BIO-FEEDBACK

DEPARTMENT OF BIOLOGY

Fall 2008 Newsletter • Volume 8

Dragonflies observed at the Tewksbury property mentioned in John Wheeler's article (p. 3)

ALUMNI DONATION SUPPORTS FACULTY AND STUDENT PROJECTS

A generous donation to the UWRF Foundation by Biology alumnus Dr. A. Duane Anderson and his wife, Phyllis Anderson, established the Kettelkamp-Lieneman Professorship in 1998. This award honors former Biology professors Benny Kettelkamp and Catherine Lieneman. The professorship has been awarded each year to a biology professor in support of a scholarly project. These funds have had a significant impact on the biology department, allowing faculty to enhance their scholarly work, provide research opportunities for students, and bring their scholarship into the classroom to the benefit of countless students. There are few sources of funding for this type of faculty work, so this professorship has been very important for implementing the department's mission. Several of the recent recipients have used the award to augment field biology activities.

The 2006-07 recipient, Dr. Mark Bergland, was able to acquire optical equipment for ornithology research that is facilitating independent research projects. Previously, students had to bring their own binoculars; the uneven quality hampered their observations. In 2005-06, Dr. Clarke Garry obtained a high-quality camera system to provide photographic documentation of the macroinvertebrate fauna inventory of the Kinnickinnic River. These images are used by the Department of Natural Resources as well as students in field biology courses.

The 2007-08 recipient, Dr. John Wheeler, describes his experience on page 3.

FROM THE CHAIR

Karen Klyczek

Greetings! This issue of our newsletter highlights field biology activities – faculty and students engaged with local and regional communities, studying ecosystems and the environment, and working with various agencies to collect data and address important issues. The UWRF Biology Department continues to offer classes and research experiences in many areas of biology, including field biology, biomedical sciences, and laboratory research. We hope you enjoy reading about recent happenings in the department.

We always enjoy hearing from alumni, and thank all of you who have sent updates on your activities and accomplishments. Right now there is an opportunity for you to provide us with some feedback about your experiences with the biology major, as part of the department's periodic program audit. Please see page 2 for more information about how to access the alumni survey.

Thank you for your assistance!

MCNAIR SCHOLARS GAIN RESEARCH EXPERIENCE

Three biology majors spent the summer of 2007 engaged in research projects that allowed them to mature as scientists and provided a foundation for continuing their educational experience in graduate school. Becky Cote, Crystal Mathisrud, and Mitra Naseri were participants in the McNair Scholars program, which provides intensive mentoring and a paid summer internship to promising students from groups traditionally underrepresented in graduate programs. The McNair program is funded by a U.S. Department of Education TRIO grant and named in honor of Ronald E. McNair, an astronaut killed in the Challenger explosion.

Becky Cote's first introduction to conducting research began when she joined the McNair Scholars Program. Her research project, supervised by Dr. Tim Lyden, allowed her to spend the summer of 2007 studying a subject of great interest to her - the hematopoietic system. The research focused on modeling early embryonic hematopoiesis using three-dimensional scaffolding and chicks as the model system. She was able to create a favorable stem cell niche that supported the growth of what appeared to be hematopoietic stem cells. Becky presented her research at the 2007 McNair conference at Pennsylvania State University as well as at the 2008 National Conference on Undergraduate Research, in Salisbury, MD, Posters in the Rotunda in Madison, WI, and the UW-System Undergraduate Research Symposium. Becky is headed to the Immunobiology graduate program at Pennsylvania State University.

Crystal Mathisrud worked with Dr. John Wheeler to complete a preliminary inventory of vascular plants in the Tewksbury Bluff area in Polk County, WI. This work involved carefully collecting, identifying and preserving many plant samples. During the inventory, Crystal found a neat little plant called *Houstonia nigricans* (Glade Bluet) which is rare in our area; this discovery represents a northern range extension. Crystal presented her research at the 2008 McNair Conference in Texas, and she gave an oral presentation at the UW System Undergraduate Research Symposium.

Mitra Naseri spent the summer at Mayo Graduate School as a Summer Undergraduate Research Fellow in the Department of Immunology. She studied the role of Apolipoprotein-A1 in the activation of dendritic cells. In addition, she worked with Dr. Kim Mogen to investigate the efficacy of phage therapy to control soft-rot of bean sprouts. According to Mitra, "Presenting my research at national McNair conferences and interacting with faculty and scholars from across the country about my work made me realize my leadership and intellectual abilities, and my passion toward science." Mitra is headed to UW-Madison for graduate work in microbiology.

2007-08 Senior McNair Scholars, including Biology majors Mitra Naseri (seated, first from left), Crystal Mathisrud (seated, third from left), and Becky Cote (standing, third from left)
(Jens Gunelson, UWRF Photographer)

As a graduate of the Biology Department at the University of Wisconsin-River Falls, we are seeking your participation in an online survey about your educational experience. The results of this survey will be used as part of an administrative review of the Biology program. Your participation is voluntary, but will be greatly appreciated. Your name will not be associated with any responses. Please visit the site below to complete the survey.

You may have also been contacted about this survey by mail; please do not take the survey more than once.
Survey site: **http://www/uwrf.edu/bio/**
If you have questions about the survey, please contact Betsy Gerbec, **betsy.gerbec@uwrf.edu**
Thank you for your cooperation.

IN DEFENSE OF "USELESS" BUGS AND PLANTS AND OTHER NONHUMANS (OR WHY I LIKE THE KETTELKAMP-LIENEMAN PROFESSORSHIP)

by **John Wheeler**

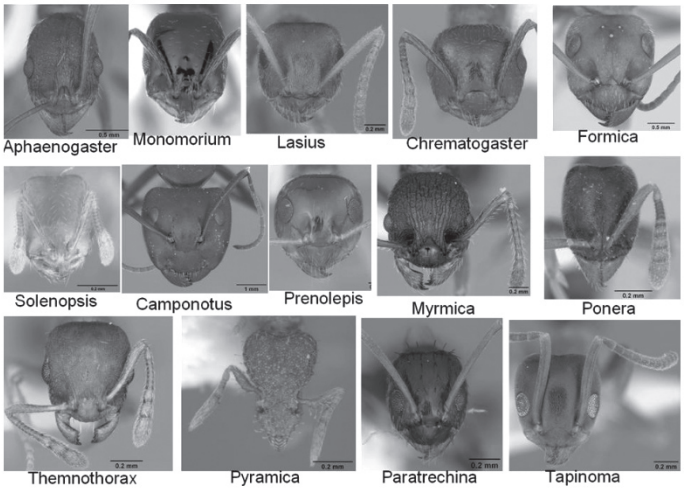
The earth is teeming with wonderful and varied kinds of life. Biology is the study of that life. Ecology is that part of biology concerned with interactions between organisms and between organisms and their environment. I would argue that to be human is to be a biologist on some level. Human ecology, for example, is covered in great depth and detail on this and other college and university campuses; it goes by many names: Anthropology, Sociology, Psychology, English, Literature, Modern Languages, Business, Advertising, Journalism, Teacher Education, Music, Art, History, etc., etc. If we study insects or plants or birds then we tend to call that 'biology'—but if we study humans or human behaviors then we normally call that something else.

There is no shortage of opportunities to study human biology on this campus, but opportunities to study nonhumans are less common. And even if we do study nonhumans, then our motivation is often anthropocentric because, in the final analysis, the learning and research mostly serves us—humans—rather than them (nonhumans) or both (ecosystems).

Chelsea Harder at work categorizing invertebrate species.

This has implications for funding because grant proposals are typically reviewed by humans rather than insects or plants or birds (wink). Discretionary funds such as those supplied by the Kettelkamp-Lieneman professorship are important precisely because they enable projects and equipment that are hard to subsidize in other ways.

Biological inventory (bioinventory) is a way to systematically document the occurrence of species at a particular location at a particular point in time. Bioinventory enables subsequent biological monitoring (biomonitoring) which reveals any changes or shifts in populations of the constituent species. In this sense, the species that we biomonitor serve as sentinels of ecosystem change and/or disturbance. Ideally, biomonitoring serves us, other species, and even ecosystems by enabling informed decisions about remediation, management, and sustainable development.



Gallery of ant species representing the fourteen genera detected so far by Chelsea Harder at the Tewksbury Unit, a National Park Service property. Images are from AntWeb; www.antweb.org/

In Summer 2007, student Chelsie Harder participated in a terrestrial invertebrate inventory on a National Park Service property near Osceola, Wisconsin. Terrestrial invertebrates are creatures such as ants, beetles, spiders, millipedes, etc. This property, the Tewksbury Unit, is important because it contains remnant prairie that was apparently never completely plowed (due to intermittent surface rock) and therefore retains original populations of native plants and animals. Chelsie chose to focus on ants as a sentinel group for future biomonitoring. Ants are one of those "little things that run the world" to borrow a quote from Pulitzer Prize-winning author and biologist E. O. Wilson. Funds from the Kettelkamp-Lieneman professorship paid for materials and supplies for fieldwork, lab analysis, and the permanent curation of voucher specimens. She presented her research at the St. Croix River Research Rendezvous in October 2007. Chelsie hopes to attend graduate school in the future and continue her study of ant biology.

The professorship funds also supported student Crystal Mathisrud's vascular plant inventory at the Tewksbury Unit, which she completed for her McNair Scholars project (see accompanying article). Each species of plant that Crystal observed was carefully documented in the form of a voucher specimen; funds from the Kettelkamp-Lieneman professorship paid for the special archival-quality mounting paper.

Remaining funds from the professorship will be used to purchase an updated video-projection system. This system will allow instructors to simultaneously manipulate and project clear, magnified, high-resolution images of living or preserved specimens— in real time—to an entire classroom of students. This will be especially useful in courses that emphasize keying and the identification of whole organisms. For example, the ability to project real-time dissections of grasses and sedges and other difficult plants will be extremely helpful during my Identification of Plants lab. Each student will be able to watch the screen but at the same time follow along with hands-on experiences at his or her own station. This equipment will also serve other courses such as General Botany, General Zoology, Entomology, Freshwater Biology, Ichthyology, etc.

NEW FACULTY

Hi. I'm Joe Gathman, and I'm happy to say that I'm the most recent addition to the Biology Department. I feel like I've settled in pretty well already, thanks to the friendliness of the faculty, staff, and students here at UWRF. I've enjoyed spending the last few years bouncing around quite a bit, but now it's nice to find a comfortable place to settle down, especially a place close to my family in Chicago.

I'm an aquatic ecologist, and my primary interest is in the ecology of wetland invertebrate communities. At UWRF, I'm teaching Entomology and Zoology. I find it a bit amusing that I'm now the resident entomologist in the department, because I've spent so many years trying to convince family and friends that I'm not just "the Bug Guy". In fact, although invertebrates are my main strength, my ecological work has also included fish, amphibians, aquatic plants…well, pretty much anything that's wet.

Another misconception I often encounter is that, as an ecologist, I am expected to be an expert on all topics related to the environment. I have spent much of the last three years in a place with many serious environmental problems: Ukraine. My wife and I spent two years there as Peace Corps volunteers, and then I added one more year as a Fulbright Fellow. In the Ukrainian and Russian languages, the word "ecologichesky" is used to mean both "ecological" and "environmental", so the two concepts are the same in most people's minds (this is largely true in the U.S. also, though we have two different words). So in Ukraine I was asked questions about everything from birds and trees to air pollution and Chernobyl. While it's true that I've spent plenty of years as a student of science, I can't say I know much about the health effects of breathing soot, or the dangers of radioactivity.

On the other hand, almost all of my work has been at the intersection between basic ecology and the applied aspects of environmental protection. I have worked on and off for many years on developing invertebrate-based Indices of Biotic Integrity (IBSs) for wetlands. I have also been a private environmental consultant performing ecological assessments, rare-species surveys, and wetland delineation in Wisconsin, Minnesota, and North Dakota.

To round out this mini-bio: I've taught at UW-Whitewater and Northern Michigan University, earned a PhD at Michigan State University, an MS in Forest Resources at the University of Minnesota, and started my fascination with bugs in wet places while working at the Metro Mosquito Control District in the Twin Cities twenty years ago. Since I'm already quite familiar with the flora and fauna of the region (including Packer fans), I shouldn't have much trouble continuing some of Clarke Garry's work on the Kinnikinnick River, but I'll also continue my doctoral work on the community-structuring factors in wetlands and vegetated-lakeshores. The great thing about doing this type of work at a student-oriented university like UWRF is that it is very accessible to students and, though it can be hard work, it is fun. In fact, I already have one research student, and we are both eager to get outside.

Me and my wife with a Ukrainian cossack at the Cossack Horse Theater in Zaporizhya, Ukraine.

The Hagia Sofia mosque, formerly the center of the Eastern Orthodox church, in Istanbul, Turkey.

Field sampling for an EPA-funded project to develop indicators of ecosystem integrity in Great Lakes shoreline habitats.

FIELD BIOLOGY NEWS

Field Biology student Sarah Knorr with her Red-Tailed Hawk.

UWRF students have been successful obtaining work experience with the Wisconsin Department of Natural Resources and the U.S. Fish and Wildlife Service (USFWS). These include both Biology majors and majors in CAFES who take biology courses such as Wildlife Biology, Ecology, Ornithology, and Freshwater Biology.

Some of the students involved this past fall were Caitlin Charron, Nick Myers, Katie Nelson, Katherine Kasnia, Kathryn Zweber, Kelsey Swanson, Anita Lampert, Elizabeth Palodichuck, Becky Davis, and Sarah Knorr. Agency personnel included Harvey Halvorsen, Chad Mogen, Jess Carstens, and Ryan Brathal of the Wisconsin DNR, and Tom Kerr and Rich Miller of the USFWS.

Most of the above students worked deer registration during opening weekend of the deer gun season last fall. Some also assisted with Chronic Wasting Disease sampling in Madison. Last year CWD sampling was done in western Wisconsin, and a number of UWRF students assisted with this effort. In addition, some of these students volunteered at the prairie seed facility, a joint venture of the DNR and USFWS located near Star Prairie.

We continue to emphasize contacts with natural resources agencies to help students obtain work experience critical to employment following graduation. For example, here is what Sarah Knorr, a Biology/Conservation major who is a licensed falconer, will be doing the spring and summer...

Becky Davis

"This summer I will be working for Tom Kerr of the New Richmond Office of the U.S. Fish and Wildlife. I will be a part of a waterfowl pair and brood count. Modifications to the Leopold protocol will be formatted to the New Richmond area because it is not a continuous wetland as is Leopold's. Pair counts will be conducted by FWS staff, volunteers, and myself in mid-May and the brood count will be conducted in Mid-June. The data collected will be a baseline because not much is known in the waterfowl production of this area, and down the road more statistical analysis will be done when more data is collected. This summer I will also be working for Minnesota Valley National Wildlife Refuge of Bloomington as an intern."

Becky Davis, a recent graduate of our program, who has been hired by the USFEW to work on a burn crew this summer. Becky also conducted an independent study project this past fall to analyze years of data collected on grassland birds in western Wisconsin. The analysis is important because many of these species have declined in numbers, and are species of special concern to the Wisconsin DNR. Becky conducted a statistical analysis under the direction of Mark Bergland, and presented results to DNR personnel at a meeting in Baldwin. She was hired under contract to continue this analysis.

Kelly Piersak

Kelly Piersak, a Biology major / Psychology minor, was accepted into the Minnesota Zoo internship program for the summer. She will be conducting behavior management research, working with keepers at the zoo, and assisting with the training of other interns.

Kathryn Zweber

Kathryn Zweber was hired as a work-study intern by the New Richmond office of the USFWS, in part because of her background in GIS. We strongly encourage students to take GIS training at UWRF because of its wide use in natural resource management. Kathryn is double-majoring in Biology and French.

These are just three examples of the kinds of things that our students have been doing outside of class to better prepare themselves for careers in field biology. Biology alumni currently working for natural resources agencies have been very helpful by providing information regarding internships and other job opportunities for our majors. For example, Kris Johansen of the Wisconsin DNR regularly passes along job announcements from this agency. We would greatly appreciate hearing from any other biology alumni who can help our field biology majors obtain the kinds of experiences necessary for success as a natural resources professional. Please feel free to contact Dr. Mark Bergland if you think your place of work may be able to support an intern. (mark.s.bergland@uwrf.edu)

LYDEN LAB MORPHS INTO THE UWRF TISSUE AND CELLULAR INNOVATION CENTER (TCIC)

In partnership with WiSys, the system IP organization, Dr. Lyden is establishing a new research and training center focused on tissue engineering, stem cell biology and translational medicine. This Center is one of several that are being established throughout the system. The plans call for significant support from the state level through WiSys, but envision industrial collaborations and federal funding through grants and contracts. A major aspect of the Innovation Center will be the development of new intellectual property and associated patents that may translate into additional revenue streams. Unlike the traditional models of establishing Centers that require permanent funding to maintain, these new "Innovation Centers" are intended to be self-sustaining within five years.

The TCIC will focus on tissue engineering applications and stem cell biology in both its research and teaching components. In these research areas, collaborations have already been established with UW-Stout to evaluate gene expression patterns and with Marshfield Clinic to explore and develop translational medicine approaches to cancer biology. Within the teaching and training component, a new collaborative arrangement with CVTC recently produced a one-day workshop for their Nanobiotechnology course from Eau Claire. This program was extremely successful and will become a permanent feature of their course. In addition, one of their students will begin an internship in the TCIC this spring. It is planned that she will be the first of many future students from CVTC working in the TCIC. The TCIC will also have a significant teaching component focused on summer training institutes that will target high school students and teachers, technical college students from CVTC and others, undergraduate students from UWRF and McNair program students from other institutions. Undergraduate students from around the nation will be recruited through an NSF REU program that we hope to establish in 2009 or 2010. Plans also include the potential development of a Masters in Biomedical Technology, a collaborative program between the campuses of the ISC and Marshfield Clinic. Finally, the TCIC will provide training programs in cell culture, tissue engineering and stem cells for industrial partners.

A major current project at the TCIC involves the development of tissue engineering techniques for pharmaceutical applications. This work focuses on avian fetal cells and affords a new approach to study the basic cellular biology of these tissues and the associated developmental processes. Another project looks at the application of tissue engineering methods to study human tumor stem cell biology with the goal of developing or enhancing cancer therapeutics. Finally a third project directive involves developing new tissue engineering approaches for the study of human embryonic stem cells to develop pharmaceutical and other applications.

Recent TCIC "outreach activities" have included presentations at a Legislative Undergraduate Research Symposium in Madison, presentations at the Poster in the Rotunda and UWRF Davies Library Celebration of faculty RSCA, the CVTC workshop (above) and a "morning with the professor" SOS program talk to senior citizens and alumni.

As a component of the support provided by WiSys, we added a technician last fall. Paige Sams joined the lab for a year after her graduation from UWRF in the spring of 2007. She plans to matriculate into Medical School shortly. WiSys has also spearheaded the upcoming addition of a post-doctoral fellow to the TCIC as well. Funding for this position was just secured and the new staff member will join us by the summer.

Needless to say, UWRF administrative support from the departmental to the deans level as well as the provost and chancellor has been extremely important to the evolution of this program. In addition, the UWRF Foundation has also been a critical factor in building the needed infrastructural base for this program to develop.

KLYCZEK AWARDED CAS OUTSTANDING TEACHER

Karen Klyczek, Biology Department Chair, was named 2007 Outstanding Teacher in Science and Mathematics by the College of Arts & Sciences. This is the second time Klyczek has been honored with an Outstanding Teacher award; she also received it in 1995. "This award is very meaningful, because it was decided by former students," says Klyczek. "It is often hard to tell if you are making an impact as a teacher, so it is rewarding to receive this type of feedback. It is also humbling, because there are so many excellent teachers in our college."

Paige Sams at work in the cell culture room. Paige joined the TCIC in 2007 following her graduation from the Biology Department's Biomedical track. Paige is in the process of applying to medical school and will matriculate in 2009. This technical position was funded jointly by WiSys and the UWRF administration.

DONALD DUSZYNSKI
(1966) lives in New Mexico and received the 2008 American Society of Parasitologists, Clark P. Read Mentor Award. The award honors an individual during his career who has demonstrated extraordinary leadership in the training of young scientists who have successfully pursued the independent study of parasites or aspects of the host-parasite relationship, as well as influenced the research and/or graduate education of a department, college or institution to significantly increase the number of students completing graduate level training in the various disciplines of parasitology. eimeria@unm.edu

CONNIE BUECHEL SCHULTZ
(1984) received her MS in Medical Genetics from UW-Madison in 1994; currently working as a Genetic Counselor with Dean Medical Center at St. Mary's Hospital in Madison, WI. She lives with her husband Tim and three sons, Dane, Trevor & Liam in Waterloo, WI. Pastimes include racing between overlapping sporting events and waging war on weeds (otherwise known as gardening). schultzloo@verizon.net

CARRIE JAMES
(1992) after working in various labs for several years, she is now working as a Sales Representative for ISC BioExpress. She sells Life Science lab supplies to researchers in Minnesota and North and South Dakota. carrieLJames@aol.com

ERIN (ELLIS) AMUNDSON
(1999) is currently residing in Northeast Minneapolis with her husband Mike and our "kids", 2 beagles and 2 cats. She is a middle school science teacher in a charter school in St. Paul called Twin Cities Academy. "It's tough, but it rocks." iheart_hank@yahoo.com

NELLIE WIRSING
(1999) after graduating, she completed medical school in Madison and then moved to Oregon for residency. I'm now a family physician working for Oregon health & Sciences University as a clinician/teacher at Cascades East Family Medicine Residency in Klamath Falls, Oregon. nelliewirsing@hotmail.com

MICHELLE (THEOBALD) HILDEBRANDT
(2001) finished her Ph.D. in Molecular Pharmacology and Experimental Therapeutics at Mayo Clinic College of Medicine. She is now a Post-doctoral Fellow in Cancer Prevention Research at MD Anderson Cancer Center in Houston, TX. jmhildebrandt@yahoo.com

KATE (KNOESPEL) KNAUFF
(2004) graduated from the Carolina's College of Health Sciences at Carolina's Medical Center, Charlotte, NC in January 2008, as a Medical Technologist (also known as a Clinical Laboratory Scientist). I will be taking the American Society for Clinical Pathology (ASCP) Board of Registry. k8erk@hotmail.com

KARA NELSON
(2006) is a soil conservationist in Polk County for the USDA Natural Resources Conservation Service since immediately following graduation. I plan conservation practices on private lands ranging from nutrient management to wildlife. I also get to assist other partners like DNR with prescribed burning, goose banding etc. kara.nelson@wi.usda.gov

KRISTEN HURLEY
(2007) will be attending the University of Detroit-Mercy in Detroit, MI to complete her second bachelor's degree in Nursing in May, 2008. krstn_hrly@yahoo.com

ANNA JACOB
(2007) has been accepted into the MATC-Madison Veterinary Technology Program and plans to graduate in Spring 2009. She will then take her boards exam to become a Certified Veterinary Technician. After certification, she plans to obtain a position as a Wildlife Rehabilitator or a Veterinary Technician at a zoo or an aquarium. alj14@hotmail.com

IN MEMORIAM

ROBERT LELAND "BOB" CALENTINE, 77, died May 10, 2007. He was a professor of biology at UWRF from1963 until his retirement in 1991. He was equally at home in the lab and in the field, something that is rare today. Bob also willingly shared his extensive expertise in various lab techniques with colleagues. He held B.A., M.A., and Ph.D. degrees from Iowa State University.

JEROME (JERRY) HALLBERG, died July 4, 2007 from Amyotrophic Lateral Sclerosis (ALS or Lou Gehrig's disease). He had a wonderful career as a fisheries biologist with the Alaska Department of Fish & Game extensively traveling the lakes and rivers of Alaska. He retired in 1999 but continued to work part-time at the Alaska fly Shop where he added to his collection of fly rods until ALS stilled his hands in 2005. He died peacefully at home with his family at his side.

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BIOLOGY ALUMNI INFORMATION

Visit our departmental home page: http://www.uwrf.edu/biology/welcome.html

Name:_____

Address:_____

Phone:_____

Email:_____

Years attended UWRF:_____

May we share this information with your fellow biology alumni? Yes No

Employment or other news:_____

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