brine shrimp) enriched with different amounts of HUFA emulsion as the diets. The second experiment used experimental dry diets with different lipid sources. I have also had the opportunity to present the results of my research at two scientific meetings, the Great Lakes Research Consortium's 19th Annual Student Faculty conference in Syracuse and the Aquaculture 2010 meeting in San Diego, CA. I would not have had the opportunity for such experiences if I did not have the support and guidance of my major advisor, Dr. Jacques Rinchar, to drive me to succeed. I have no doubt that the knowledge and experience I have gained at Brockport will open many doors in my future."

Graduate Alumni Profile: Rhonda Hudgins (MS 10)

After many years of working with computers, I needed to change my career and was given a great opportunity in 2006 when my company left town. I have always liked being outdoor, either camping, hiking in the woods or just on hands and knees in a garden. I started my career change in Finger Lakes Community College where I received an Associates of Applied Science in Natural Resource Conservation. However, this was not enough—I needed to know more about the environment and what makes it work. Therefore, armed with a Bachelor of Arts degree in American History and my AAS degree, I approached Dr. Christopher Norment about The College at Brockport's new graduate program in Environmental Science and Biology. I began taking graduate courses in the fall of 2007 and was accepted into the program in January 2008. The courses I attended for the next two years were great and challenging. Each professor, Dr. J. Haynes, Dr. M. Norris, Dr. C. Norment, Dr. J. Rinchar and Dr. D. Wilcox were knowledgeable about their topics and made the environmental problems we face in the world real and that there is no single solution, but possibly many small ones. The other students, both undergraduate and graduate enlivened the times between classes through conversations and friendship. As a graduate student, I was fortunate to have Dr. Christopher Norment to be my primary advisor. His insight and understanding made the work of doing two field seasons and writing my thesis easier and with some fun thrown into the mix. I am proud to have attended The College at Brockport and to have earned my Master of Science degree in Environmental Science and Biology. The friends I have made and the knowledge gained will be with me for the rest of my life.

Spend a Month Studying in Australia and Earn Six Credits

Aaron Heminway (BS/MS candidate)

I had always imagined Australia as a vast, flat, unending desert populated with European descendants and Aboriginals surrounded by koalas, kangaroos, and crocodiles. My study abroad experience this summer (OAP 428/528, *Sustaining Human Societies and the Natural Environment*, 6 credits) reshaped preconceived ideas and broadened my knowledge of global ecosystems. The continent is full of diverse topography, wildlife, and ecosystems. Aboriginals, European Australians, Asians, and Pacific Islanders all form a diverse Australian culture.

Queensland is the northeastern most state in Australia. It is bordered by the Coral Sea, home to the Great Barrier Reef, to the east and the arid Northern Territory to the west. Driving 100 km inland takes you through diverse ecosystems: mangrove, sugar cane, rainforest, mountainous jungles, and dry sclerophyll forest in the Outback.

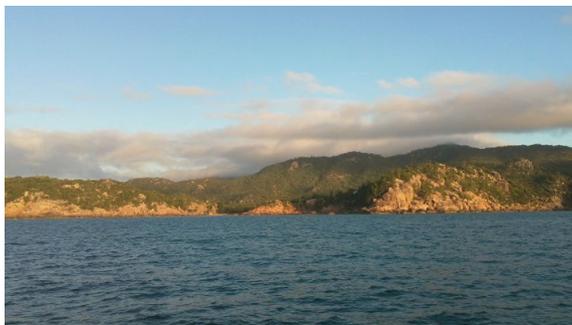
The Great Barrier Reef lies just off the coast in the Coral Sea and is home to what I consider one of the most beautiful, fascinating ecosystems in the world. Snorkeling on the Great Barrier Reef with sharks, green sea turtles, invertebrates, corals, and a massively diverse assemblage of marine fishes is an incredible experience. Zones for varied human uses have been established from open fishing to no use and everything in-between. This practice of zoning is a great example of using a source-sink model to allow human uses of the environment while protecting biodiversity and maintaining ecosystem services.

The Daintree Rainforest, a UN-designated World Heritage Area, was another highlight of the study-abroad course. This narrow strip of rainforest is ancient, having remained relatively unchanged for 135 million years. While only 1200 km², it contains the highest diversity of flora and fauna on the continent. More species of flora can be found in one acre of the Daintree than in the continental United States.

While all of this aquatic and terrestrial diversity is amazing, one must remember that it is under intense pressure from anthropogenic influence. Invasive species, development, pollution, natural resource consumption, and climate change are constant threats.

The course emphasizes the concept of sustainability, and Australia is the perfect environment in which to gain a deeper understanding of the true meaning of this concept. We spent time with Aboriginal and European Australian families. Through these experiences, I learned how these two cultures approach land management. In my opinion, the practices of the Aboriginals, who have lived in Australia for at least 60,000 years, are the perfect example of sustainable living. Understanding and adopting many of their practices are essential if humans are to live sustainably in Australia and the rest of the world.

The course is open to all majors, but science majors are seriously underrepresented. My final words...**go there**; it is an environmental, ecological, and cultural experience of a lifetime.



2010 Environmental Science and Biology Seminar Schedule

Monday, November 1-Frederick Stoss—University of Buffalo "***Climategate***"

Monday, November 8—Kimberly Durham—Riverside Foundation for Marine Research and Preservation "***New York State's Marine Mammal and Sea Turtle Stranding Program—Current Conservation and Research Initiatives***"

Monday, November 29—Dr. Satyendra Bhavsar—University of Toronto "***Using fish as a bioindicator of aquatic contamination***"

Monday, January 31-Dr. Diana Aga-University of Buffalo "***Biodegradation of pharmaceuticals in biological treatment systems***"