



The Life Scientist

UMD Department of Biology News

Summer 2006

Two Biology Faculty Members Retire

Andrew Klemer: Biology for a Better World

By Colleen Belk

If you happened to be at the corner bar near the Lake Itasca Biological Station in late May you may have seen Dr. Andrew Klemer celebrating the end of a long and successful career at UMD.

Dr. Klemer was back in Itasca to teach one last May Session course. This was a fitting end to the University career of a man who began his pursuit of science as a graduate student at Itasca Biological Station in the 1970s, where he did much of the research for his PhD in Ecology from the University of Minnesota. To this day, Klemer considers Itasca to be the greatest learning environment he has ever been exposed to, and its proximity to UMD played a role in his decision to become a faculty member at UMD in 1985.

Childhood experiences also influenced



Klemer's career. Growing up in a coal mining town in Pennsylvania he saw how the coal industry, which had very destructive effects in the environment, benefited some people more than others. Watching miners get black lung disease and often die, while others profited heavily, fueled his desire to educate the public about the issues where economics and the environment are inexorably intertwined. These experiences in early youth formed a deep commitment to social justice which impacted Klemer's later decision to turn his research focus from a very successful career studying limiting nutrient effects

on buoyancy regulation in cyanobacteria (including an article in Science) to the emerging field of ecological economics.

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Linda Holmstrand, at the Heart of It All

By Lyle Shannon

Associate Professor Linda L. Holmstrand retired from the UMD biology department in January, 2006, after an amazing 44 year career. Linda began her association with UMD as a student in 1958, and was later hired as an instructor in 1962. At the time of her retirement she had served longer than any faculty member in the history of the department, a record which is unlikely to be broken.

Most students will remember Linda for her enthusiastic teaching. Over the years, she taught courses in Human Anatomy, Human Physiology, General Biology, Natural History of Invertebrates, Animal Diversity, and a Freshman Seminar on Invasive Species. Some students were fortunate enough to have her as their academic advisor. As the word of her advising skills spread,

more and more students sought her expert advice.

Linda was the advisor for the Pre-Dental club for the last 15 years. During that time she developed a strong relationship with the University of Minnesota Dental School, giving her the insight to help many UMD students successfully prepare for admission to that program. In recognition of her efforts she was awarded the College of Science and Engineering's Outstanding Advisor Award in 2003.

Although best known for her teaching, Linda was also involved in research during her UMD years. In collaboration with professor emeritus Hollie Collins, she developed and evaluated leech aquaculture techniques, and con-

(Continued on page 2)



(Klemer... continued from page 1)

Klemer spent three years on a post doctoral fellowship in New Zealand where he, in addition to his pursuit of science, learned to play cricket and rugby and to appreciate the New Zealander sense of fair play and democracy. He had been interested in New Zealand ever since learning in the fifth grade that the small nation did a better job of nourishing its people than the much larger and wealthier U.S., and that this was the first English speaking country to give women the vote. After his time in New Zealand, but prior to coming to UMD, Klemer was a faculty member at SUNY Albany.

His passion for ecological economics led Klemer to help develop the Environmental Studies major in the College of Liberal Arts and, more recently, the Environmental Sciences major in the College of Science and Engineering. While Klemer has taught many courses

at UMD with an environmental focus, including Earth's Life Support Systems, Global Ecology, Lake Ecology, Advanced Lake Ecology, Ecological Economics, Ethics and the Human Condition, Limnology and Water Pollution Biology, he is most proud of the role he played in helping to develop these two majors at UMD.

In addition to his teaching and research, Klemer was also an advisor to countless graduate and undergraduate students. Klemer says he advised his students that the pursuit of that which interested them most intensely was the best way to prepare themselves for a satisfying career.



Andrew and Mary Ellen Klemer visit South Island, New Zealand in 2004. (submitted photo)

In retirement from the University, Klemer will take his own advice and continue to pursue what interests him most. He is looking forward to having extra time to spend analyzing data, writing papers, and seeking funding for his

work on ecological economics. Likewise, he will spend more time with his wife Mary Ellen, their four kids and six grandkids, and visiting the friends he and Mary Ellen have made all over the world.

While Klemer moves on with his life, the rest of the biology department will be left trying to figure out how to fill the void he leaves

behind. Who will roam the halls late at night, grimy tea cup in hand, looking

for someone to have a thoughtful conversation about politics with? Who will show up late for meetings looking like he has no idea where he is? Who will be seen riding his late model road bike to work in the rain? Who will wear t-shirts from his 1970s flag football glory days and recount plays from intramural games decades ago as though they happened yesterday? Most importantly, who will remind us of what it really means to be an academic who cares about the world and its people more than accolades and financial success?

So, to the man at the corner bar in Itasca who has dedicated his career to making the world a better place for all its people, we raise a glass in the sincere hope that his retirement provides him with as many good memories as his career.

(Holmstrand... continued from page 1)

ducted the definitive study of the life history of the bait leech, *Nephalopsis obscura*.

In addition to her service to students, Linda was strongly committed to serving the biology department, the University and the community. She was Associate Head of the department for the last 12 years, editor of the Biology newsletter, *The Life Scientist*, for the last 14 years, and the long-time chair of the Biology Curriculum Committee.

Linda was committed to helping others become better teachers. She was the



Linda Holmstrand samples algae on Fish Lake as a graduate student in the early 1970's. (submitted photo)

biology department liaison to the Department of Education for over 20 years, helping to reshape curriculum

for science teaching majors. She also spent many years helping incoming graduate students learn to teach.

She was very active beyond the halls of UMD, helping many local science teachers improve their classes. Linda was also the "Biology Answer Person" for many years, providing information for news agencies and private citizens who would call with questions about local fauna.

Retirement will give Linda the opportunity to spend more time with her husband, Ken, her three daughters, grandchildren, and parents.



From the Department Head

By Randall E. Hicks [May 31, 2006]



As I write this column, I am finishing my last year as Head of the Department of Biology and look forward to soon returning to the faculty ranks. Last spring, I agreed

to serve another year while we searched for a new Department Head. When the editors asked me to write my last 'From the Department Head' column for this newsletter, they suggested I consider writing a retrospective article about changes that have occurred in our department. I agreed, but while it is comforting to occasionally look back our eyes should remain focused on our future. Eight years ago when I became Department Head, I was excited about the direction our department was starting to move in and energized by our renewed spirit of teamwork. The developing strength in cell and molecular biology within our department then is now complementing our nationally recognized achievements in ecology and aquatic biology. So, while I was optimistic about our future before, I can say that even more emphatically today.

Eight years seem to pass quickly when great things happen. In July 1998, there were fewer faculty, staff members and graduate students in our department,

we had a smaller budget, and a new building and renovation of the Life Sciences Building were not even dreams. Now, we finished our first year teaching and working in the Swenson Science Building and the renovation of the Life Sciences Building is well underway. And who would have guessed then that younger members would replace over half our faculty now, and that the Integrated Biosciences graduate program would even exist today? We have witnessed growth in all aspects of our department, from new facilities and the larger number of students we serve to new scholarships, an increasing departmental budget, and larger research grant awards to our faculty members from national organizations like NSF, NIH, USDA, DARPA, and the Sea Grant College Program (see Table 1, page 7).

Some changes are not as easily quantified but just as important. Graduates of our department, who continually increase in number each year, are making important contributions to science, education, and health care professions throughout the world. We have established long-term, renewable contracts for our valued instructors, successfully advocated for salary adjustments for faculty, graduate teaching assistants and staff members, established international teaching and research collaborations, and strengthened ties with researchers at the Natural Resources Research Institute by developing an ongoing

program for them to share their expertise by teaching specialized courses for advanced students. Not only have the number of graduate students associated with our department increased but also there are now additional teaching assistantships with more competitive stipends to support them. These opportunities are leading to the next generation of scientists and educators here and abroad. Their successes will reflect the solid scientific training they received from biology faculty and researchers at UMD.

We have an award winning faculty and staff. For example, Dr. John Pastor was the first recipient of the Chancellor's Distinguished Research Award in 1999 and Dr. Donn Branstrator became one of the first winners of the CSE Young Teachers Award this spring. Our Laboratory Coordinators, Randy Hedin and Julie Smith, Greenhouse Manager, Deb Shubat, and Executive Secretary, Ruth Hemming, have all won Outstanding Service Awards from UMD during the past few years, some more than once. We continue to attract strong faculty members. We were fortunate to recently hire two tenure-track assistant professors. Dr. Timothy Kroft will join our department this fall as a tenure-track Assistant Professor. Dr. Kroft, a geneticist, finished a B.A. degree in Microbiology at Miami University and a Ph.D. in Biochemistry, Molecular Biology and Cell Biology at Northwestern University before working as a

postdoctoral fellow at Emory University. Dr. Tali Lee will also join our department in August as a tenure-track Assistant Professor. During the past four years, Dr. Lee has been an Assistant Professor at the University of Wisconsin-Eau Claire. Her research and teaching expertise in plant physiology will be a valued addition to plant biology at UMD. This growth and renewal has been wonderful for our department, students, and employees.

Many of our old dreams are now fulfilled and replaced by new dreams and aspirations. This year we met the remaining recommendations of the external team who reviewed our undergraduate and graduate programs in the spring of 2001. Now we face other challenges ... like increasing the size of our outstanding faculty to keep pace with and provide more opportunities for our growing student body, adding another staff member to improve advisement for biology and cell biology majors, refining our General Biology curriculum, taking the Integrated Biosciences graduate program to the next level by developing a Ph.D. degree, and planning for other facilities like a greenhouse which will enhance student and faculty research in plant biology.

These are the types of challenges our faculty and new Department Head will face. Our program remains a positive blend of high-quality undergraduate

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A Department on the Move

Grand Opening of Swenson Science Building

By Ruth Hemming

The Swenson Science Building is named for Jim Swenson, a 1959 UMD chemistry graduate. Jim and Susan Swenson, through the Swenson Family Foundation, made a gift of \$7.5 million to help fund the new building, providing incentive to local legislative leaders to secure an additional \$25.5 million in state funding.

The 110,000 square foot, three-level structure contains teaching and research space for the Departments of Biology and Chemistry & Biochemistry and biology's administrative office. The building is designed to meet today's education and research needs, and to encourage shared learning. It contains 16 research labs, 16 teaching labs, one computer teaching lab, several research support rooms, a student study room, and a central classroom. Research labs use an "open lab" design to encourage interaction among all researchers in related disciplines. Over 1,000 students per semester will receive instruction in the building.



Jim Swenson speaks at the building's dedication ceremony (Brett Groehler photo)

Dedication and Inaugural Celebration Events for the James I. Swenson Building were held September 13-16. September 13 events included a Legislative thank-you with guided tours, program, and lunch for legislators, distinguished guests, faculty and staff. On September 14, special lectures were given by John David Mooney, creator of the *Wild Ricing Moon* outdoor sculpture and Carol Ross Barney, design architect for the building. Sep-

tember 15 events celebrated student research, with student poster sessions, lectures given by Dr. Kathleen R. Annette and Dr. Brian Kobilka, inductees for the Academy of Science and Engineering, a reception and dinner. The official Grand Opening Celebration on September 16 was attended by Jim Swenson and family, area legislators, university officials, alumni, faculty, staff, and students. Festivities concluded with a picnic sponsored by the Biology Club.

Wild Ricing Moon Sculpture Completed

By Nellie Danke

The *Wild Ricing Moon* sculpture on the grounds outside of the Swenson Science Building was completed on June 2, 2006. The first half of the sculpture, a 40-foot wide steel circle depicting the full harvesting moon of late summer, was erected in October, 2005. Forms depicting a rice stalk and bird were the final pieces assembled to complete the 89-foot tall sculpture. The sculpture was designed by John David Mooney, a Chicago-based environmental artist with an international reputation for large scale public sculptures. Mooney's works draw their inspiration from the spirit of place and push the boundaries that separate art and science.



Installation of the final pieces of the "Wild Ricing Moon" outdoor sculpture



(Brett Groehler photo)

The \$15.2 million renovation of the UMD Life Science Building commenced with a 'kick-off celebration' held on January 26, 2006. The newly renovated building will provide space for the Department of Biology and the College of Pharmacy.

Randy Hedin and Julie Smith Receive Outstanding Service Project Award

By Nellie Danke

Lab coordinators Randy Hedin and Julie Smith received a 2005-2006 Outstanding Service project award in recognition of their extraordinary efforts during the move to the new Swenson Science building.

Randy and Julie played a role in each step of the new science laboratory building: planning for the best use of teaching and research space; moving equipment from the Life Science Build-

ing to the new Swenson Building; set up of teaching, research and office spaces; ordering new equipment; and emptying the entire Life Science Building for its current renovation. These few examples show how they have been there, and continue each day, to support the mission of providing quality education and research experiences for students.

This project made a huge contribution

to the UMD community by allowing the biology department to function effectively in their new building, and by making it possible for the renovation of the Life Science Building to move forward.

Randy and Julie were nominated by supervisor Betty Myshack, with letters of support from Dean James Riehl,



Department Head Randall Hicks, and Associate Heads Linda Holmstrand and Tim Craig for this outstanding team

effort. Additionally, they were nominated for the university-wide President's Award for Outstanding Service.

The awards ceremony was held on March 21, 2006 in the Kirby Ballroom. Congratulations Randy and Julie!

Herbarium Relocates

By David Schimpf
Director, Olga Lakela Herbarium

As part of the full-scale renovation of the Life Science Building, the Olga Lakela Herbarium has been permanently moved to new quarters in next-door Marshall W. Alworth Hall. The herbarium had moved twice before, from the lower campus to the Science Building on the "new" upper campus around 1950, then from Science (now Chemistry) to Life Science when the latter opened in the late 1960s. Each time there has been more to move. The new facility occupies rooms 62 and 76 in M. W. Alworth Hall. Extensive remodeling was done to create the new

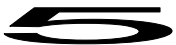
room 62. The total space has increased over that of the herbarium's Life Science rooms, and we have ample opportunity for growth of the collection. The new space is also higher in quality, allowing more flexibility in layout with better lighting.

The herbarium was started by Dr. Olga Lakela when she joined the faculty of Duluth State Teacher's College in 1935, was named for her by the University of Minnesota Board of Regents in 1960, and is funded by an endowment started by a bequest from her estate. Others have donated, and further

contributions to the Olga Lakela Herbarium Fund are welcome. Dr. Lakela's own collections make up the majority of the some 45,000 specimens currently in the holdings, with numerous other scientific contributors headed by her late successor Dr. Paul Monson. This is one of the significant botanical resources of the upper Midwest.

The steel herbarium cabinets were moved with their contents inside them after the latter were packed toward the bottom so as to prevent load shifting and lower the center of gravity. We chose this approach after learning that

it had worked well at UC Berkeley. During the fall the moving company did a test with one cabinet to see if it would slide into the elevator; it did, barely clearing the top of the elevator door frame. But when the actual moving day came on January 17, the cabinets could not be slid out onto the landing on the destination floor, which has a different type of surface. The suspended ceiling was then removed from the elevator, the cabinets were moved between floors in the tipped position, and all ended well.



Brian Kobilka Inducted into Academy of Science and Engineering

By Conrad E. Firling, Emeritus Faculty

Biology graduate Brian K. Kobilka was inducted into the Academy of Science and Engineering at a September 15, 2005 award ceremony on the UMD campus. The Academy of Science and Engineering was established in 2002 to give public recognition to distin-

guished alumni of the College of Science and Engineering, who have brought distinction to themselves through their participation, commitment, and leadership in their chosen profession. Dr. Kobilka started research during his first year of undergraduate study at UMD in the laboratory of Dr. Conrad Firling. During his four

undergraduate years he co-authored several publications with Dr. Firling regarding the hormonal control of gene expression along the polytenic chromosomes of *Chironomus tentans* larvae. Dr. Kobilka was among the first UMD biology undergraduate students to present his research findings at a scientific meeting.

Brian Kobilka graduated *summa cum laude* from UMD in 1977, earning Bachelor of Science degrees in both Biology and Chemistry. He obtained his medical degree from Yale Univer-



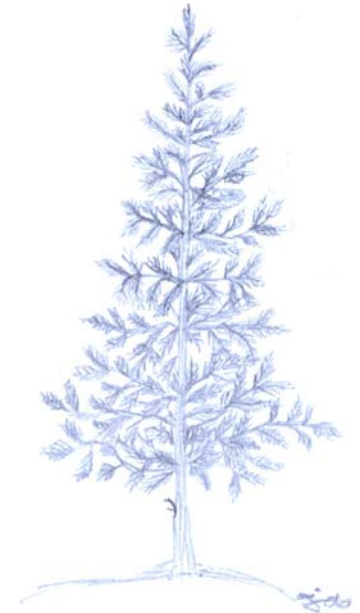
sity School of Medicine in 1981, trained in internal medicine at Washington University School of Medicine, St. Louis (1981-1984) and served as a research fellow (1984-1989) and assistant professor (1988-1989) at the Duke University School of Medicine. In

1989, Dr. Kobilka joined the faculty of the Stanford University School of Medicine where he is currently a Professor of Medicine and Molecular and Cellular Physiology.

Dr. Kobilka's research has focused on the physiology of adrenergic receptor subtypes, including signaling and intracellular trafficking in cardiac myocytes, particularly through the use of "knockout"

mice. Adrenergic receptors form the interface between the sympathetic nervous system and the cardiovascular system and play a critical role in the regulation of cardiovascular function. Professor Kobilka cloned the first beta-adrenergic receptors in 1986 and contributed substantially to the establishment of modern molecular pharmacology. He has since pioneered direct biophysical studies of conformational changes in the receptors. Professor Kobilka has authored an impressive 124 publications in such high impact

journals as *Nature* (6), *Proceedings of the National Academy* (14) and *Science* (4). His numerous awards and honors include the Nahum Prize for Thesis Research, the 1994 Syntex Prize in Receptor Pharmacology, the 1994 John Jacob Abel Award, the WSCI Young Investigator Award, a Howard Hughes fellowship, the 2004 Arthur H. Briggs Lectureship, and the prestigious 2005 Jacob Javits Award in the Neurosciences.



Nellie Danke Joins Office Staff

In September, 2005, the biology department welcomed Danielle 'Nellie' Danke as Office Support Assistant. This position was vacated by Sara Briggs after the birth of her son, Tucker James. Nellie joins Ruth Hemming and Betty Myshack in providing clerical services to the department; she serves as the department receptionist, assists faculty with various tasks, and edits the *Life Scientist*.

Nellie earned a B.S. degree in Environmental Education from the University of Wisconsin Stevens Point in 2000. She and her husband, Bruce Wallis, moved to Duluth in 2003. Most recently, she was

serving as an Americorps VISTA in the Cloquet public schools.

Nellie enjoys spending time with her family (including 12 nieces and nephews), reading, spending time outdoors, working on home improvement projects, and walking her dogs, Lucy & Ricky.



(Hicks... continued from page 3)

education, significant research programs, strong graduate training, and outreach of biological knowledge and understanding. Your past support has helped sustain us. As in the past, your continuing interest and help will carry us into the future.



Table 1. A sample of changes within the biology department

Area	1998-99	2005-06	Change
STUDENTS			
Undergraduate Students	770	915	+19%
B. S. majors (Biology, Cell Biology)	423	515	+22%
Pre-professional students	347	400	+15%
Graduate Students	25	33	+32%
AWARDS			
Departmental awards for students	2	4	+100%
Student Scholarships	0	7	+700%
PERSONNEL			
Faculty	16	18.25	+14%
Staff	4	5.75	+44%
Graduate Teaching Assistants	15	18.5	+23%
BUDGET			
Operating Budget (recurring)	\$82,700	\$113,000	+37%
Gifts & Fundraising			>\$600,000 since 1998
Faculty Research Grants			
Number	13	15	+15%
Funding	\$848,708	\$1,747,017	+106%



Gifts to the Department of Biology

The Department of Biology would like to warmly thank the following alumni and friends who supported our students and programs with a charitable gift in the past year. Listed below are the names of individuals and organizations who donated to biology department funds between June 1, 2005 and May 31, 2006. Thank you for your generous contributions.

- | | |
|--|---------------------------------------|
| Anonymous | John C. & B.J. Smith Kohlstedt |
| Samuel J. Beard | Dr. David C. Lurye |
| Drs. Thomas E. Becker & Caroline Boehnke-Becker | Ms. Linda A. Malm |
| Dr. Edward T. Bersu | Mr. Thomas M. Matthiae |
| Mr. Jon C. Birch | Dr. Joseph M. & Sally A. Mayasich |
| Ms. Jenifer A. Buckley | Professor & Mrs. Gerald J. Niemi |
| Tricia Bunten | James E. Niemi |
| Dr. Ronald Caple | Allen J. & Marilyn Odean |
| Mr. & Mrs. Ronald E. Carlson | Dr. Rolf O. Peterson |
| Mr. Patrick A. Collins | Mr. Peter S. Ross |
| Jeanne M. & James J. Daniels | Mrs. Margery M. Salmon |
| Allan & Margaret Dooley | Dr. Laurence E. Skog |
| Dr. Barbara C. Farrell | Lorinda J. Stevens |
| Mr. Donald M. Fasteen | Drs. Tong Sun Thian & Brian Kobilka |
| Mr. Douglas M. Fitton | Dr. Terry M. & Abigail J. Tumpey |
| Steven C. Garske | Mr. Edgar Turcotte |
| Drs. Brent M. & Dayle K. Haglund | Mr. Gabriel D'A Venticinqu |
| Helen B. & Paul T. Hanten | Dr. Archie Vomachka & Susan Brenneman |
| Mr. Mark A. Hermeling | Daniel T. Weaver |
| Professor Randall E. Hicks & Dr. Lucinda Johnson | Mr. Steven J. Wilkowski |
| Dr. Carl S. Hornfeldt & Marcia M. Knaak | Blandin Paper Company |
| Douglas A. & Kathleen M. Jensen | Cooperative Light & Power Association |
| Professor M. Reza-ul Karim | The Merck Company Foundation |
| Cheryl A. Kelley | The Proctor & Gamble Fund |
| Dr. Jerome A. & Harriet Klun | |

For more information on supporting our students and programs with a gift, please call Tricia Bunten, Development Director, at 218-726-6995, toll-free 1-866-999-6995 or email: tbunten@d.umn.edu

Departmental News Briefs

The biology department extends a warm welcome to **Dr. Tim Kroft** and **Dr. Tali Lee**, both who will be joining the department in August.

Tim Kroft will join the faculty as a tenure-track Assistant Professor specializing in genetics/genomics. Dr. Kroft comes to UMD from Emory University in Atlanta, GA, where he held a position as a postdoctoral fellow. Dr. Kroft received a B.A. degree in Microbiology at Miami University and a Ph.D. degree in Biochemistry, Molecular Biology and Cell Biology at Northwestern University.

Tali Lee will join the faculty in August as a tenure-track Assistant Professor specializing in plant biology, with specific expertise in plant physiology. During the past four years, Dr. Lee has been an assistant professor at the University of Wisconsin Eau Claire. Dr. Lee was one of the authors of the article "Nitrogen limitation constrains sustainability of ecosystem response to CO₂" published in the journal *Nature* this April. She received a B.S. degree in both Biology and Mathematics from Grand Canyon University in Phoenix, AZ and a Ph.D. in Plant Biology from the University of Minnesota.

Congratulations to biology faculty members **Dr. Donn Branstrator** and **Dr. Tom Hrabik** who were both promoted to Associate Professor with indefinite tenure beginning August, 2006.

Dr. Matt Andrews received one of two 2005 Distinguished Alumni Awards from the College of Science and Technology at Central Michigan University (CMU). Dr. Andrews received his M.S. in Biology from CMU in 1981. He went on to receive his Ph.D. in Biochemistry from Wayne State University School of Medicine and to postdoctoral research in the Department of Embryology at the Carnegie Institution in Washington, D.C., but returned to CMU to learn more about the care and handling of the thirteen-lined ground squirrel from his former professor, Roy Burlington. The thirteen-lined ground squirrel is now central to his work on genetic factors that control mammalian hibernation.

Dr. Donn Branstrator became one of the first winners of the UMD's College of Science & Engineering Young Teachers Award this spring.

The following biology faculty members were granted single semester leaves during the 2005-2006 academic year:

Dr. Matt Andrews, **Dr. Donn Branstrator**, and **Dr. Anna Rachinsky**.

Dr. John Pastor was on sabbatical leave during the 2005-2006 academic year. Dr. Pastor spent his sabbatical in Sweden, at the Department of Animal Ecology, Sveriges Lantbruksuniversitet (Swedish University of Agricultural Sciences) located in Umeå. While there he continued his long-term research

collaboration with Swedish colleagues on the ecology of moose and worked on a textbook on mathematical ecology. Dr. Pastor continued work as an Invited Organizer of a workshop sponsored by the Mathematical Biosciences Institute (an NSF sponsored institute), "Mathematical Problems of Global Climate Change", held in June, 2006. Additionally, he made time to enjoy other pursuits including painting, drawing, touring, and visiting with friends.

Dr. Julie Etterson has been granted single semester leave during the Fall 2006 semester.

Dr. Tim Craig has been granted sabbatical leave spring and fall semesters, 2007.

Dr. Tom Hrabik continues to contribute to the North Temperate Lakes Long-Term Ecological Research Project. Dr. Hrabik primarily facilitates the collection of hydroacoustic data for incorporation into long-term data sets and to augment experimental manipulations related to an NSF Biocomplexity grant.

Dr. Julie Etterson has been invited, for second year in a row, to give a symposium talk at the Ecological Society of American meeting being held in Memphis, TN in August, 2006. The symposium is titled "Thermal physiology as a biogeographic determinant: historical and mechanistic perspec-

tives". This symposium aims to initiate a dialogue among physiologists, ecologists, and biogeographers in order to bring further understanding of the role of temperature in determining species distributions at both local and geographic scales.

Dr. Allen Mensinger developed a two week neurophysiology laboratory and served on the admissions committee for the Summer Program in Neuroscience and Ethics (SPINES) at the Marine Biological Laboratory in Woods Hole, MA, during the summer of 2005. SPINES targets historically underrepresented groups in Neuroscience. This was the first time that the neurophysiology laboratory was officially included into the SPINES curriculum.

Michael Dixon, graduate student in biology, and **Julia Holmblad** (B.S. Biology 2005) plan to be married in July, 2006.



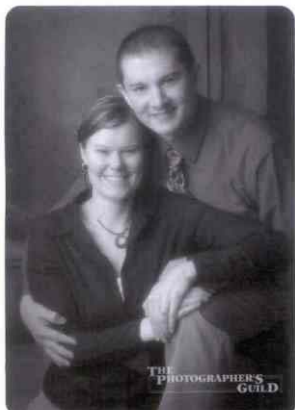
Alumni Updates

Please take the time to return the Alumni Update form on the back of this newsletter, or send us an e-mail. We look forward to hearing from you!

Beth Holbrook (M.S. Biology, 2006) and **John Sandberg** (M.S. Biology, 2005) were married in Duluth on May 13, 2006.

Elizabeth Mathias (B.S. Biology, 2005) is currently serving as a high school science teacher at Crazy Horse School in Wanblee, SD on the Pine Ridge Reservation. She's part of the 'Teach for America' program.

Sean P. Garrity (B.S. Cell Biology, 2004) and **Karen B. (Lee) Garrity** (B.S. Cell Biology, 2004) were married at Fridley United Methodist Church on May 20, 2006. Currently, they are both employed at Medtox Laboratories in St. Paul, MN. Karen works as a technician in the Clinical Screens and Comprehensive Toxicology laboratory and Sean works as a technician in the Clinical Liquid Chromatography laboratory.



Sean and Karen Garrity
(submitted photo)

Ann Marie Brown (B.S. Biology, 2002) completed the Physician Assistant Program at Nova Southeastern University in Fort Lauderdale, FL in 2004. She has since moved back to Minnesota and is working as a PA for Park Nicollet Clinic in Burnsville. She and Mike Strong were married on November 19, 2005.

Angie (Halgren) Sullivan (B.S. Biology, 2002) was married to Ryan Sullivan on June 18, 2005 at Marjorie McNeely Conservatory in St. Paul. She is the stepmother of a 6 year old boy, and is working as a Clinical Study Coordinator at Medtronic in Shoreview, MN.

Tanner McKenna, D.D.S. (B.S. 1997) recently completed four years of U.S. Navy active duty service and has opened a private dental practice in Madison, WI.

Keather McLoone (B.S. 1987 and B.A. Chemistry 1987) has worked in environmental and nutrition laboratories and commercial breweries making ales and lagers and is currently working as an environmental consultant, which includes travel to remote areas of Alaska.

"I truly enjoy receiving the *Life Scientist*. Feeling part of the UMD biology department was the most positive part of my seven and a half years of college (5 at UMD). I am proud to have been a

T.O. Odlaug award recipient. Finally, I am delighted to see that in addition to the Biology Club, which I was active in (and president of in '85-'86) that there are now also additional clubs such as the Pre-Vet Med Club."

Antoinette Moran, M.D. (B.S. 1980) is Division Head of Pediatric Endocrinology, a Professor of Pediatrics, and a Diabetes Researcher at the University of Minnesota.

Chris Degernes (B.A. Biology, 1976) has been appointed to Deputy Director with Alaska State Parks. She manages all park field operations for the park system.

Will Haapala (B.A. Biology, minor Geology, 1971) "After working in wastewater management for over 31 years, I made a career shift in June 2004 to work as Regional Manager for the Minnesota Pollution Control Agency's Northwest Regional Office in Detroit Lakes, Minnesota. The primary focus of this job is to oversee water quality basin planning and management in the Northwest Region and laterally manage Agency-wide basin planning.

Prior to this change, I last served as Wastewater/Geothermal Superintendent for Klamath Falls, Oregon, managing startup and optimization of a wastewater system designed to produce reclaimed wastewater for cooling the City's new 500 megawatt power plant,

and serving on a team that developed an Integrated Water Quality Management Plan in response to the regulatory pressures and development needs of the Klamath Basin. In recognition of the reclaimed water project and unique IWQM Plan, the City was awarded the Oregon Association of Clean Water Agencies' Member Award for 2003.

I received the Water Environment Federation Quarter Century Operator Award in 2002, recognizing 25 years of service in wastewater management and operations.

My wife Teri and I thoroughly enjoy being back in Minnesota, splitting our time among Detroit Lakes, and hometowns of Ely and Babbitt for fishing, canoeing, bird watching, gardening and photography, and the Twin Cities for visits with our four children, spouses and first grandchild, Morgan Marie."



Faculty News



Dr. Amanda Little Joins Biology Faculty

By Nellie Danke

Dr. Amanda Little joined the UMD Department of Biology faculty in August of 2005 as an assistant professor. The biology department has enjoyed getting to know its newest faculty member.

Originally from Verona, Wisconsin, Dr. Little earned her B.S. degree in Biology & Natural Resources Management from the University of Wisconsin Stevens Point. She went on to earn both her M.S. degree in Botany & Landscape Architecture and her Ph.D. in Botany from the University of Wisconsin.

While working on her Ph.D., Dr. Little worked on a USGS project developing indicators of wetland degradation in Acadia National Park. Her doctoral dissertation was titled "The effects of beaver inhabitation and anthropogenic activity on freshwater wetland plant community dynamics on Mount Desert Island, Maine".

Dr. Little's research interests lie in plant community response to disturbance, and the application of hierarchical systems approaches to problems of community organization and stability. She is specifically interested in how



both beaver and human activity impacts freshwater wetland, especially small peatland dynamics. Little spent the month of June doing field research on *Sphagnum* in Maine.

Before coming to UMD she held a full-time teaching position at Edgewood College in Madison, Wisconsin. During the 2005-2006 academic year, Dr. Little taught Genetics, Biology & Society, and the botany portion of General Biology II.

After her first year, Dr. Little finds she enjoys the friendly atmosphere in the biology department and the challenge of teaching new courses. She would like to see a wetlands field ecology summer course or a restoration ecology course offered for students in the future.

Mandy lives in Duluth with her husband, Matt Kuchta, who is currently working on his Ph.D. in Geology from the University of Wisconsin. They enjoy hiking, running, biking, and are avid cross-country skiers; favorite winter spots include Lester River trails and Snowflake Nordic Ski Center. Mandy is enjoying the summer by making time for gardening and spending time with her two cats, Pippin and Birke.

Recent Faculty Publications

Brauch, K.M., Dhruv, N.D., Hanse, E.A., and **Andrews, M.T.** 2005. Digital transcriptome analysis indicates adaptive mechanisms in the heart of a hibernating mammal. *Physiol. Genomics* vol. 23, pp. 227-234.

Belk, C., Borden, V. Biology: Science for Life, Laboratory Manual. Upper Saddle River, New Jersey: Prentice Hall. 2005.

C.J. Tanner and **D.K. Branstrator**. 2006. Generational and dual-species exposures to invertebrate predators influence relative head size in *Daphnia mendotae*. *Journal of Plankton Research* vol. 28, pp. 1-10.

D.K. Branstrator, M.E. Brown, **L.J. Shannon**, M. Thabes and K. Heimgartner. 2006. Range expansion of *Bythotrephes longimanus* in North America: evaluating habitat characteristics in the spread of an exotic zooplankter. *Biological Invasions* online journal. <www.springerlink.metapress.com>

D.K. Branstrator. 2005. Contrasting life histories of the predatory cladocerans *Leptodora kindtii* and *Bythotrephes longimanus*. *Journal of Plankton Research* vol. 27, pp. 569-585.

M.E. Brown and **D.K. Branstrator**. 2005. Seasonal dynamics in *Bythotrephes* diapausing egg emergence and pro-

duction, and the role of dormancy in range expansion. *Proceedings of the International Association of Theoretical and Applied Limnology* vol. 29, pp. 174-178.

M. Surpin*, M. Rojas-Pierce*, **C. Carter***, G.R. Hicks*, J. Vasquez, and N.V. Raikhel. 2005. The power of chemical genomics to study the link between endomembrane system components and the gravitropic response. *Proc. Natl. Acad. Sci. USA*, vol. 102, pp. 4902-4907.

S. Pan*, **C.J. Carter***, and Raikhel, N.V. 2005. Understanding protein trafficking in plant cells through proteomics. *Expert Rev. Proteomics* vol. 2, pp. 781-792.

C. Carter, S. Shafir, L. Yehonatan, R.G. Palmer, and R. Thornburg. 2006. A novel role for proline in plant floral nectars. *Naturwissenschaften* vol. 93, pp. 72-79.

S. Naqvi, A. Harper, **C. Carter**, G. Ren, A. Guirgis, W.S. York, and R.W. Thornburg. 2005. Nectarin IV, a potent endoglucanase inhibitor secreted into the nectar of ornamental tobacco plants: Isolation, cloning and characterization. *Plant Physiol.* vol. 139, pp. 1389-1400.

* Indicates equal contribution to manuscript
(Continued on page 11)

(Faculty Publications...Continued from page 10)

Craig, T. P. and J. K. Itami. In Press.

The resource constraints hypothesis and the evolution of preference and performance relationships. In K. Tilmon ed. The evolution of plant-insect interactions. University of California Press, Berkeley, CA.

Craig, T. P. 2006. Evolution of plant-mediated interactions among natural enemies. Pp. 78-834 in T. Ohgushi, **T. P. Craig**, and P. W. Price, editors Indirect interaction webs: nontrophic linkages through induced plant traits. Cambridge University Press, Cambridge.

Ohgushi, T, **T. P. Craig**, and P. W. Price. 2006. Introduction. Pp. 43-69 in T. Ohgushi, **T.P. Craig**, and P. W. Price, editors, Indirect interaction webs: nontrophic linkages through induced plant traits. Cambridge University Press, Cambridge.

Ohgushi, T, **T. P. Craig**, and P. W. Price. 2006. Indirect interaction webs propagated by herbivore-induced changes in plant traits. Pp. 889-971 in T. Ohgushi, **T.P. Craig**, and P. W. Price, editors, Indirect interaction webs: nontrophic linkages through induced plant traits. Cambridge University Press, Cambridge.

Indirect interaction webs: nontrophic linkages through induced plant traits. Cambridge University Press, Cambridge. T. Ohgushi, **T.P. Craig**, and P. W. Price, editors. 2006.

Davis, M.B., R.G. Shaw and **J.R. Ettersson**. 2005. Evolutionary response to changing climate. *Ecology* vol. 86,

pp.1704-1714.

Galloway, L.F. and **J.R. Ettersson**. 2005. Population differentiation and hybrid success in *Campanula americana*: geography and genome size. *Journal of Evolutionary Biology* 18:81-90.

Pundsack, J. W., **R. E. Hicks**, and R. P. Axler. 2005. Effect of alternative on-site wastewater treatment on the viability and culturability of *Salmonella choleraesuis*. *J. Water and Health* 3:1-14.

Olson, M. R., R. P. Axler, **R. E. Hicks**, J. R. Henneck, and B. J. McCarthy. 2005. Seasonal virus removal by alternative onsite wastewater treatment systems. *J. Water and Health* 3:139-155.

Ishii, S., W. B. Ksoll, **R. E. Hicks**, and M. J. Sadowsky. 2006. Presence and growth of naturalized *Escherichia coli* in temperate soils from Lake Superior watersheds. *Appl. Environ. Microbiol.* 72:612-621.

B. Holbrook, **T. Hrabik**, **D. Branstrator**, D.Yule, and J. Stockwell. In Press. Hydroacoustic estimation of zooplankton biomass at two shoal complexes in the Apostle Islands Region of Lake Superior. *Journal of Great Lakes Research*.

Krueger, D. M. and **T. R. Hrabik**. 2005. Foodweb alterations that promote native species: the recovery of native cisco (*Coregonus artedii*) populations through management of native piscivores. *Canadian Journal of Fisheries and Aquatic Sciences* 62:2177-2188.

Mason, D.M., T.B. Johnson, C.J. Harvey, J.F. Kitchell, S.T. Schram, C.R. Bronte, M.H. Hoff, S. J. Lozano, A. S. Trebitz, D. R. Schreiner, E. C. Lamon, and **T.R. Hrabik**. In Press. Hydroacoustic estimates of abundance and spatial distribution of pelagic fishes in western Lake Superior. *Journal of Great Lakes Research*.

Sass, G.G, J. F. Kitchell, S. R. Carpenter, **T. R. Hrabik**, A. Sugden-Newberry, T. K. Kratz and M. G. Turner. 2006. Fish community and food web responses to a whole-lake removal of coarse woody habitat. *Fisheries*. 31:321-330

Mercado – Silva, N., J. D. Olden, J. T. Maxted, **T. R. Hrabik**, M. J. Vander Zanden. In Press. Invasion potential of rainbow smelt (*Osmerus mordax*; Pisces: Osmeridae) in the Great Lakes region: predictions from distribution in their native range. *Conservation Biology*.

Danz, N.P., **G. J. Niemi**, R. R. Regal, T. Hollenhorst¹, L. Johnson, J. Hanowski, R. Axler, J. Ciborowski, **T.R. Hrabik**, V. J. Brady, J. R. Kelly, J. C. Brazner, and R.W. Howe. In Press. Integrated Measures of Anthropogenic Stress in the U.S. Great Lakes. *Environmental Management*.

Hrabik, T.R., O. P. Jensen, S. J. D. Martell, C. J. Walters and J. F. Kitchell. In Press. Evidence for persistent diel vertical migration in the Lake Superior pelagic foodweb. *Canadian Journal of Fisheries and Aquatic Sciences*.

Jensen, O.P. ,**T. R. Hrabik**, S.J.D. Martell, C.J. Walters and J. F. Kitchell. In Press. Diel vertical migration in a Lake Superior pelagic community: modeling trade-offs at three trophic levels. *Canadian Journal of Fisheries and Aquatic Sciences*.

Little, A.M. 2005. The effects of beaver inhabitation and anthropogenic activity on freshwater wetland plant community dynamics on Mount Desert Island, Maine, USA. Ph.D. Thesis. University of Wisconsin-Madison, Madison, WI.

Mensinger, A. F., P. J. Walsh, and R. T. Hanlon. 2005. Blood biochemistry of the toadfish (*Opsanus tau*). *Journal of Aquatic Animal Health* 17:170-176.

Hanowski, J., J. Lind, N. Danz, **G. Niemi**, T. Jones. 2005. Regional breeding bird monitoring in eastern Great Lakes National Forests. Pp. 974-981 in C.J. Ralph and T.D. Rich (Eds). Bird conservation implementation and integration in the Americas: proceedings of the Third International Partners in Flight Conference. 2002 March 20-24; Asilomar, California; Vol. 2. Gen. Tech. Rep. PSW-GTR-191. Albany CA: Pacific Southwest Research Station, Forest Service, USDA, 643 pp.

Hanowski, J., N. Danz, J. Lind, and **G.J. Niemi**. 2005. Breeding bird response to varying amounts of basal area retention in riparian buffers. *Journal of Wildlife Management* 69(2): 689-698.

(Continued on page 12)



Wolter, P.T., C.A. Johnston, **G.J. Niemi**. 2005. Mapping submergent aquatic vegetation in the US Great Lakes using Quickbird satellite data. *International Journal of Remote Sensing* 26:5255-5274.

Danz, N., R. Regal, **G.J. Niemi**, V.J. Brady, T. Hollenhorst, L.B. Johnson, G.E. Host, J. M. Hanowski, C.A. Johnston, T. Brown, J. Kingston, and J.R. Kelly. 2005. Environmentally stratified sampling design for the development of Great Lakes environmental indicators. *Environmental Monitoring and Assessment* 102:41-65.

Price, S.J., D.R. Marks, R.W. Howe, J.M. Hanowski, and **G.J. Niemi**. 2004. The importance of spatial scale for conservation and assessment of anuran populations in coastal wetlands of the western Great Lakes, USA. *Landscape Ecology* 20:441-454.

Angelstam, P., S. Boutin, F. Schmiegelow, M. Villard, P. Drapeau, G. Host, J. Innes, G. Isachenko, T. Kuuluvainen, M. Mönkkönen, **G. Niemi**, J. Roberge, J. Spence, and D. Stone. 2004. Targets for boreal forest biodiversity conservation - a rationale for macroecological research and international cooperation. *Ecological Bulletin* 51:487-509.

Hale, C.M., L.E. Frelich, P.B. Reich, and **J. Pastor**. 2005. Effects of European earthworm invasion on soil characteristics in northern hard-

wood forests of Minnesota, U.S.A. *Ecosystems* 8: 911-927.

Weltzin, J. F., J. K. Keller, S. D. Bridgman, **J. Pastor**, P. B. Allen, and J. Chen. 2005. Litter controls plant community composition in a northern fen. *Oikos* 110: 537-546.

Pastor, J. and R. Durkee Walker. 2006. Delays in nutrient cycling and plant population oscillations." *Oikos* 112: 698-705.

Knowles, R. D., **J. Pastor**, and D. D. Biesboer. In Press. Increased soil nitrogen associated with the dinitrogen fixing, terricolous lichens of the genus *Peltigera* in northern Minnesota. *Oikos*.

Pastor, J., A. Sharp, and P. Wolter. 2005. An application of Markov models to the dynamics of Minnesota's forests. *Canadian Journal of Forest Research* 35: 3011-3019.

Graves, W., B. Peckham, and **J. Pastor**. In Press. A bifurcation analysis of a simple differential equations model for mutualism. *Bulletin of Mathematical Ecology*.

Danell, K., Bergström, R., Duncan, P., and **Pastor, J.** (Editors). In Press. Large Mammalian Herbivores, Ecosystem Dynamics, and Conservation. Cambridge University Press.

Glasscock J.M., Mizoguchi A. & **Rachinsky A.** 2005. Immunocytochemical localization of an allatotropin in developmental stages of *Heliothis virescens* and *Apis mel-*

lifera. *Journal of Insect Physiology* 51, 345-355.

Rachinsky A., Mizoguchi A., Srinivasan A. & Ramaswamy S.B. In Press. Immunocytochemical localization and quantification by ELISA of *Manduca sexta* allatotropin-like peptide in *Heliothis virescens*. *Arch. Insect Biochem. Physiol.*

Schimpf, D. J., and D. L. Pomroy. 2005. Noteworthy collections: Minnesota and Wisconsin. *Michigan Botanist* 44:81-86.

Schimpf, D. J. 2005. Naturalization of *Campanula cervicaria*, bristly bellflower, west of Lake Superior. *Rhodora* 107:417-419.



**"...my college years will be unforgettable and UMD faculty and friends made that possible, and I'll never regret that I chose UMD!! GO DOGS!!"
Stephanie Olson (far right) B.S. Biology, 2006**

Recent Faculty Funding



M. T. Andrews (co-PI), Rolf Gruetter (PI), National Institutes of Health, “Dynamic MRI and MRS Studies of Focal neural Activation”, 4/03-3/07, \$1,457,013.

M. T. Andrews, Defense Advanced Research Projects Agency, “Hibernation Strategies to Improve Recovery from Hemorrhagic Shock”, 7/05-12/06, \$291,263.

M. T. Andrews, National Institutes of Health, “Genes Controlling Heart Function in a Hibernating Mammal”, 5/05-6/08, \$223,107.

D. Branstrator (PI), Chancellor’s Faculty Small Grant, “Mercury in fish: a landscape perspective”, 2005-2006, \$720.

D.K. Branstrator (PI) Grant-in-Aid; U of MN, “Species invasion in Minnesota lakes: predicting establishment of *Bythotrephes*”, 7/04-1/06, \$33,295.

D.K. Branstrator (PI), **T.R. Hrabik** (Co-PI), and B.D. May, External Research Grant; Minnesota Sea Grant College Program, “Mesoscale eddies and the distribution of biological productivity in Lake Superior”, 3/05-2/07, \$33,544 direct, \$60,000 shiptime, and GRA salary for 2 years.

D.K. Branstrator (PI) and **L.J. Shannon**, External Research Grant; Minnesota Sea Grant College Program, “Effects of physical and chemical stressors on survival of the resting egg stage of *Bythotrephes longimanus*”, 3/03-2/05, \$54,867

and GRA salary for 2 years.

C. J. Carter (PI) Chancellor’s Faculty Small Grant; UMD, “DNA sequencing in Molecular Biology Laboratory (BIOL4232)”, FY06 \$689.40.

C.J. Carter (PI), National Research Initiative: Genetic Processes and Mechanisms of Agricultural Plants; United States Department of Agriculture, “Molecular genetics of nectar production in *Brassica rapa*”, 9/06-8/08, \$99,722.

Craig, T., Chancellor’s Small Grant, \$750.

J. R. Etterson, 2005 Student Tech Fees; Department of Biology; UMD, “Request for instructional equipment for the course: Biol 5240 Ecological Genetics,” \$15,488.

J.R. Etterson (P.I.), Grant-in-Aid of Research, Artistry, and Scholarship; Office of the Dean of the Graduate School U of MN, “Testing the evolutionary potential of polyploids”, \$30,484.

M. J. Sadowsky and **R. E. Hicks** (Co-PI), Minnesota Sea Grant College Program, “Sources and Impacts of ‘Naturalized’ *Escherichia coli* in Coastal Environments”, 2/03-1/05, \$146,440.

Hicks, R. E. (PI) and M. J. Sadowsky, Minnesota Sea Grant Program, “Seasonal Variation in Sources of *Escherichia coli* Fecal Bacteria Contributing to Beach Closures”, 2/05-1/07, \$108,000.

Werne, J. P. and **R. E. Hicks** (Co-PI), National Science Foundation (Chemical Oceanography), “Linking Archaeal Membrane Lipids and Ecology in Great lakes: Understanding the TEX86 Paleotemperature Proxy”, 8/05-7/08, \$537,294 plus 30 days ship time on R/V Blue Heron.

Hicks, R. E. (PI), U of MN Center for Urban and Regional Affairs Program, “Assessing the Impact of Microbially Influenced Corrosion on the Accelerated Loss of Port Transportation Infrastructure”, 7/06-6/07, \$39,744.

Hicks, R.E. (PI), Duluth Seaway Port Authority. “Initiating the Assessment of Microbially Influences Corrosion on the Accelerated Loss of Steel Sheet Piling in the Duluth-Superior Harbor”, 2006, \$8,952.

T. Hrabik, Minnesota Department of Natural Resources, “Implementation of a hydroacoustic assessment of pelagic fishes in the Minnesota waters of Lake Superior”, 2005, \$15,000.

T. Hrabik (PI), J. Stockwell, D. Yule and O. Gorman, Minnesota Sea Grant, “Habitat supply and trophic transfer in Lake Superior”, 2005-2007, \$53,000 + 2yr. GRA salary.

J. Vander (Co-PI), S. Chandra (Co-PI) and collaborators **T. Hrabik**, J. Kitchell, E. Stanley, D. Gilroy, P. Moyle, Z. Hogan, B. Allen, M Erdenebat, A. Brunello, The International Finance Corporation (World Bank), “Development of a research program on the ecology and management of *Hucho taimen* in the Eg-Uur and surrounding watersheds (Mongolia), 2003-2008, \$250,000.

T. Hrabik (PI), Bradley Fund for the Environment-Sand County Foundation,”

Assessment of the restoration of winter-kill influenced fish community using winter aeration”, \$8,600, 2002-2003, received additional \$19,300 for 2003-2005.

T. Hrabik (PI), O. Gorman, D. Mason, Ontario Ministry of Natural Resources, “Development of a lake-wide acoustic monitoring program for Lake Superior pelagic fishes”, 2003-2006, \$80,000.

T. R. Hrabik (PI), N. J. Wattrus, **D. K. Branstrator**, B. D. May, M. H. Hoff, S. T. Schram, O. Gorman, and S. Stark, Minnesota Sea Grant Program, “Assessing determinants of lake trout reproductive success: comparison of Lake Superior reef complexes with contrasting survival rates of young lake trout.”, 2003-2005, \$70,000 + 2 year GRA salary.

Amanda Little L.L. Bean Acadia Research Fellowship Program, “*Sphagnum* in Acadia National Park”, 2006, \$5000.

A. F. Mensinger (PI), National Science Foundation, “RUI: Acoustic Detection in Free-Swimming Toadfish”, 9/03-8/06, \$381,562.

A. F. Mensinger (PI), National Science Foundation, “Research experience for undergraduates supplemental grant to RUI: Acoustic Detection in Free-Swimming Toadfish”, Summer 2005, \$6,000.

A.F. Mensinger (PI), Visualization and Digital Imaging Laboratory, UMD, “Digitally tracking movement of an invasive exotic fish to curtail migration into the Great Lakes”, \$2,000.

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(Faculty Funding...Continued from page 13)

A. F. Mensinger (Co-PI), Marine Biological Laboratory internal grant, "Toadfish mariculture", \$20,000.

G.J. Niemi (PI), US Environmental Protection Agency, "Development of environmental indicators of condition, integrity, and sustainability in the Great Lakes Basin", 2001-2006, \$6,188,298

G.J. Niemi (PI) National Aeronautics and Space Administration, "Development of environmental indicators for the US Great Lakes using remote sensing technology", 2001-2006, \$600,000.

G.J. Niemi (PI) USDA Forest Service and US Fish and Wildlife Service, "Monitoring bird populations in Minnesota's national forests, North Central Forest Experiment Station-Chippewa National Forest, Superior National Forest", 1991-present, \$369,680.

G.J. Niemi (PI) USDA Forest Service, USDI-US Geological Survey, and US Fish and Wildlife Service. Cooperative Agreement through Minnesota Cooperative Fish and Wildlife Unit, "Canada lynx ecology in the Superior National Forest", 2003-present, \$320,000.

J. Pastor (PI), Y. Cohen, National Science Foundation, "LTREB: Spatial dynamics of the moose-forest-soil ecosystem on Isle Royale", 2004-2009, \$300,000.

J. Pastor (PI) National Science Foundation, "Wild rice population dynamics and nutrient cycles", 2002-2006, \$543,046.

Shannon, L., Moen, R., Chancellor's Small Grant, "MinnesotaMammal Project: UMD Biology Mammal Collection on the web" \$1,410.

Shannon, L., Chancellor's Small Grant, "Development of Frogloggers for use in Teaching and Research", \$750

Shannon, L., CSE Student Tech Fee, "Proposal to Acquire Computers and Video Conferencing Equipment for the General Biology II Laboratory in the Swenson Science Building", \$16,068

Rachinsky A (PI), Grant-in-Aid Program, Graduate School, U of MN, "Differential protein expression during caste-specific ovary development in honeybees", 1/05- 6/06, \$28,121.



Owls on the Move Symposium - a Weekend of Education, Research and Fun!

By Gerry Niemi

The winter of 2004-2005 brought us an amazing gift. Great Gray Owls and Northern Hawk Owls irrupted into Minnesota in record numbers. More than 5,000 Great Gray Owls and more than 450 Northern Hawk Owls were counted from November 2004 to April 2005. Even though owls periodically invade Minnesota from Canada, the numbers in the winter of 2004-2005 were phenomenal and unprecedented in anyone's memory. One birder commented that the woods were "dripping with owls".

To explore the reasons for this irruption, a symposium was held on March 17-19, 2006 at the University of Minnesota Duluth. The symposium, partly sponsored by the Department of Biology, brought together owl experts from Minnesota, Wisconsin, Illinois, Massachusetts, Ontario, Manitoba, and a world expert from Finland. Biology department graduate student, Dave Grosshuesch, and NRRI scientist, Jim Lind, gave presentations on their extensive observations of the winter owls. One night of the symposium was dedicated to educating and entertaining families – over 350 individuals attended. Another day was dedicated to presentations on current research on owls with over 200 owl enthusiasts registered.

So why did these owls irrupt and invade Minnesota, Wisconsin, Ontario, and other parts of the upper Midwest? No one knows for sure, but certainly the availability and accessibility of food, primarily meadow voles (*Microtus pennsylvanicus*), appears to be a key issue. However, a major difference of this irruption from many others was that most of the birds were adults and not those that hatched in 2004. Like many biological phenomena, the symposium raised more questions than it answered, but the spectacle was exciting.



From Irish elk to Canada lynx

Dr. Ron Moen works on some unique projects that find their way into scientific publications, but also into other outlets like National Geographic's website, magazines, newspapers, television, and radio stations. Part of the reason is the animals he studies—cute Canada lynx, mysterious moose, extinct Irish elk—maybe mammoths and elephants in the future. Some of this research is done with computer modeling, but that is only part of the story. Although he's certainly earned the right to send students out in the field, Moen still finds time to tramp through the woods himself for the sake of science.

Moen earned his doctorate in Wildlife Conservation in 1995 from the University of Minnesota. He also has a M.S. degree in Wildlife, with a minor in Plant Physiology. Today, Moen is a research associate at the Natural Resources Research Institute at the University of Minnesota Duluth, and a temporary faculty member of the UMD Department of Biology. He has taught mammalogy and animal behavior at UMD, and biometry, ecology and introductory biology elsewhere.

Classroom teaching quickly led to opportunities for undergraduate students to get hands-on research and teaching experiences through the projects Moen is involved in. Over the last two years, Moen worked with ten undergraduate

students, most from the biology department, inside and outside of the classroom. Some students helped build the mammal collection and worked on the new MinnesotaMammals Web site. Undergrads, along with four graduate students, have assisted with the Canada lynx research project; trapping and handling the lynx, logging telemetry locations, taking vegetation measurements, entering and analyzing data, and writing reports. This summer a student will work on a remote camera pilot project.

Initial development of the MinnesotaMammals Web site Moen is building with Lyle Shannon (temporarily housed at www.nrri.umn.edu/mammals) was funded through the Chancellor's Faculty Small Grants Program. It is a region-specific source of taxonomy and natural history of mammal species. Taxonomic relationships are utilized in accessing different species. Pictures of skulls, bones, and live animals are found on the site with associated text.

"This website will be a learning resource for UMD biology students, and also a site that others in Minnesota can use to identify skulls and learn about mammals. Just one visit to the MinnesotaMammals site will show how unique it is and how useful it can be," Moen explained.

Moen is now directing a study of Canada lynx in Minnesota using VHF and GPS radiotelemetry collars to track their movements. Even though they are classified as a threatened species, the project has succeeded in radiocollaring 33 animals, finding 7 dens, and getting over 15,000 locations of lynx. Minnesota is now the land of 10,000 lynx locations as well as the land of 10,000 lakes! The project website is www.nrri.umn.edu/lynx.

"Just one visit to the MinnesotaMammals site will show how unique it is and how useful it can be."

Dr. Ron Moen



Ed Lindquist (U.S. Forest Service) is handing a lynx kitten to Chris Burdett (M.S. Biology '05) for weighing. (Submitted photo)



Becky Gordon (B.S. Biology '06) prepares to draw inject reversal while Dave Danielsen (U.S. Forest Service) watches and Ron Moen holds the lynx's leg. (Submitted photo)

New Study Abroad Opportunity in Poland for Biology Students

By Conrad E. Firling, Emeritus faculty

The Department of Biology in association with the College of Science and Engineering and the UMD International Education Office will offer a unique summer study abroad program in Poland for biology and cell biology undergraduate students.

A new course, BIOL 4503, General Microbiology in Wroclaw, Poland, will be offered August 2006 at the Institute of Genetics and Microbiology, University of Wroclaw. All instruction will be in English. Professor Emeritus Conrad E. Firling will accompany the students and coordinate both the course and the program.

The cost to students will be \$2,999 and includes air transportation, transfers, tuition and fees, international insurance, university dorm housing, three microbiology field trips, pre-course orientation lectures on the language, history and customs of eastern Europe, and a weekend trip to the medieval city of Krakow.



The City of Wroclaw, founded in the 10th century, is situated at the foot of the Sudety Mountains and on the Odra River in southwestern Poland. The city has over 600,000 inhabitants and is noted for its beauty, with 12 islands, 112 bridges, and many historic buildings. Wroclaw is a major eastern European educational center with 13 academic institutions and over 100,000 university students. The University of Wroclaw was established over 300 years ago. Charles Darwin, John Stuart Mills, Johannes Brahms are among recipients of honorary doctorates from the University and nine faculty have received Nobel Prizes.

Emeritus Faculty Update

Conrad Firling has enjoyed extensive travel within the last year, including trips to Poland, Washington D.C., Alaska, Montana, and the western U.S.

He was invited to visit the Embassy of the Republic of Poland in Washington, D.C., in April 2006 and met with the Minister Counselor for Scientific and Technological Affairs regarding the UMD College of Science and Engineering Program at the University of Wroclaw, Poland.

Biology Students at National and Local Undergraduate Research Showcases

By Nellie Danke

Undergraduate students **Nicole Barg** and **Brittany Rowland** attended the National Conference on Undergraduate Research (NCUR) at UNC-Asheville on April 6-8, 2006. Barg's presentation was entitled "The Effects of Habitat Type on the Distribution of Frogs in Vernal Ponds of Hartley Nature Area, Duluth Minnesota". Rowland's presentation was entitled "Distribution and Abundance of Invertebrates in Vernal Ponds of Hartley Nature Area, Duluth Minnesota."

Also in attendance at NCUR 2006 was undergraduate student **Adam Foss**, who was selected as a recipient of a 2006 American Society of Pharmacognosy Undergraduate Research Award for his proposal "Evaluation of Streptomyces H7667 in Glycogen Synthase Kinase 3b Assay". Foss was awarded a \$2,000 research stipend, and his UMD faculty sponsor, Dr. L. C. Chang, an assistant professor in the chemistry department, was awarded \$500 to help defray the cost of the research.

UMD held its eleventh annual Undergraduate Research/Artistic Showcase on May 2, 2006 in the Kirby Ballroom. Representing the biology department were the following students:

Abdalla Abdalla

Faculty Sponsor: Raj Karim
"Novel Highly Organ-born Compounds" poster presentation

Zach Austin

Faculty Sponsor: Raj Karim
"Studies of Heavy Metal Resistance of Lake Superior's Bacterial Fauna" computer presentation

Caitlin Cleary

Faculty Sponsor: Raj Karim
"Isolation and Identification of Antibiotic resistant Microorganisms from Water Samples Collected around Duluth, MN" computer presentation

Sean Curry

Faculty Sponsor: Raj Karim
"Isolation and Evaluation of Fish Enteric Bacteria" computer presentation

Amanda Henke

Faculty Sponsor: Raj Karim
"Comparative Survival Rate in Four Freezing Conditions of Vero, Melanoma, and Epithelial Cells" computer presentation

Christy Kennedy

Faculty Sponsor: Clay Carter
"Gene Expression of *Brassica* ssp." poster presentation

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(Undergrad Research ...Continued from page 16)

Ryan Leege

Faculty Sponsor: Anna Rachinsky
“In Vitro Analysis of the Role of Intracellular Calcium in Juvenile Hormone Biosynthesis” poster presentation

Dan Lexcen

Faculty Sponsor: Raj Karim
“The In-vitro Synergistic Effects of Quercetin and Urtica dioica Agglutinin in UDA alone and in combination against Herpes Simplex Virus Type 2” poster presentation

Neil Olson

Faculty Sponsor: Raj Karim
“Analysis of Road Salt Contamination in Tischer Creek” computer presentation

Jasmine Wagner

Faculty Sponsor: Julie Etterson
No title available, poster presentation

Integrated Biosciences Graduate Program

By Stacy Johnson

It's an exciting time for graduate study in the biosciences at UMD! After six years of hard work, faculty from six collegiate divisions on the Twin Cities and Duluth campuses have succeeded in founding the new graduate program in Integrated Biosciences (IBS).

The IBS graduate program offers many new and expanded opportunities for graduate students in the biological sciences. There are two areas of emphasis for students to choose between, both encompassing a strong

tradition of using mathematics, statistics and computer science to analyze, model and manage research data. The Cell, Molecular and Physiological Biology (CMP) emphasis applies the study of gene expression, cell function and systemic interactions to contemporary biological questions. The Ecology, Organismal and Population Biology (EOP) emphasis will investigate the evolutionary and ecological consequences of an organism's interaction with its environment, including problems ranging from the genetic basis of adaptation to the flow of energy and materials through the ecosystem and the globe.



Further, IBS students have fifty faculty to choose from when selecting research advisors. This wide range of faculty are from University of Minnesota Duluth Departments of Biology and Chemistry and Biochemistry; the College of Pharmacy, Duluth; the University of Minnesota Medical School; the Natural Resources Research Institute (NRRI); the Large Lakes Observatory (LLO); University of Minnesota Twin Cities departments in the College of Biological Sciences and the College of Natural Resources; and the Environmental Protection Agency.

In the last decade, integration of the biological sciences has changed drastically. The vast amount of information generated in all sectors of biology, coupled with innovations in computer technology, have created a growing demand for scientists who can generate, manage and analyze biological information. By emphasizing the greater picture of how various biological subdivisions interact with each other, IBS students will be trained to employ multi-pronged approaches to study living organisms spanning from molecules to ecosystems.

The IBS graduate program has accepted fourteen excellent students to matriculate in Fall of 2006 and looks forward to a brilliant inaugural year!

Graduate Commencement

The Graduate Commencement ceremony was held on Thursday, May 11, 2006 in the Romano Gymnasium. Graduates from the Department of Biology honored at this ceremony were:

Lisa Rose Belmonte

M.S. Biology
B.S., Black Hills State University, Spearfish, SD
Major Advisor: Gerald Niemi

Megan Elizabeth Forbes

M.S. Biology
B.S., University of Wisconsin Madison
Major Advisor: George Host

Jessica Ann Grochowski

M.S. Biology
B.S., Northland College, Ashland, WI
Major Advisor: Julie Etterson

Beth Victoria Holbrook

M.S. Biology
B.A., College of St. Benedict, St. Joseph, MN
Major Advisor: Thomas Hrabik

Other graduates from advanced degree programs during the 2005-2006 academic year were:

Nathan DeJager

M.S. Biology, 4/2005
B.S., Northwestern College, Orange

City, IA

Major Advisor: John Pastor

Wendy Hieb

M.S. Water Resources Science, 5/2005
B.S., University of Florida, Gainesville, FL
Major Advisor: Randall Hicks

Winfried Ksoll

M.S. Water Resources Science, 1/2006
B.S., Brandenburg University of Technology (BTU), Germany
Major Advisor: Randall Hicks

Graduate Student Profiles

The following are graduate students working towards a Master of Science degree in Biology at UMD or a towards a doctoral degree in one of the programs offered jointly with U of M. Most graduate students are supported as teaching assistants or as research assistants. The Department of Biology gratefully acknowledges the teaching and research efforts of its graduate students.

Margot Bergstrom entered the biology graduate program in Fall 2004 with Al Mensinger as her advisor. Her thesis is titled "A comparative study of sensory physiology and competitive interactions of the round goby (*Neogobius melanostomus*) with three native species: logperch (*Percina caprodes*), slimy sculpin (*Cottus cognatus*) and spoon-head sculpin (*Cottus ricei*)".

Margot is originally from northern Wisconsin and received a B.S. in biology at UMD in 2004. She has been involved in several projects including: primary productivity in lakes, biological illustration, moose browse on Isle Royale, and toadfish sensory physiology.

After she receives her master's degree, Margot would like to continue her education and attain a Ph.D. in marine biology and animal behavior. Long term goals include employment as a college professor or animal care specialist and researcher at an aquarium.

Oliver Brun entered the biology graduate program in Spring 2005. Oliver works with Dr. Lucia Barker in the UMD Medical School on *Mycobacterium marinum*, a close cousin of TB

causing *M. tuberculosis*. His thesis is titled "Gene expression in *M. Marinum* biofilm". Originally from Toulouse in the south of France, he has lived in the U.S. for the past six years; graduating from Hamline University in St. Paul with a B.A. in Mathematics and Pre-Med. After completing his master's degree, he'd like to go on to an M.D./Ph.D. program."

Michael Dixon entered the biology graduate program in Fall 2004 with Tim Craig as his advisor.

"I grew up in Folsom, CA and received my B. S. in Ecology and Systematic Biology from Cal Poly, San Luis Obispo in 2001. Since then, I have worked in environmental forensics and parks, and will complete 4 years of active duty in the U.S. Coast Guard as a pollution investigator in September of 2006.

My project, "Potential parapatric speciation of an inquiline beetle between two biomes" examines how a coevolved group of insects and their host plant may be diverging in parallel between prairie and forest populations. In January of 2007, I will be starting a Ph.D. in Conservation Biology at the U of M Twin Cities. I hope to continue doing research in the future, most likely in an academic setting."

Dennis Hansen entered the biology graduate program in Fall 2005 with Randall Hicks as his advisor. His thesis is titled "Microbial source tracking of *E. coli* in the Duluth-Superior harbor".

"My project compares DNA fingerprints of *E. coli* isolated from the environment

and compares them to a library of host *E. coli* to determine a source of fecal contamination in public waters.

My hometown is Mora, MN. I earned an A.A. degree at Cambridge Community College (2002), with a Business emphasis. I then switched fields and earned a B.S. degree in Aquatic Biology at St. Cloud State University (2005). During my time at SCSU, I spent two summers at Kent State University under the NSF-REU program studying the uptake of ATP by heterotrophic bacterioplankton. These findings were presented at several conferences and published in the Ohio Journal of Science."

Eric Jensen entered the biology graduate program in Spring 2005. He is working with Dr. Gerald Niemi to develop a study assessing the effects of agricultural pesticides on the American Kestrel (*Falco sparverius*). Following graduation he hopes to continue conducting raptor field research and will probably pursue a Ph.D. degree.

Terri Jicha entered the biology graduate program in Spring 2005 with Lucinda Johnson as her advisor. Her thesis is titled "Predicting spatial and temporal patterns of nitrification from flood pulse disturbance on the Upper Mississippi River forested floodplain".

Born in Racine, Wisconsin, she spent her childhood playing in the local creeks and ponds. So when it came time to decide what she would be when she grew up the choice was obvious. Why grow up when you can be paid to play? She received her bachelor's degree in Water and Soil Resources from the Uni-

versity of Wisconsin Stevens Point in 1998. After graduation she landed a coveted job with the US EPA, where she participated in various research projects involving small streams, wetlands, large rivers, and currently great rivers. After completing her master's degree in biology she will continue working with the US EPA.

Rhett Johnson entered the biology graduate program in Fall 2002 with David Schimpf as his advisor. He received his undergraduate degree in biology (botany) from Iowa State University and has spent time botanizing in Missouri, Iowa, Nebraska, Minnesota, South Carolina, Idaho, and Oregon. He is currently a Restoration Ecologist/Adjunct Instructor at the UM Crookston. He will be completing his thesis titled "Impacts of flooding on peatland trees and plant communities" this summer.

Amanda Klein entered the biology graduate program in Fall 2005 after earning a B.S. degree in cell biology from UMD. She works with Matthew Andrews; her thesis is tentatively titled "Hibernation strategies to improve hemorrhagic shock". Amanda receives funding for her research through Funding Defense Advanced Research Projects Agencies (DARPA). Amanda would like to pursue a Ph.D. degree in the future.

Brian Kram
"I enrolled in the biology master's degree program, and began working with Dr. Clay Carter, in the fall of 2005. The

primary objective of my thesis project titled 'Genetic Regulation of Nectar Production and Secretion & Functional Analysis of Nectarins from *Jacaranda mimosifolia*' is to identify key genes involved in the regulation of nectar production and secretion.

In the spring of 2005, I graduated from UMD with a B.S. degree in Cell Biology. Originally from the area, (Barnum, MN) I elected to continue my schooling at UMD in pursuit of my master's degree. After receiving my master's degree, it is my aspiration to obtain my teaching license, and become a high school biology teacher."

Trent Liebich entered the biology graduate program in Fall 2004 with Thomas Hrabik as his advisor. His thesis is titled "Water chemistry and its associated impacts on Atlantic salmon physiology".

Prior to graduate school, he attended Lawrence University in Appleton, WI. He also spent two summers as a fishing guide in Alaska, worked with the WI Department of Natural Resources, and currently works at the National Marine Fisheries Service. In his free time I am usually out on the water, bow hunting, or simply enjoying the outdoors. He hopes to become a fisheries biologist or possibly a high school biology teacher.

Rachel Makarral entered the biology graduate program in Fall 2005 with John Pastor and Tim Craig as her advisors. Her project is titled, "Creating useful tools for learning insect anatomy and function".

"I grew up in Rhinelander, Wisconsin, attended Nicolet Technical College, and got my B.S. from UMD in 2000. In the

years since, I traveled some, married my wonderful husband Trevor, and established a business as a freelance scientific illustrator. I am happy to return to Duluth and UMD for my graduate work. My foremost interests are illustration, entomology, and teaching, and I hope to continue pursuing those throughout my career."

Tim McAulay entered the biology graduate program in Fall 2005 with Julie Etterson as his advisor. His project is titled "Local adaptation of *Solidago altissima*". Tim grew up in St. Paul, MN and earned a B.A. in Biology from St. Mary's University of Minnesota in Winona.

Nick McCann entered the biology graduate program in Fall 2004 with Jerry Niemi and Ron Moen as his advisors. His thesis is titled "Snowshoe hare habitat selection".

Julie Palakovich entered the biology graduate program Fall 2005 with Jerry Niemi as her advisor. Her thesis is titled "Current and future Canada lynx habitat use in Minnesota based on activity patterns".

"My research uses activity counters on GPS collars to determine individual activity levels of lynx in Minnesota. This information will then be related to habitat characteristics. Then, predictions of future suitable lynx habitat in Minnesota will be made.

I grew up in Mechanicsburg, Pennsylvania. In 2005, I received a B.A. in Biology from Boston University. My undergraduate research focused on fisheries management. Upon completion of my master's degree, I plan on pursuing a Ph.D. and gaining employment as a college professor."

Sara Peterson entered the biology graduate program Fall 2005 with Raj Karim and Ben Clarke as her advisors. Her thesis is titled "The effects of acute stress on immune system activation." Sara is from Esko, MN and received her B.S. in Biology from UMD in 2003. Sara would like to go on to a Ph.D. program in Immunology.

Lysie Radovich entered the biology graduate program Spring 2005 and is currently working under the advisement of Chalet Tan. She received her B.S. degree in Biomedical Sciences from St. Cloud State University. Upon completion of her master's degree she plans to pursue her doctorate.

Angela Rohweder entered the biology graduate program Fall 2003. Her thesis is titled "Effects of atrazine and sedimentation on amphibians".

Originally from Houston, MN, Angela spent a year attending the University of Alaska Anchorage before transferring to Winona State University, where she received her B.S. degree in Biology with an ecology emphasis. Angela works under the advisement of Dr. Patrick Schoff at the Natural Resources Research Institute.

Julie Smith entered the biology graduate program in Fall 2004 with Ben Clark as her advisor. Her project is titled "CSE for the real world". Julie received her undergraduate degree in biology and secondary education from UMD. She anticipates completing her degree in 2007 and plans to teach at a community college in a warmer climate.

Justin Spanier entered the biology graduate program in Spring 2004 with Les Drewes as his advisor. His thesis is

titled "Functional Regulation of MCT1 (Monocarboxylate transporter 1): a search for protein - protein interactions." Justin graduated from UMD in 2003 with a B.S. in Cell Biology. After graduate school he is planning a career as a research scientist. .

Marte Thabes entered the biology graduate program in Fall 2004 with Donn Branstrator as her advisor.

"I have a B.A. in Psychology and a B.S. in Biology. I currently work in a lab that focuses on Bythotrephes invasions, morphometry, and resting eggs. I will be studying bythotrephes spine induction. My goals are to become a researcher in an academic setting, work for a federal agency, or become an independent consultant."

Natalie White entered the biology graduate program Fall 2004 with David Schimpf as her advisor. Her thesis is titled "Sexual reproduction in *Phragmites australis*: Differences between native North American and introduced European subspecies near Lake Superior".

"After I graduated from Iowa State University with a B.S. in Biology, I spent time working with spotted owls in California and gypsy moths in southeastern Minnesota. I came to UMD to learn more about invasive plant species and botany in general. I hope to use my education in the field of natural area restoration, either in government or private industry. My current work on *Phragmites* sometimes allows me to get out into local wetlands in my kayak, which keeps me happy."

(Continued on page 23)

Biology Awards & Scholarships

By Ruth Hemming

The generosity of alumni and friends makes it possible for the Department of Biology to present annual awards and scholarships to students within the department. The 2005-2006 Department of Biology Awards and Scholarships Program and reception was held on April 27, 2006. The welcome and closing remarks were given by David Schimpf, with comments from Dean James Riehl. Thank you to the members of the awards committee; committee chair Tom Hrabik, David Schimpf, and graduate student Beth Holbrook, who had the difficult task of choosing this year's winners from the many deserving applicants. Congratulations to the following award and scholarship recipients.

The **T.O. Odlaug Scholarship** is given in honor of Dr. Theron O. Odlaug, a former biology professor and department head who retired in 1978. Dr. Odlaug passed away in 2000. This scholarship was initiated when an anonymous donation was made in memory of Dr. Odlaug. The anonymous alumnus remembered the inspiration and help given by Dr. Odlaug. This scholarship is presented to a biology student based on merit and need. This year the award was given to both **Ed Eberhardy**, a junior biology major from Belleville, WI and **Danielle E. Ostrom**, a junior biology major from Cottage Grove, MN.

A new scholarship, the **Ernest & Tyyne Niemi Scholarship** is dedicated to the memory of Ernest and Tyyne Niemi, children of immigrant Finnish parents who lived and raised families in northeastern Minnesota. This scholarship is dedicated towards supporting a junior or senior biology or cell biology student from the local region. **Christine Hoover Draskovich**, a senior biology major from Nashwauk-Keewatin, MN was the first recipient of this award which was presented by Doris Ukura, Ernest & Tyyne Niemi's daughter.

The **UMD Peterson Memorial Scholarship** is given through the College of Science and Engineering (CSE) and rotates between CSE departments; it is presented to a motivated, high-achieving student with demonstrated financial need. This year the award was presented to **Scott Wendroth**, a senior cell biology major from Eden Valley, MN.

Each year two **Ed & Alma Turcotte Scholarships** are awarded to motivated, high-achieving biology or cell biology majors. This scholarship is dedicated

with profound respect and everlasting love to the memory of Edgar (Ed) L. and Alma Turcotte of Carlton, Minnesota. Their three sons and two daughters



all attended UMD. This year's recipients were **Emma L. Bahe**, a junior biology major from Waite Park, MN, and **Kelsey L. Hultman**, a senior cell biology/pre-

medicine student from Cambridge, MN.

The **John McCabe Scholarship** assists high achieving biology or cell biology students who demonstrate financial need. This year scholarships were awarded to both **Lisa A. Chilberg**, a junior biology major from Duluth and **Dustin R. Wing** a junior biology major from Duluth.

The **Pre-Veterinary Medicine Award** is sponsored by Dr. Reza-ul (Raj) Karim and family in memory of Sikander M. Karim, Dr. Karim's father. The pre-veterinary medicine student who receives this award demonstrates high academic achievement, a dedication to the veterinary profession, maturity, and reliability. This year scholarships were awarded to both **Jessica D. Radtke**, a

junior from Brainard, MN and **Megan J. Wehrwein**, a senior from Stevens Point, WI.

The **Outstanding Freshman Award** is given to a freshman student who excels in the introductory biology courses, Biology 1011 and 1012, and is selected by the instructors of these courses. This year's recipient is **Ashley Jo Hendrickson**, a biology major from Montevideo, MN.

Since 1979 biology faculty have nominated a senior biology student who displays scholarship, strong leadership qualities, service to the department, and participation in undergraduate research. The **T.O. Odlaug Award** was created in honor of Dr. Theron O. Odlaug. This year the award was shared by three deserving seniors; **Jenna M. Bergin** a biology/pre-dental medicine major from Nisswa, MN, **Adam P. Foss** a biology/pre-medicine major from Winsted, MN, and **Laura C. Jensen** a cell biology major from Esko, MN.

The **Outstanding Graduate Teaching Assistant Award** is presented to the top teaching assistant in each department in the College of Science and Engineering, and is chosen by faculty members using established criteria. This year's recipient was **Margot A. Bergstrom**, a graduate student in biology from Eagle River, WI. This year Ms. Bergstrom was a TA for General Biology I and Animal Physiology.

Undergraduate Commencement

By Nellie Danke

The University of Minnesota Duluth held its 106th Undergraduate Commencement on Saturday, May 13, 2006 at the Duluth Entertainment and Convention Center. From the Department of Biology Linda Holmstrand, assistant department head and associate professor, served as the banner carrier for the College of Science and Engineering and Matthew Andrews, professor, served as a faculty marshal. Comments were given by two alumni of UMD; James Brandenburg, a nationally known nature photographer, and Harry Oden, educational consultant and humanitarian.

Congratulations and best wishes for the future to our graduates!

B.S. Biology

Erin Marie Albrecht
Sara Beth Arne
Martin Thomas Arnold Auer
Zachary Douglas Austin
Nicole Rae Barg
Will Melvin Bartsch
Christina Lynn Bellert
Katherine L. Burger
Todd William Busch
Caitlin M. Cleary
Nicole Louise Carrier
Adam Daniel Cutter
Justin David Dahl
Jacob Bradley Dalbee
Robert Douglas Dass
Lindsey Rae DeGoey
Daniel Edward Delf**
Stacy Lynn Denny
Jenawa Katherine Dukowitz
Shena May Fesenmaier
Amanda Leigh Fox
Ryan Jon Gaalswyk

Cooper Daniel Gehrman
Kimberly Theresa Giertych
Heather May Gillespie
Rebecca Laura Gordon
Jonathon Harley Gralewski
Rachel Lynn Grams
Alexis Ann Hager
Matthew Steven Haglund
Ann Marie Hair
Rosemarie Ann Heikkila
Matthew Phaneuf Hill
Kenneth Michael Hines
Julia Marie Holmblad
Caralee Lois Isbell
Mark Joseph Kasella
Molly Kissner
Mitchell Allen Lawler
Kirstin Leigh Loose
Daniel Robert Lucchesi
Dylan Graue Lueth
Deneice Nicole Matthews
Jamie Marie Miller
Daniel Alan Nerheim
Hanaa Al-Khansa Nik Rushdi*
Chelsea Ann Nollet
Megan Catherine O'Hern
Neil Jerrold Olson**
Stephanie Ann Olson
Clint Robert Peacock
Brandon James Peterson*
Erik Dennis Peterson
Kevin Kenneth Prodinsky
Jeffrey Scott Rangitsch
William Denver Reynolds
Jeffrey Van Richards
Christina A. Rolfes
Matthew Jon Rueter
Jennifer Lynn Schilling,
Shanna Lynn Schultz*
Lindsey Rae Seifert
Kathryn Ann Sivanich,
Joseph Benjamin Slota

Kyle Steven Snell,
Angela Marie Streckert
Scott Joseph Sveiven*
Jennifer Marie Swenson
Tammy Rose Tang
Sara Marie Tierney
Jamie Leigh Tranberg
Tara Joy Turnwall
Eric William Uutala
Ryan George Viola
Adam Michael Wennersten
Dustin Christopher White
Leslie Marie Wilson
Tyler John Winter
Alisha Jayne Wruck
Angela Antoinette Young

B.S. Cell Biology

Matthew C. Adelman
Elliot Hayward Ballance
Jesse Earl Bandelin
Allison Jo Boddy
McKenzi Karen Burmeister
David James Cegla
Miranda Marie Cole
Jesse David Hines
Patrick John Hoheisel
Cynthia Janet Hommerding
Sarah Ann Hurd
Laura Clare Jensen*
Paul Alan Karow,
Christy Linnea Kennedy
Michael Joseph Krause
Shanna Rachelle Landgren
Daniel Robert Lexcen
Jacob Allen Lyons
David Erick Midthun
Jenna Rose Mollison
Jessica Ria Nagel
Michael John Neubauer
Sara H. Palmer*
Brennan Christopher Rodgers



Nou Vang (center) and friends at graduation

Jeffrey Mark Ruhlmann
Katherine Margaret Sanford
Drew Michael Scribner
Steven D. Skolasinski
Dana Marie Steuding,
Becky Ngoe Thieu
Nou Vang
Kristin Ann Wellenstein*
Paul D. Williams

B.A.S. Teaching Life Science

Eric James Antonson**
Jennifer Ann Heins
Cory Charles Johnson
Bradley John Norman
Tania Leigh Piehowski
Kelli Marie Shockman
Krista Lynn Toumi
Rinda Lynn Van Zuilen

B.A. Biology

Joshua Louis Bailly
Samantha Jo Brichacek
Christina L. Gile
Belissa Ping Ting Ho
Jamie Lee Lind
Edith Ann Schilling*
Jacquelyn Marie Ustrucuk

Honors graduates are recognized as follows:

**cum laude, **magna cum laude, and*

****summa cum laude*

Student Clubs

UMD Biology Club

By Adam Foss

The mission of the UMD Biology Club is to give students a chance to interact with faculty and other students interested in biology. The officers for the 2005-2006 school year were Adam Foss, President; Mike Carroll, Vice President; Tammy Tang, Treasurer; Sean Curry, Secretary; and Jon Gralewski and Clint Peacock, Co-Directors of Membership Activities.

The club held meetings every month and had 2-3 major outings per semester. The club also sponsored many events throughout the year. At the start

of the year, the club volunteered for the Bulldog Bash and helped freshman move into the residence halls. In October, we had our annual camping trip to Gooseberry Falls. We created a new event this year, which we would like to see become an annual gathering, bowling with the faculty. This event was well attended by both faculty and students. "X-treme Gangrene", our intramural broomball and floor hockey team, played very well this year, taking second place in the maroon division for floor hockey. *March of the Penguins* was the featured movie at our annual

movie night. The club is proud of its on-going sponsorship of Relay for Life, and for its new membership in the Adopt-a-Highway program. Finally, we wrapped up the year with the departmental picnic, which was a smash hit.

The club was very active in fundraising this year. There were numerous biology seminars that the club was glad to make cookies for. One week had four seminars! Fundraising for Relay for Life featured a new crowd pleaser, Buck-a-Duck. This unique raffle featured 1,000 rubber ducks in the Swenson Pond; an unforgettable sight.

Thanks to the Biology Club members and faculty advisor Clay Carter for making 2005-06 a great year!



2005-2006 Biology Club officers: Jon Gralewski, Adam Foss, Sean Curry, Tammy Tang, and Mike Carroll (not pictured, Clint Peacock submitted photo)

Pre-Veterinary Medicine Club

By Shena Fesenmaier

The UMD Pre-Vet Club is an organization made up of students interested in veterinary medicine. This year the club held activities for members to meet and get to know each other, the advisor, and other biology faculty. The club held meetings throughout the year to plan activities and inspire interest in the veterinary field.

This year was a lot of fun; we had many activities and a couple fundraisers. For Halloween the club carved pumpkins and had a pizza party. In March we had a Bake Sale at Kirby Plaza. It wouldn't have been possible if

it wasn't for all the help from the club members through baking goodies and volunteering time to sit at the table. We made a good profit and 50% of it was donated to local animal shelters in the Duluth/Superior area. The club also went on a behind the scenes animal care tour at the Lake Superior Zoo; we were able to tour the facilities and animal care center. It was very interesting and a lot of fun to find out how the zoo cares for its animals. In the spring there was a picnic held in faculty advisor Raj Karim's backyard for all the club members and UMD biology faculty and staff. Later in April we held our second

fundraiser, a Car/Dog Wash in the parking lot of Festival Foods. Even though it rained that day, we still had a lot of fun. The club ended the year with a bowling and pizza party at Incline Station in May. Over all, this school year was very exciting and productive for the Pre-Veterinary Club.

The officers for 2005-2006 were: President, Shena Fesenmaier; Vice-President, Megan Wehrwein; Secretary, Terri Albright; and Treasurer, Kristen Hasbargen. Elections were held in May and the new officers for 2006-2007 are: President, Megan Wehrwein; Vice-President, Terri Albright; Secretary, Jessie Radtke; and Treasurer Amanda Doran. If you would like more information, please contact the club

president or Raj Karim, faculty advisor. Our web page can be viewed at: www.d.umn.edu/biology/prevet.



Pre-Medicine Club

By Sandra Holseth

2005-2006 was a huge year for the UMD Pre-Medicine Club. The focus this year was to bring in new members and exciting speakers.

We tried a variety of successful approaches to recruit new members while retaining our current membership; a mix of traditional and new meetings, a new schedule of meeting times to allow for more members to attend more meetings, and involvement in campus events.

Throughout the year we held many different kinds of meetings. The club's traditional meetings included doctor panels, where doctors of different fields came and shared what they do with us.

We had an MCAT informational meeting and prep class. The club purchased MCAT practice tests and references so that students would have more opportunities to prepare for the test. The club's advisor, Dr. Repesh, spoke to the club about the UMD School of Medicine's mission and admissions.

The club also held some new meetings. We had medical students from UMD speak to our club members, held game and movie nights, and Career Services spoke about personal statements and starting the medical school application process.

This year the club sponsored the Red Cross Blood Drive in the fall and

spring, which was a new campus-wide event for the club. We were also supporters of Relay for Life.

The 2005-2006 officers included: President Ryan Gaalswyk, Vice President Sandra Holseth, Secretary Shantel Schallenkamp, Treasurer Adam Foss, Volunteer Coordinator/ SHAC Representative Josh Peltier, Public Relations Officer Sarah Bogan, and Fundraising Coordinator Lindsey Pryzbilla.

Special thanks go out to all of the officers for the work and effort that they each put into making this year such a success. Even more, a special thanks to the members that came to meetings and participated in the events; without them

there would be no club. We look forward to an even bigger and better next year.



(Profiles... continued from page 19)

Matt Balge entered the Water Resources Ph.D. program in Fall, 2003 with Tom Hrabik as his advisor. His thesis is titled "Development of a lake-wide hydroacoustic sampling strategy for quantifying prey fish biomass in Lake Superior".

"I received my B.S. from Northland College in Biology and Natural Resources - Fish and Wildlife Ecology (1999), and my M.S. from the Department of Fisheries and Wildlife at Michigan State University (2003). As of the fall of 2006 I will have spent enough time on Lake Superior to have 'officially covered it all'.

My long-term goals include helping to develop management strategies that will

ensure healthy ecosystems for future generations, and to promote public awareness of the need to conserve and protect our natural resources."

Megan Brown

"I will officially graduate June 1, 2006 from the Water Resources Science Ph. D. program. I will be spending the summer post-docing at the Institute of Ecosystem Study in Pallanza, Italy studying the diapausing egg of the Spiny Waterflea in Lago Maggiore, where this North American exotic is native. In the fall, I will begin a tenure track assistant professor position in the Department of Biology at Hobart and William Smith Colleges in Geneva, NY. I will be teaching and continuing researching in aquatic biology and invasion ecology." Megan's advisor is Donn Branstrator.

Allison Gamble entered the Water Resources Science Ph.D. program in Fall 2004 with Tom Hrabik as her advisor.

"I'm originally from St. Paul and attended Lawrence University in Appleton, WI for my undergraduate degree, and earned a master's degree in fisheries & aquatic sciences from Cornell University, NY. Currently, I'm using a biomass size spectrum model to examine temporal and spatial variability within multiple trophic levels in Lake Superior. I will also be doing diet analysis on several thousand fish stomachs, which will be tied into the size spectrum modeling. I'm interested in working for a state/ federal agency after graduation."

Kevin Russeth is a Ph.D. candidate in the Biochemistry, Molecular Biology

and Biophysics graduate program. Before coming to UMD, Kevin received B.A. degrees in both Biology and Chemistry along with a Religion minor from Concordia College in Moorhead, MN. His research emphasizes hibernation; his thesis is titled "Proteomic and NMR Spectroscopic Analysis of Mammalian Hibernation: A Discovery Driven Approach". Kevin anticipates completing his degree requirements in the fall of 2006. After marrying his fiancée Angie Lintner in October, 2006, Kevin will pursue a teaching or research position.

Other students in the biology master's degree program: Kari Dresback, Matt Gearhiser, David Grosshuesch, Malia Lahr, Frank Maragi, and Christian Matson.



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AND ENGINEERING
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ALUMNI UPDATE Please return so we can update our files.

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E-Mail address: _____

UMD Degree: MS BS BAS BA Class of: _____

What's new? (change of job, special recognition, family, civic involvement, travel, etc) _____

The Life Scientist 2006

An annual newsletter for alumni, faculty, staff, students, and friends of the UMD Department of Biology

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Original Artwork *Terri Jicha*

Graphic Design *Karin Haidos*

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