Note From the Chair

The Human Impact: Looking to the Past, and to the Future

Another summer gone; they seem to go faster every year. This year, a combination of professional obligations provided me with the opportunity for two exciting summer trips. First, I visited the University of Wyoming Field Research Station, located within the boundaries of Grand Teton National Park. To reach it I drove across the beautiful sage deserts, grasslands, and mountains of northern Utah and western Wyoming. Then, just 10 days later, I left for a scientific conference convened in Masai Mara National Reserve, in Kenya. Masai Mara is the northward extension of better-known Serengeti National Park on the northern edge of Tanzania. (You might gather, correctly, that travel is one of the aspects of a life in academic science that I enjoy!)

Wyoming and Kenya differ dramatically in human demographics. Kenya has one of the world’s highest population growth rates, doubling every 25 years or so. In contrast, Wyoming has the lowest population density of the lower 48 states, and a growth rate one-fifth of Kenya’s. Yet, despite this difference, an obvious feature that the two areas share is expanses of land populated by large mammals. In both places, grazers (grass-eaters, like bison and zebra) and browsers (leaf-eaters, like moose and giraffe) are exciting elements of the landscape. Where there are herbivores there are sure to be carnivores, and while the lions of Kenya are slightly more visible than the wolves of Wyoming, it is a thrill in both places to see, hear, or even just to contemplate their presence.

Left: Bison, as seen from the Snake River in Wyoming.
Right: Zebras and wildebeest grazing in southern Kenya.

CoSM Student Researchers Blog from Atlantic Ocean

WSU professor and three students, Dr. Chad Hammerschmidt, Katlin Bowman, Will Ehresman, and Lisa Romas attended an eleven day research cruise on board the University of Rhode Island’s Endeavor, which is owned by the National Science Foundation. The purpose of the trip was to study biogeochemistry of mercury in the Atlantic Ocean. These four were accompanied by scientists from various other institutions, such as the University of Connecticut and Wesleyan University.

For more details, including several blogs from the trip, visit www.wright.edu/cosm
Student Achievements

“I know the price of success: dedication, hard work and unremitting devotion to the things you want to see happen.”
~ Frank Lloyd Wright ~

Perry Poteet

WSU June 2008 graduate, Perry Poteet, will have an article he co-wrote published in Metallurgical and Materials Transactions. “Branch elimination during heat treatment of titanium alloys with a colony-alpha microstructure” is focused on modeling the evolution of lamellar alpha platelets in a beta matrix during extreme heat treatments for various lengths of time. All research was conducted at Wright Patterson Air-Force Base Air Force Research Laboratory materials and manufacturing directorate while he was working as a student researcher for the Southern Ohio Council for Higher Education. Perry is currently a first year medical student at WSU.

TJ Hufford

TJ Hufford was selected as having the best presentation in Health Sciences at the Honors Research Colloquium. His presentation entitled “Regulation of Btf Expression during Muscle Differentiation” earned him a $100 Honors Research Colloquium Scholarship. TJ plans to present that research again at a national conference at Cold Spring Harbor Laboratory in New York in September. This endeavor will be partially funded through the Office of the President, Office of the Provost, Vice President for Student Affairs, and the Department of Biological Sciences. TJ graduated from WSU in June 2008 and is currently in his first year of the MD/PhD program at WSU.

Kathryn Barto

Kathryn Barto became the first Biology graduate (and second overall) of the Environmental Sciences PhD program. Kathryn completed her Bachelor’s of Science degree in Biology at WSU in 2000. Since then, she has worked with Dr. Don Cipollini on her MS and PhD degrees, studying the effects of compounds produced by the invasive plant Garlic Mustard on symbiotic fungi associated with the roots of other plants. Recently Kathryn was honored with the Environmental Sciences program’s Graduate Excellence award. Kathryn defended her dissertation on June 24th. She is now continuing her research career at a laboratory in Berlin, Germany.

Jeremi Mullins

Jeremi Mullins recently completed his Masters degree in Dr. Larry Arlian’s lab in the Biology Dept., on the topic of “Immunomodulation of Human Skin Cells by Extracts of the Scabies Mite.” Jeremi was subsequently one of 35 students selected for the prestigious Emerging Infectious Disease Laboratory Fellowship sponsored by the Centers for Disease Control and Prevention (CDC) and the Association of Public Health Laboratories (APHL). With that Fellowship, Jeremi has elected to relocate to the University of Iowa Hygienic Laboratory in Iowa City, IA, to study avian influenza and West Nile virus. In the longer term, he plans to return to graduate school to pursue a PhD/MPH degree.
2nd Annual Department of Biological Sciences Golf Scramble

When: Mon., September 15, 2008 (1PM Tee Time)
Where: Dayton Country Club
Why: Support undergraduate & graduate student research in the Department of Biological Sciences
Honorary Golf Chairman: Mr. Matthew O. Diggs II

For information about registering, donating, and/or sponsoring this event, contact Dr. Mill Miller (mill.miller@wright.edu).

DON’T MISS OUT ON THIS OPPORTUNITY!

Note from the Chair continued...

Although these groups of fauna have many parallels, there is also one obvious difference. That is, one can easily count on one's fingers the number of large mammal species in Wyoming; among the herbivores, that list includes mule deer, elk, moose, bison, and pronghorn. In contrast, the diversity of mammals in the East African grasslands is striking. In my relatively short time there I saw zebra, giraffe, Thompson's gazelle, topi, hartebeest, wildebeest, waterbuck, reedbuck, Grant's gazelle, impala, elephant, cape buffalo, hippopotamus, rhinoceros, and eland (and I may have forgotten a few!). And the numbers of these mammals are vast; at the time I visited Masai Mara, more than one million wildebeest were migrating across the park.

It is amazing to realize that this difference in large mammal diversity is a recent phenomenon. In the late Pleistocene, just 15,000 years ago, North America was populated by horses, camels, ground sloths, woodland musk ox, tapirs, glyptodonts, mammoths, and others. But then, in the Great North American Megafaunal Extinction, about 11,000 years ago, nearly 3 dozen genera of large mammals disappeared from the continent. What happened? Among the theories are climate change (the end of the last Ice Age) and the spread of disease. However, the theory that predominates, often called the “blitzkrieg hypothesis,” is over-hunting by humans. Humans arrived in North America just before the time of the extinction, and they (we) rapidly spread across the continent. The relics of human presence and hunting (such as spear points), along with the decline of large mammals but not of other sorts of organisms, are among the evidence pointing to a human origin for the decline.

So if humans caused extinction of American mammals, why didn’t that happen in Africa? After all, hominids have been in Africa for a much longer time (a few million years), and probably in larger numbers than in Pleistocene North America. One possible explanation is exactly that expanse of time. That is, African mammals evolved with humans over long time spans, and an equilibrium evolved much like among the various other herbivores and carnivores; healthy adult mammals were able to evade hunting by hominids, and sustainable populations of all species co-existed.

In contrast, in North America the lack of behavioral experience with humans permitted hunting beyond the point of no return. Of course, current human population pressures in Africa exert a whole new level of influence on that continent’s wildlife.

Alan Weisman in his intriguing book *The World Without Us* (The Time #1 non-fiction book of 2007) incorporates and extends this line of thinking, but in the opposite direction. Weisman explores the happen if humans became extinct. What America or Africa experience from our natural world reclaim our cities, or our great human artifacts would persist, which would modify our world, Weisman’s book provides a reading. My recommendation: buy this book, Kenya. The combination is sure to be eye-
Honors & Awards

Additional Noteworthy Department of Biological Sciences

Student Achievements

- Khadijeh Alnajjar- American Physiological Society Undergraduate Research Fellowship
- Nicole Bozych and Angela Martzell- National Student Honor Award, American Society for Clinical Pathology
- Cole Budinsky- Outstanding Emerging Leader Award
- Roger Fecher and TJ Hufford- accepted into MD/PhD programs
- TJ Hufford- Outstanding Senior Leader Award
- Moody Kassem- Distinguished Emerging Leader Award
- Angela Martzell- Clinical Laboratory Medicine Association Scholarship

Congratulations to you and to all of the department’s students who continue to challenge themselves and accomplish their goals!

Good Luck Spring & Summer Graduates

Watch commencement live online!
This year’s commencement ceremony may be viewed live via video streaming on the internet. The webcast is free; however, you must register with the Horizon League Network to view. The streaming is made possible by the Horizon League, WSU Department of Athletics and the Center for Teaching and Learning.

www.wright.edu/commencement
Dr. Volker Bahn: Global Change Ecology

Dr. Volker Bahn is from Germany, where he received a MS degree in conservation biology from Philipps University in Marburg. His master’s and later professional work was on the Marbled Murrelet, a threatened seabird nesting in coastal old growth forests of the Pacific Northwest. He received a PhD in wildlife ecology from University of Maine conducting research on species distribution modeling. During Dr. Bohn’s postdoc at McGill University, Montreal, he picked up additional interests of large-scale ecology and ecoinformatics. Dr. Bahn is teaching a senior seminar this fall, “Predicting the distribution of Species.” He will teach a graduate-level class on “Environmental Resources Sustainability” in the winter, and will teach Ecology in the spring.

“I take my motivation from a strong urge to improve the relationship between humans and nature. Predicting species distributions is a powerful tool for conservation. It helps in protected area planning, threatened species management, and global change research and planning.” ~Dr. Volker Bahn

Dr. Lynn Hartzler: Physiology

Dr. Lynn Hartzler’s interest in how animals work began with a comparative physiology class taught by Dr. Jerry Stinner while she was an undergraduate student at The University of Akron. She began her research career in Dr. Stinner’s lab as a master’s student and studied the effects of temperature on acid-base regulation in ectothermic vertebrates. She then moved to the University of California at Irvine where she earned her PhD under the direction of Dr. Jim Hicks. While at UCI she continued research in acid-base regulation, but she also began to examine the pH recovery mechanisms animals use when they become alkalotic (after eating) or acidic (after exercise). During her dissertation research, she realized that she wanted to address the sensory mechanisms for acid-base regulation, so she came to WSU to work as a post-doctoral fellow with Dr. Bob Putnam (Neuroscience, Cell Biology, and Physiology).

In Dr. Putnam’s lab she has studied the signaling mechanisms of CO₂/pH-sensitive neurons in the brainstems of neonatal rats using combined electrophysiological and fluorescence imaging techniques. In her new lab in the Biology Dept., she will study how the signaling mechanisms of CO₂/pH-sensitive neurons work in ectothermic vertebrates, and how these chemosensory neurons are altered by changes in body temperature and metabolic state.

“I was (and still am) amazed at how animals adapt to so many diverse environments and tolerate perturbations to those environments.” ~Dr. Lynn Hartzler

Dr. Jeff Peters: Molecular Ecology

Dr. Jeffrey Peters received his MS in Applied Ecology and Conservation Biology from Frostburg State University, Maryland. With a focus in behavioral ecology, he used DNA analyses to study waterfowl mating behavior. Dr. Peters continued genetic studies of waterfowl while pursuing his PhD in Biological Sciences at the University of Maryland. There, he used DNA to study ancient changes in species’ distributions, and found evidence that gadwalls, a species of duck, colonized North America from Eurasia during the Late Pleistocene. This result led him to replicate the study with five additional species of ducks during his postdoctoral fellowship at the University of Alaska, Fairbanks. Recently, he received a grant from the National Science Foundation to test several assumptions that are made when using DNA sequences to infer species’ histories, such as the direction of colonization. Examining the DNA sampled from wild populations will continue to be a central component of his research here at WSU.

“My research is driven by a desire to understand biodiversity and how it has arisen. DNA provides a window into the past, through which the process of population divergence and speciation can be studied. DNA studies also help us to protect biodiversity by identifying management units and accentuating conservation priorities.” ~Jeffrey Peters
Dr. Dan Krane  
WSU Professor, co-authored an editorial article that was picked up widely by newspapers across the country: “Forensics Tipping Scales of Justice”; to view the article, visit www.kentucky.com/589/story/492766.html

Dr. John Stireman  
WSU Assistant Professor, received the prestigious Presidents Award for Early Career Achievement; Dr. Stireman’s research is in evolutionary ecology

Dr. James Amon  
WSU Professor, received Beavercreek Chamber of Commerce Environmental Service Award for his work with the Beaver Creek Wetlands Association

During the 2007-2008 academic year, departmental faculty:

- received funding from federal grants (NIH, NSF, EPA)
- produced more than 30 peer-reviewed publications
- made more than 70 presentations of research at conferences and invited seminars (including presentations in Brazil, Canada, Chile, Italy, Japan, Mexico, Northern Ireland, and Sweden)
- hosted countless visits by fellow scientists and speakers
- organized and hosted the 6th annual national “Expert Forum on The Science of DNA Profiling”
- contributed to Tech Fest, Take our Sons and Daughters to Work Day, Exploring Science, and other community events

We can’t wait to see what 2008-2009 will bring!

Dr. Yvonne Vadeboncoeur was promoted to the rank of Associate Professor.

Dr. Paula Bubulya was among the first group of researchers to receive a scholarship from the CoSM’s Women in Science Giving Circle.

Dr. Don Cipollini was promoted to the rank of Professor.
Get Involved!

Congratulations
2008-2009 Club Presidents

- **Biology Club:** Moody Kassem
- **Minority Pre-Med Society:** Deanna Cole
- **Pre-Dentistry Society:** Brandon Kollar
- **Pre-Medical Society:** Karen Guyton
- **Pre-Veterinarian Society:** Ariana Bolan

If you are not involved in an organization already, now is the time! Contact one of the above individuals, stop into the advising office (BH 104), or visit the student activities website (www.wright.edu/studentactivities) for an additional listing of student clubs and organizations on Wright State’s campus.

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**Biological Sciences Departmental Seminars**

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<thead>
<tr>
<th>Date</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>September 8</td>
<td>Dr. Jim Runkle</td>
<td>Ohio woodlots: Reflections from a sabbatical year</td>
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<tr>
<td>September 19</td>
<td>Dr. David Fitch</td>
<td>Evo-Devo in the nematode male tail</td>
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<tr>
<td>September 22</td>
<td>Dr. Jane Jackman</td>
<td>Mechanism and function of the tRNAHis guanylyltransferase (Thg1) from archaea and eukarya: insights into the origin of 3'5' nucleotide addition</td>
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<td>September 29</td>
<td>Dr. Colleen Farmer</td>
<td>Lung evolution and design in archaurs (birds and crocodilians)</td>
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<td>October 6</td>
<td>Dr. Kevin Omland</td>
<td>Character evolution and speciation in New World orioles</td>
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<tr>
<td>October 13</td>
<td>Dr. Jeff Lawrence</td>
<td>Tempo and Mode Speciation in Bacteria: Genomics’ Strange Lessons</td>
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<tr>
<td>October 20</td>
<td>Dr. Eric Benbow</td>
<td>Starting from ground zero: The first ecological studies of a worldwide emerging infectious disease</td>
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<tr>
<td>October 27</td>
<td>Dr. John Stireman</td>
<td>Gall midges and goldenrods: the multitrophic context of adaptive radiation</td>
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<tr>
<td>November 3</td>
<td>Dr. Dmitri Petrov</td>
<td>High rate of adaption and genome-wide hitchhiking in Drosophila and humans</td>
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<tr>
<td>November 10</td>
<td>Dr. Michael R. Hall</td>
<td>Ghosts of evolution: Implications for conservation biology</td>
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All seminars are held at 1:30pm on Mondays in room 103 of the Biological Sciences building.

Everyone is welcome!

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**Attention Juniors!**

Do you have a strong interest in science and are maintaining at least a 3.4 GPA? If so, then you should strongly consider pursuing departmental honors! Don’t miss this opportunity to be a part of cutting-edge research and to learn from professors who are among the best in their fields.

Visit the advising office, BH 104, to pick up a packet of information.
New Amazon Expedition Field Course

The Amazon Expedition Course is being offered for the first time during winter intercession. This field course in Ecuador is designed to provide students with first-hand knowledge and experience in some of the richest ecosystems on earth. The course will introduce students to a diverse tropical rainforest, where they will engage in ecological inquiry and research projects, using various field techniques.

Prerequisite: All students must register and complete the Amazon Expedition: (BIO 201/401/701), offered fall 2008, in order to attend the Amazon Expedition Field Course.

Instructors: Dr. Tom Rooney & Marcia Wendeln

**Spring Marine Biology Course**

Consider applying for a spot in the spring Biology of Selected Marine Environments course. This is a 400 level course that focuses on biological aspects of marine environments. Students in the course will participate in sampling and observation of living marine specimens during a week-long trip to Duke University's marine laboratory.

For more information, contact Dr. Yvonne Vadeboncoeur

**EXB 466 Internship Application Deadlines**

- **Fall Internship**: Deadline for applying is August 15
- **Winter Internship**: Deadline for applying is November 15
- **Spring Internship**: Deadline for applying is March 15
- **Summer Internship**: Deadline for applying is May 30

**Wright State University**

*Need Advising?*

If you need to schedule an appointment with an advisor, please call 937-775-4226 or e-mail bioadvising@wright.edu. Make sure to include the name of the advisor you would like to meet with, along with your availability.

- **Undergraduate Degrees:**
  - Jacqui Neal
  - Lindy Lauterbach

- **Graduate Degrees:**
  - Laura Buerschen

- **Clinical Lab Sciences:**
  - Bev Schieltz

The BioLogue is a quarterly newsletter that contains valuable information for faculty, staff, and students in the Department of Biological Sciences.