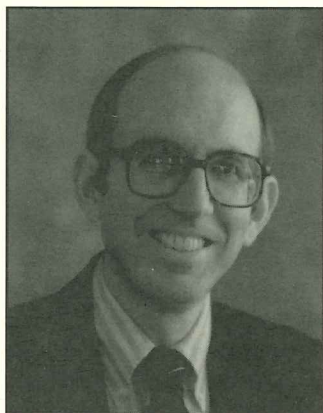




The Departing Department Head Looks Back



By David Schimpf

The past four years was a time of unprecedented change for Biology's faculty. Four sabbaticals. Two retirements. Two individuals who switched between administrative duties and faculty-only roles. Five temporary faculty members brought fresh perspectives to us. This all took place against a backdrop of tremendous increases in our instructional responsibilities. The number of students we taught jumped 28%, our number of undergraduate advisees rose 47%, and the number of graduate students we advise is up 50%. These percentages of growth are based on numbers that were already healthy in 1989. Biology students must see UMD as "the place to be", but I can assure you that these indicators do not lull us into complacency. We need to offer a better educational product for both undergraduate and graduate students, and will continue to seek ways to do so.

All of that may have been enough to ask of the department, but during

the same time the faculty also achieved a major increase in its research activity. Regardless of how you want to measure it, research is up several-fold. Biology is a leading research department on the campus, and shows every sign that this will continue. Growth on this front has given increased opportunities to bachelor's and master's students to get research experience, as well as better service to the needs of the state. As with instruction, we seek ways to higher quality in research. Being bigger is not an end in itself.

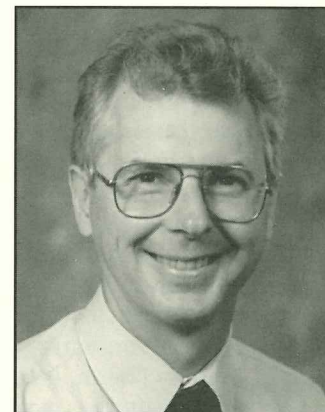
The faculty and departmental staff deserve our admiration and thanks for their exceptional level of effort in

A "NEW" LIFE SCIENTIST

You'll notice many changes in this issue of the *Life Scientist*, before your eyes and behind the scenes. Following Helen Hanten's retirement, Linda Holmstrand has taken over the editing reins. In an effort to garner more outside involvement in the *Life Scientist*, Holmstrand has added two student - intern positions to assist with writing, photography and layout. Look closely at the masthead and the graphics throughout the issue; the staff has enlisted the aid of outside contributors—and computers- to produce a brand new look. If you missed the *Life Scientist*, last spring, its because publication was switched to fall quarter in order to include spring activities and awards.

this time span. There is no other way it could have happened. The University chose not to provide us with additional faculty, staff, or space as our student numbers burgeoned. We hope that will change, for we are now at our limits in facilities and human resources. The figures show that Biology gives the public excellent value for its money. If you feel the same way, it is time to let University and public officials know it. We will continue to appreciate your quieter, personal forms of encouragement. In these times, it is also very important that public decision-makers know that more support for Biology at UMD is in the best interest of the state.

The State of the Department 1994



By Don Christian

As Dave Schimpf, recent past Department Head, has described in his companion article on this page, growth in biological programs and activity at UMD the past few years has been tremendous. Indeed, the most recent statistics from fall quarter show that biology is now the largest undergraduate program at UMD, with almost 500 declared biology majors and over 640 stu-

"Department," continued on p.12



Focus on:

Biology Department Involved in Long Term Studies of Mosquito Wetlands

by Mark St. Louis

In addition to teaching and related duties, departmental faculty are also heavily involved in research projects. One long term project currently underway involves two anti-mosquito agents, methoprene and *Bacillus thurigiensis*, or *Bti*, both new alternatives to the use of pesticides for controlling mosquito populations. The study, involving UMD professors Anne Hershey and Gerald Niemi as well as research fellow Lyle Shannon, focuses on the possible effects on non-target organisms in the Metro Mosquito Control District (MMCD) wetlands.

According to researchers, methoprene is a mosquito-produced hormone that controls populations by preventing maturation. It was originally extracted from mosquitos, but a synthetic substitute was developed to eliminate the difficulty due to their small size. *Bti* is a microbial spore that has proven toxic to mosquitos. The advantage of these new agents is they are thought to target only mosquitos; this research by Niemi, Hershey, and Shannon tests this hypothesis.

The project began in 1987, when a research proposal was accepted by the Twin Cities-based MMCD. The research, funded by a tax base, is conducted in Wright County at 26 sites within the wetlands. The sites are divided into three groups; one group is treated with methoprene, one is treated with *Bti* and a control group is not treated at all. According to Lyle Shannon, this study is "one of the largest wetland studies ever

conducted".

Each of the researchers involved is studying a different aspect. Dr. Hershey is focusing her analysis on the possible effects methoprene and *Bti* may have on insects other than mosquitos. Negative impacts on other insects could have food web effects, since most wetland vertebrates feed on insects. This consists of taking samples from the sites during the summer months and analyzing them during the winter.

Lyle Shannon is testing the effects on zooplankton, tiny aquatic organisms, such as waterfleas, which are ingested by fish. These organisms, which are about the size of a pinhead, play a very important role in the food chain. The same type of sampling is done to chart population effects.

A third aspect of the study involves Dr. Niemi's examination of the possible effects on birds. Due to their habit of nesting in wetland areas, redwing blackbirds are the focus of the study and yellowheaded blackbirds have been included in the last two years. If the agents' treatments destroy non-target insects, such as dragonflies—which yellowheaded blackbirds feed on—reproduction and growth rates could be affected.

The study is expected to continue for several more years. According to Dr. Hershey, the results may be used as the basis for changes in the management of the MMCD wetlands and will be published in journals for the scientific community.

BIOLOGY DEPARTMENT FACULTY AND STAFF

FACULTY

- George E. Ahlgren, Associate Professor
- Colleen M. Belk, Teaching Specialist
- Virginia M. Borden, Teaching Specialist
- Donald P. Christian, Professor and Head
- Hollie L. Collins, Professor
- Conrad E. Firling, Professor
- Stephen C. Hedman, Professor
- Anne E. Hershey, Associate Professor
- Randall E. Hicks, Associate Professor
 - Linda L. Holmstrand, Associate Professor
 - M. Raj Karim, Professor
 - Andrew R. Klemer, Professor
- Paul H. Monson, Professor Emeritus
 - Gerald J. Niemi, Professor
 - Jill V. Scharold, Lecturer
- David J. Schimpf, Associate Professor
 - Lyle J. Shannon, Research Fellow
 - Melbourne C. Whiteside, Professor

STAFF

Ruth Hemming
 David Janssen
 Phyllis Jensen
 Mike King
 Nancy Kirsch
 Courtney Kowalczak
 Jason McCrea
 Bette McNamara
 Paul Mickelson
 Deb Shubat

NOW THAT'S A SABBATICAL!
by Mel Whiteside

During the academic year 1992-93, I took my first sabbatical, which by most standards was unusual. I traveled to Europe, the Caribbean and returned to Duluth all via our 34' sailboat, Niña. The voyage began in late May (92), immediately after finals. We took the boat through the Great Lakes, joined the Erie Canal at Buffalo, then continued down the Hudson River to the Atlantic. This first portion of the journey was an education in itself, as we traveled through progressively more polluted waters from Lake Superior to New York. In New York my wife Gildi and I were joined by our Atlantic crew, Mike King (Biology Department) and a Minneapolis sailor, Gary Schultz. From New York we traveled 18 days to the island of Faial in the Azores. The Azores consist of several islands built up along the Atlantic Ridge. We found the Azores to be a wonder...perhaps because it was our first landfall reached during our first crossing. The people were warm and friendly, and the islands beautiful. I fully intended to visit the freshwater lakes reported on the eastern most island of the group, San Miguel, but did not because we had limited time to complete our journey to Gibraltar and, ultimately, Spain. We continued onto Gibraltar (9 days), where we puzzled over England's continued occupation of this Spanish territory, climbed the rock, exchanged stares with the endemic ape population, and visited the caves. Mike left us to return to Duluth, Gary, Gildi and I continued along the Costa de Sol, arriving in Benalmàdena, Spain in late July, where we were to leave the boat until early November. "It's a small world" experience happened in Benalmàdena. I went to the local chandlery to purchase a few items for Niña. I couldn't locate everything I needed so I approached the owner and inquired (in my best Spanish) about the items. My American accent must have shown through...he responded in English,

continuing to say that he had been in America..."to Duluth, Minnesota".

The next leg of our journey took us by train to Barcelona (arriving after the Olympics, but still paying Olympic prices for hotels). In Barcelona, I attended the 26th Congress of the International Society of Limnologists (SIL). We had the opportunity to visit with Randy (UMD—Biology) and Lucinda (NRRI), and many friends from throughout the world. After the meetings we continued north, stopping in Germany to visit Gildi's relatives, then on to Denmark. I had received grants from the Danish Ministry of the Environment and a Fulbright to re-evaluate lakes that I had studied during my Ph.D. research in 1965. The research was directed out of the University of Copenhagen's, Freshwater Biology Laboratory located in Hillerød. The field work required travel throughout Denmark and was done in cooperation with Danish scientists. We spent a busy, productive fall in Denmark and the results of the study should be published soon.

In early November it was time to head south (the weather was getting cold in Denmark, and the winds were becoming fair for sailing westward). After a week of preparation we left the Mediterranean and headed SSW for the Canary Islands. Eight days later we were docked at Santa Cruz de la Palma (Las Palmas) on Grand Canary. We moved to Puerto Mogán on the west side of the island because of crowded port conditions at Las Palmas (ARC racers). From here we began following the route of Columbus along the trades that take you close by Cape Verde Islands and westward to the West Indies.

Landfall was in Barbados, 21 days later. From Barbados we continued on to the Grenadines—as far south as Grenada, and northward to the Leeward Islands. Along the way we had occasion to visit with Dave and Pat Darby on their boat,

"Ibis". We enjoyed some quality time aboard "Ibis" sampling local beverages. Hurricane season was approaching—Darbys headed south, below latitudes that normally experience hurricanes (and in time to intercept the second of the season); we headed northward, eventually leaving for Newport, R.I. from the American Virgins. Two days from landfall the wind shifted to our nose, so we settled on returning to New York. We retraced our passage to Duluth, arriving on June 28th.

It is difficult to put the past year into words...fantastic adventures, wonderful friendships, expanded perspectives, new knowledge, enriched lives....NOW THAT'S A SABBATICAL!

**CHRISTIAN STUDIES FOREST
BIODIVERSITY**

Don Christian was on sabbatical leave during the 1992-93 academic year. He worked at the Natural Resources Research Institute, and focused his efforts on a variety of projects with the general theme of understanding relationships between forest management/forest structure and small mammal biodiversity. Much of his effort was directed towards several specific projects, including: 1) completing, along with graduate student Marlys Reuvers, a project on effects of mechanical strip-thinning of aspen on small mammals; 2) working on a major project of the Minnesota Environmental Quality Board, the aim of which is to project the possible effects of timber management and different levels of timber harvest in the state over the next 50 years; 3) studying the distribution and abundance of small mammals in peatlands habitats in the Chippewa National Forest; 4) beginning a new project, with John Pastor at NRRI, on roles of small mammals in nutrient cycling in forest ecosystems; and 5) in collaboration with Jerry Niemi and JoAnn Hanowski at NRRI, working on a large project funded by the US Forest Service and the

Larry Hufford Leaves UMD

The Biology Department will sorely miss **Dr. Larry Hufford**, a faculty member in the Biology department for the past four years. Dr. Hufford was an active researcher and enthusiastic teacher. He moved in August to Washington State University, where he is Assistant Professor of Botany and Director of the Herbarium. He will continue his work on the phylogeny and diversification of the Hydrangeaceae for which he was awarded a research grant by the National Science Foundation earlier in 1993. One of Larry's graduate students, Andrea Winbauer, transferred from UMD to WSU to continue work on this project. His other graduate student, Rick Gitar, continues at UMD working on a group within the Liliaceae. Larry and Gary Walton, an undergraduate, are in the process of synthesizing their work on the evolution of the shoot architecture of the bleeding heart (*Dicentra*). During 1992-1993 Larry continued to publish his work on development/phylogeny relationships in the genera *Bessya* and *Synthyris*. He also gave an invited address at the Keystone Symposium on plant development and evolution at Taos, New Mexico in January. Before Larry left, a group of faculty members, staff and students gathered to share a soup and sandwich lunch and to wish him the best in his new position. He was also presented with a framed print of the lighted Duluth arial lift bridge as a remembrance of Duluth.



US Department of Energy on the study of birds and mammals inhabiting hybrid poplar plantations in the upper midwest. Plantations of these fast-growing trees are being developed as possible sources of biomass energy, and this study is directed at understanding biodiversity implications of this development. These projects took Don into the field frequently the past year in Minnesota, Wisconsin, and South Dakota. He also travelled to Petrozavodsk, Russia, twice during the year to lecture and meet colleagues and students there, gave a paper at an international conference in Sweden, and hosted a colleague from Russia who visited UMD for two weeks this spring. Don continued to teach in the summer field biology program at Lake Itasca.

This fall, Don is beginning a term as Department Head in Biology. To allow him time to do this job he will not be teaching several of his upper-division biology courses, but will continue to teach comparative anatomy of vertebrates each winter quarter.

WHERE ARE THEY NOW?

Dr. Larry Choate... filled a sabbatical position in the department during the '92-'93 academic year, teaching courses in Comparative Anatomy of Vertebrates, Natural History of Vertebrates, and Biology and Society. A native of Oklahoma, Dr. Choate earned his Ph.D. from Texas Tech and after teaching for a year at his alma mater, he and his wife Cathy moved to Duluth. In August, the Choates left for Colorado, where Larry accepted a teaching position at Western State College. His address there is: Department of Mathematics and Sciences, Gunnison, CO 81230.

Dr. Janet Boe... is currently working as a plant ecologist for the Minnesota County Biological Survey as part of the DNR's Natural Heritage Program. She works out of an office in Deer River.

Sylvio "Chip" Codella...

who taught Animal Diversity and Entomology here during the '91-'92 academic year, is an assistant professor of biology at Northland College in Ashland, Wisconsin. In September '93, he defended his doctoral thesis. Chip and his family reside in Duluth.

FACULTY NEWS

George Ahlgren...

and his wife Elaine spent the last two weeks of June in Finland. Their tour, much of it by train, took them through the midwest and northern parts of the country. Besides visiting many relatives, the Ahlgrens were able to renew an acquaintance with a Finnish exchange student they had hosted here in 1972. George has completed his last quarter of teaching and will soon be officially retired.

Colleen Belk...

joined the Biology Department staff in the fall of 1991 as a Teaching Specialist and continues to be involved in Biology and Society, General Biology, Cell Biology and Genetics. Besides her teaching duties and caring for her one year old son Mac, Colleen is also pursuing a Ph.D. in Biochemistry/Molecular Biology.

Virginia "Gin" Borden...

received her M.S. degree in Biology from the University of Michigan, Ann Arbor. Her research interests center on plant evolution, specifically the evolutionary changes that may or have resulted from human activity in an environment. Her teaching responsibilities are in Plant Biology and Conservation Biology. Gin is enjoying her stay in Duluth, especially its natural areas, and is anticipating an active winter on cross country skis.

Hollie Collins...

is directing the research of two graduate students working on the early life history, movements and distribution of eurasian ruffe in the St. Louis River Estuary. This academic year marks the first year of a phased retirement plan where he will be annually teaching two quar-

ters. Hollie and his wife Barb recently moved to their retirement home near Floodwood, a log house hand-hewn, scribed and built by the professor himself.

Conrad Firling...

Professor of Biology, has been elected secretary of the Biology Division, National Council for Undergraduate Research, at the annual meeting of CUR councilors at Pomona College, Pomona, California.

Helen Hanten...

Assistant Professor Emeritus, participated in the International Brown Bag Series with a talk entitled "In Search of Traces of Celtic Christianity" based on her most recent journey to England.

Steve Hedman...

Professor of Biology and Associate Dean of the Graduate School, has recently published "Investigations of Life: A Laboratory Manual" with Burgess International. It is intended for use in introductory biology courses. Dr. Hedman also recently traveled to Petrozavodsk where he lectured and consulted with State University officials regarding graduate student exchanges. While in Russia, he

presented a seminar entitled "The Evolutionary Significance of Genetic Introns" at Moscow State University.

Randy Hicks and Don Christian...

joined other UMD faculty members in Petrozavodsk, Russia in October 1993, where they participated in a workshop with Russian scientists on a project on comparative ecotoxicological studies of the world's greatest lakes and their surrounding landscapes.

Linda Holmstrand...

was recently awarded a certificate of appreciation for her participation in a drug and alcohol abuse prevention program, sponsored on the UMD Campus by Bright Futures Network. During the past year, each of eight UMD faculty members from different departments undertook the task of infusing a prevention module into the curriculum. Holmstrand's infusion module, designed for the introductory human anatomy course, brought charts, models, slides and a speaker into the laboratory, focusing on the effects of alcohol abuse to the human nervous system and the digestive organs.

M.R. "Raj" Karim ...

Originally from Pakistan, has held many posts, academic and administrative, throughout his diverse career. He came to UMD in 1989 as Associate Vice Chancellor for Academic Administration and began teaching in the Biology department in 1992. He has also served on the faculty at West Chester University in Pennsylvania, Northern State University in South Dakota, the University of Wisconsin-Eau Claire, and the University of Minnesota at Minneapolis - St. Paul. A background in public health is evident from his current research, "Herpes Simplex Virus Latency Associated Transcript and Gene Therapy," and "Ethno Medicine and Bioremediation/ Biotechnology."

Andy Klemer...

During the winter 1994, quarter, Andy will join other faculty in the UMD Study in England Program. He is also in the third year of an NSF grant awarded to study the causes and consequences of nuisance blooms by phytoplankton.

Jill Scharold...

holds a Ph.D. in oceanography from Woods Hole Oceanographic

MONTE, WHERE ARE YOU?

Monte, whose scientific name is *Python reticulatus*, was being housed temporarily in the basement of the Life Science building. He was the object of affection for staff and students who would drop by to visit him in his metal cage. Then one day, Monte's cage was empty!! Had he escaped? Had he been stolen? Did someone let him loose as a prank? An APB went out, seeking information on his whereabouts, but asking people not to be startled if they stumbled upon him in the stockroom. Weeks went by Monte was finally apprehended in the women's room on the first floor of Heller Hall....the search was over.



Institution Massachusetts Institute of Technology, where her research centered on behavior and metabolism of marine fishes, including sharks. Her temporary appointment assigned her to teaching duties in Animal Diversity, General Biology and Human Anatomy. Last summer, Jill worked at the EPA lab in Duluth, where she was part of a team monitoring and assessing conditions in the Great Lakes. She will return to the department to teach during the winter and spring quarters.

Lyle Shannon... research fellow in biology, received a grant of \$457,000 from the U.S. EPA for a three - year study on "Predicting the Survival and Effects of Introduced Microorganisms." **Randall Hicks** is a co-principal investigator.

Mel Whiteside... was awarded a Fulbright Travel Grant in support of his sabbatical leave during the 1992-93 academic year. He did further research on Danish lakes he first studied as a graduate student in the 1960's (See article "That's a Sabbatical" in this section.)

BIOLOGY STAFF KEEPS DEPARTMENT RUNNING SMOOTHLY

A mainstay in the Biology Department office for more than 20 years, **Phyllis Jensen** supervises and coordinates the office work. She also serves as senior accounts supervisor, taking care of grant budgets and other financial matters of the department. Phyllis oversees the performance of Kerry Falkowski, a work-study student. Phyllis spends her personal time enjoying crafts and traveling to visit her children and grandchildren. Her husband, Lawrence, is retired from UMD Plant Services.

Ruth Hemming types class materials and exams, takes care of correspondence for the office, answers phones and students questions and makes delicious decorated cakes for department social functions. Ruth has assumed all these duties and

more in her five years of service to the department. Indispensable to the office, she is also a talented and creative individual outside the workplace, with skills in wood-working, ceramics, carpentry and landscaping. Last summer, with help from husband Jim and son Bryan, she finished remodeling their home in Lakeside.

Deb Shubat formally known as a "senior agricultural plot technician," continues to direct greenhouse activities, providing living plant materials for department botany courses and leading educational greenhouse tours for school children and garden clubs. She also teaches the introductory botany course through extension and in 1994 is planning to offer a class in horticulture. Shuby recently moved into a building on her 15 acres near French River - the future home of her orchard.

Bette McNamara is the person faculty and students turn to for supplies and equipment. She is in charge of the department stockroom, including all bidding and acquisitions. In addition, Bette trains and works with 5-10 student workers, who assist in lab preps and other stockroom duties. In her spare time, Bette keeps busy on her "ranch" where she owns and raises a variety of animals from rats and rabbits to chickens and appaloosa horses.



Phyllis Jensen & Kerry Falkowski

GRANTS AND PUBLICATIONS

Research by Biology faculty and students has resulted in a large number of recent publications. The following represent some of these that were published during 1992 and 1993. Due to space limitations, full citations are not included, and only co-authors linked to UMD Biology are indicated:

Colleen Belk...

Alterations in Paraquat Pharmacokinetics by Histamine Correlate with Mortalities in Male Mice. **Toxicology and Applied Pharmacology**, 1992.

Don Christian...

Factors influencing meadow vole, *Microtus pennsylvanicus*, distribution in Minnesota. **Canadian Field-Naturalist**, 1992 (lead author is graduate student Joe Whittaker).

Lack of potassium-anion interaction in diet selection by captive meadow voles. **Physiology and Behavior**, 1993 (lead author is former biology student Mark Anderson, B.S., 1991).

Sodium and potassium balance of captive meadow voles (*Microtus pennsylvanicus*) fed laboratory chow and vegetation diets. **Comparative Biochemistry and Physiology** (co-authors were former graduate student Tom Manning, M.S., 1988, and graduate student Cal Harth).

Two papers on birds and small mammals inhabiting hybrid poplar biomass energy plantations have been accepted for publication. These papers are co-authored with Jerry Niemi, JoAnn Hanowski, and Pat Collins. JoAnn and Pat received their B.S. and M.S. degrees in biology from UMD, as did Jerry, who later joined the faculty.

Conrad Firling...

Influence of short-term aluminum exposure on demineralized bone matrix induced cartilage and bone formation. **Archives of**

Toxicology, 1992 (co-authors include former graduate student Craig Haut, M.S., 1989).

Anne Hershey...

Effects of experimental fertilization on the benthic macroinvertebrate community of an arctic lake.

Journal of the North American Benthological Society, 1992.

Control of arctic lake ecosystems: a limnocorral experiment.
Hydrobiologia, 1992.

The effects of river fertilization on mayfly (*Baetis* sp.) drift patterns and population density in an arctic river. **Hydrobiologia**, 1992 (lead author is former graduate student Deb Hinterleitner-Anderson, M.S., 1990; coauthor is Jeff Schuldt, M.S., 1992, currently a doctoral candidate in the U of M Forest Resources program but working mostly at UMD).

Salmonid diet and the size, distribution, and density of benthic invertebrates in an arctic lake.
Hydrobiologia, 1992 (lead author is former graduate student Glenn Merrick, M.S., 1989)

The effect of phosphorus enrichment on black fly density, growth, and production in an arctic river.
Hydrobiologia, 1992.

Effects of fish predation on larval chironomid (Diptera: Chironomidae) communities in an arctic ecosystem. **Hydrobiologia**, 1992.

A comparison of slimy sculpin (*Cottus cognatus*) populations in arctic lakes with and without piscivorous predators.
Hydrobiologia, 1992 (lead author is former graduate student Kristi Hanson, M.S., 1993).

The biogeochemistry of lakes and rivers in arctic Alaska.
Hydrobiologia, 1992.

Cost of predation avoidance in young-of-year lake trout (*Salvelinus namaycush*): growth differential in sub-optimal habi-

tats. **Hydrobiologia**, 1992.

Shifts in abundance of growth of slimy sculpin in response to changes in the predator population of an arctic Alaskan lake.
Hydrobiologia, 1992.

Biological responses of a tundra river to fertilization. **Ecology**, 1993.

The trophic significance of epilithic algal production in a fertilized tundra river ecosystem. **Limnology and Oceanography**, 1993.

Two additional papers accepted for publication are "Stable isotopes resolve the drift paradox for *Baetis* mayflies in an arctic river," and a book chapter, "The Kuparuk River: a long term study of biological and chemical processes in an arctic river." Jeff Schuldt is a co-author of the latter publication.

Randy Hicks...

Dual staining of natural bacterioplankton with DAPI and fluorescent oligonucleotide probes targeting kingdom-level 16S rRNA sequences. **Applied and Environmental Microbiology**, 1992.

Biodegradation of organic particles by surface and benthic nepheloid layer microbes from Lake Superior. *Journal of Great Lakes Research*, 1993 (lead author is former graduate student Peter Aas, M.S. 1993).

Another paper, "Deposition, resuspension, and decomposition of particulate organic matter in the sediments of Lake Itasca, Minnesota, USA," has been accepted for publication in **Hydrobiologia** (co-authors are Aas and former UMD biology student Chris Owen (B.S., 1989).

Larry Hufford...

Floral structure of *Besseyia* and *Synthyris* (Scrophulariaceae). **International Journal of Plant Sciences**, 1992.

Leaf structure of *Besseyia* and *Synthyris* (Scrophulariaceae).

Canadian Journal of Botany, 1992.

Phylogeny of Asteridae: an introduction. **Annals of the Missouri Botanical Garden**, 1992.

Rosidae and their relationships to other nonmagnoliid dicotyledons: a phylogenetic analysis using morphological and chemical data.
Annals of the Missouri Botanical Garden, 1992.

A phylogenetic analysis of Cunoniaceae. **Systematic Botany**, 1992.

A phylogenetic analysis of *Besseyia*. **International Journal of Plant Sciences**, 1993.

Jerry Niemi...

Experimental design considerations for establishing an off-road, habitat specific bird monitoring program using point counts. U.S. Fish and Wildlife Symposium, 1992 (JoAnn Hanowski is lead author).

Bird populations. Book chapter in "The patterned peatlands of Minnesota." 1992 (JoAnn Hanowski is co-author)

Habitat associations of breeding peatland passerine species in eastern Finland. **Ornis Fennica**, 1992.

Integrated assessment of contaminated sediments in the lower Fox River and Green Bay, Wisconsin. **Ecotoxicology and Environmental Safety**, 1992.

Recovery of stream fish communities from disturbance: a review of case studies and synthesis of theory. **Environmental Management**, 1992.

Prediction of octanol/water partition coefficient (K_{ow}) using algorithmically-derived variables. **Environmental Toxicology and Chemistry**, 1992 (co-authors include Greg Grunwald, B.S., 1985).

Drought and annual variation in bird populations: effects of migrato-

ry strategy and breeding habitat. Book chapter in "**Ecology and conservation of neotropical migrant landbirds.**" 1992 (co-authors include JoAnn Hanowski).

Multivariate association of graph-theoretic variables and physico-chemical properties. **SAR and QSAR in Environmental Research**, 1993.

Rehabilitation of ecosystems. Book review, **Ecology**, 1993.

The effect of wetlands on lake water quality in the Minneapolis/St. Paul metropolitan area. **Landscape Ecology**, 1993. 2,3,7,8-tetrachlorodibenzo-p-dioxin equivalents in tissues of birds at Green Bay, Wisconsin, USA. **Archives of Environmental Contamination and Toxicology**, 1993.

Bioaccumulation of planar polychlorinated biphenyls, 2,3,7,8-substituted polychlorinated dibenzofurans, and dibenzo-p-dioxins by birds nesting in the lower Fox River/Green Bay, Wisconsin. **Archives of Environmental Contamination and Toxicology**, 1993.

Effects of extremely low frequency electromagnetic fields on breeding and migrating birds. **American Midland Naturalist**, 1993 (lead author is JoAnn Hanowski, other co-authors include Pat Collins).

Effect of sewage effluent on bird abundance and species composition in a northern Minnesota wetland. **Journal of the Minnesota Academy of Science**, 1993 (lead author is JoAnn Hanowski).

Comparative analysis of variables to measure recovery rates in streams. **Environmental Contamination and Toxicology**, 1993.

Birds of the Sandstone unit of Rice Lake National Wildlife Refuge, Pine County. **Loon**, 1993 (lead author is JoAnn Hanowski). Breeding birds of Rice Lake

National Wildlife Refuge, Aitkin County. **Loon**, 1993 (lead author is JoAnn Hanowski).

Two additional papers have been accepted for publication in 1994.

Dave Schimpf...

Rapid germination of pollen *in vitro*. **American Biology Teacher**, 1992.

Biology faculty also have been successful at obtaining grant funds to support their research and research-related activities. During the 1992 calendar year, biology faculty received over \$50,000 from university sources, including the Graduate School, Office of International Education, and institutional sabbatical funding. At the same time, faculty received 12 grants totalling over \$1.3 million from agencies and organizations outside the university. These grants do not include funding obtained by Jerry Niemi, who is a professor in the department but also is Director of Center for Water and the Environment at the Natural Resources Research Institute; the institute lays claim to his funding!

Editor's Note

Hello to all of you—alumni, students, and friends. As you can see, this newsletter is really a double issue—we've tried to bridge the gap since the last issue of Spring '92. From now on, Your *Life Scientist* should arrive on a regular annual basis. I especially want to thank the student writers, faculty contributors and the UMD Graphic Design Service for format and layout. Please send us your news and suggestions for future issues.

Waiting to hear from you!
...Linda Holmstrand

GRADUATE STUDENT ACTIVITIES

Dan Weaver has focused his research on microbial ecology. Besides being awarded the Biology graduate TA of the year award for 1992, Dan has published two papers; he was awarded the IAGLR/Hydrolab Award for Best Student Paper.

Joe Whittaker expects to complete his degree during winter quarter 1994. He is working under Dr. Don Christian on a project entitled "Movement Patterns and Space Use by Meadow Voles (*Microtus pennsylvanicus*) in relation to Gopher Mounds and Other Habitat Features". He has also worked as a TA and research assistant.

Rita Y. Hawrot has been studying Avian Ecology under the direction of Dr. Gerald Niemi. She has worked for Dr. Niemi as both a teaching and a research assistant and expects to complete her degree during fall quarter 1993.

Heather Brient-Johnson plans to complete her degree during winter quarter after spending the summer working as a naturalist at Pfeiffer Lake for UMD's outdoor program. She is working on a thesis entitled "Interaction of Sodium and a Plant Chemical in *Microtus pennsylvanicus*."

While doing research on stream ecology, **John R. Wheeler** presented papers at North American Benthological Society meetings in 1992 and 1993. He has worked in the Biology department as both an RA and a TA and expects to complete his degree during fall quarter.

Also planning to complete her degree this fall, **Tracy Galarowicz** is working on a thesis entitled "Predation of Slimy Sculpins on Chironomids". Tracy has worked as both a teaching assistant and a research assistant; she also presented a paper at the

1993 North American Benthological Society meeting.

A student of avian ecology, **Oksana Piterman** is finishing a thesis entitled "Diet of Red-winged Blackbirds in Mosquito Treated Wetlands". In July 1993, Oksana attended the Ecological Society of America conference in Madison, Wisconsin.

Ann Sigford has spent her years at UMD coordinating a project entitled "Superior Lakewatch: Citizen Monitoring of Lake Superior". She has given talks and presentations at several conferences, including the Global Education Conference, Minnesota Science Teacher Conference, the Lake Superior Conference, and the Inland Sea Symposium. Ann received the Outstanding Biology TA Award in 1992.

With an anticipated completion date of December 1993, **Carol Pearson** is studying landscape effects on avian abundance. She has three year's experience as a research assistant and has served as a TA for Dr. Niemi's ornithology class.

David Pascoe is studying the genetic diversity of natural bacterial communities under the direction of Dr. Randy Hicks. David has presented papers at the American Society of Limnology and Oceanography and at the Symposium on Microbial Community Structure.

Beth Schnieder completed her degree in the spring of 1993. Her thesis is entitled "The Effects of Aluminum Citrate on Embryonic Long Bone Formation". In 1992, Beth attended the 14th Annual Meeting of the American Society for Bone and Mineral Research in Minneapolis.

William (Pat) Brown is researching the early life history of the ruffe, a Lake Superior fish. He is working under the direction of Dr. Hollie Collins. Pat attended the Lake Committee Meetings in 1992

and 1993.

Andy Edwards, of Iron River, Wisconsin, is also working on Dr. Collin's St. Louis River Ruffe project. Andy would like to eventually find a full time position in the field of fishery research and/or management.

A student of ornithology under Dr. Gerald Niemi, **Kent Montgomery** is writing a thesis entitled "Determining Presence and Absence of Selected Avian Species Using Satellite Imagery". While at UMD he has worked as both a TA and an RA.

Joan Weyandt-Fulton is studying Plant Ecology under the direction of Dr. David Schimpf. She is concentrating her research on the mineral nutrition of wetland plants.

Amy Fisher Wold is concentrating her graduate work in Aquatic Ecology with Dr. Anne Hershey. Amy plans to go on to complete her Ph.D. and would like to eventually teach at a small private college.

Kate Michmerhuizen is studying methane and carbon dioxide emissions from north temperate lakes. Advised by Dr. Mike McDonald of the Chemical Engineering department, she expects to complete her work in May of '94.

Carmen Chapin is concentrating her studies in Ecosystems/Botany. Currently working on a thesis entitled "Effect of Insect Nitrogen on Pitcher Plant Growth, she expects to finish her work at UMD next spring and hopes to eventually earn her Ph.D.

A Two harbors native, **Randy Hedin** is studying how nutrient supply affects blue-green algal growth rates and competitive abilities. He hopes to finish in the spring of '94.

Steve Garske is from Wausau, Wisconsin. He is studying the effects of the growth of colonies of an introduced Eurasian

woodland plant of forest vegetation. His long-range career plans are to do research in some area of conservation biology.

Jeff Schuldt is working on a Ph.D. thesis entitled "Impact of Salmon Carcass Decomposition on North Shore Streams". In 1993, Jeff presented a paper at the North American Benthological Society conference in Calgary.

Connie Schwegman is a plan B graduate student with an emphasis on education. Her concentration has been in environmental and aquatic biology. In February of 1993, Connie was "awarded" a "healthy, happy baby boy!" Connie has had RA experience with Minnesota Sea Grant Extension and hopes to eventually work as an environmental educator at a university-based or non-profit education institution.

Richard D. Gitar has just recently started at UMD. He hopes to eventually earn his Ph.D. in Plant Systematics and teach at a college or university or secure a curatorial position at a large herbarium. He has taught at UWS in General Botany and Plant Physiology.

Anne Gingery, originally from Helena, Montana, is currently working as a junior scientist at NRRI with Dr. Thomas Malterer. Anne anticipates completing her degree in the spring of 1995.

Cindy Hale earned her undergrad degree in Ecology from the Twin Cities campus. She has worked in a number of field positions in a variety of states, but will be concentrating her UMD studies in forest ecology in conjunction with NRRI.

Joe Austin has an undergraduate degree in electronics engineering and will be putting his extensive field work to use as he attempts to design and evaluate a mercury mitigation experiment. He has a research grant in conjunction with UMD and the EPA lab and plans to complete his degree in the

spring of '94.

Ann Thering came to UMD with Bachelor's and Master's degrees in agricultural journalism from UW-Madison. She does volunteer monitoring of wetlands projects and has served as the zebra mussel coordinator for Sea Grant. Her career plans are to work in some aspect of wetlands education.

Andrea Winbauer has completed a year of graduate study with Dr. Larry Hufford, working on floral anatomy and evaluation of the plant family which includes hydrangeas. She recently transferred to Washington State University to complete her degree in botany.

Shane Yokom a native of Michigan and graduate of Michigan Tech has completed one season of field work under the direction of Rich Axler and Mike McDonald. He is taking a limnological approach to the measurement of recovery rate for a mine pit lake formerly used for aquaculture.

Other Biology Department Graduate students include Mark Tapper (featured in the focus article), Karen Ellingson, Tim Fenske, Denise (Pederson) Mayer, Scott Stai, Cal Harth, Fred Asare, Michele Barlow, Sarah Crawford, Kathryn Gronlund, Paula Holter, Michele Hughes, Kurt Johnson, Frank Kaszuba, Kathy Mayo, Mark Nelson, Cathy Podeszwa, Tammy Rieber, Tamara Swanson, Paul Tucker, and Andy Wold.



Focus on:

Viruses in Great Lakes

Research projects often add a new dimension to the studies of biology students. One such project has been initiated by graduate student **Mark Tapper**. Like many research projects, the study bears a lengthy title: "Ultra-violet Light and Chemical Induction of Temperate Bacteriophage from Great Lakes Ecosystems, but examination of the specifics of this research project makes its meaning clear.

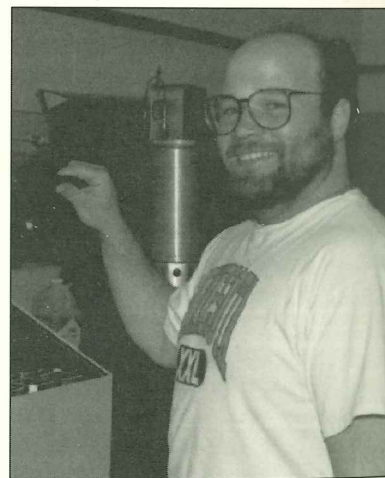
With guidance from Professor Randall Hicks, Mark is studying the viruses that exist in the waters of the Great Lakes. According to Tapper, these viruses can be found in a lysogenic, or non-hostile, state in which they do not reproduce and their DNA can be incorporated into a host without killing it. For example, bacteria might take these viruses into their systems without being affected.

In the laboratory, ultraviolet (uv) light is used to induce the viruses to a lytic state, where they could potentially reproduce and disrupt the normal nutrient cycles. The testing process also involves sampling on the lake surface as well as a depth of approximately 20 meters. The deeper samples are taken to ensure that the viruses won't be affected by the uv light normally present there. Specimens are examined before and after uv induction to note any changes which might lead to lytic states.

Mark spent much of the summer of '92 developing pro-

cedures for the project, the first of its kind on the Great Lakes. Major testing work was accomplished this past summer and resulted in viruses being found in Lake Michigan and Lake Superior. Mark's research is being supported by a Grant-In-Aid from Sigma Xi, an award he won in competition with more than 700 applicants nationally.

This project takes on special significance in relation to ozone depletion. With industrial pollution, portions of the protective ozone layer have been weakened, allowing higher levels of uv light to bombard the Great Lakes. If, as early data suggests, lysogenic viruses can be induced into lytic cycles by certain chemicals and uv light, then Mark claims that these changes "could disrupt the entire Great Lakes ecosystem."



Mark Tapper

'92 BIOLOGY GRADUATES

Bachelor of Applied Science Degree

Steven Anderson, Barnum MN
Michael Hamilton, II, Plainview, MN
Todd Jespersen, Grand Marais, MN
Gary Michael Phleger, Mound, MN
Christine A. Wyrum, Saginaw, MN

Bachelor of Arts Degree

Paul Bartlam, Proctor, MN
Douglas Fitton, Attleboro, MA
Robert Gerenz, Roseville, MN
Eric Klang
Katherine McLeod, Rochester, MN
Danial Miller, New Brighton, MN
Tegan Sweeney, Shell Lake, WI

Master of Science Degree

Rebecca Boley, Superior, WI
Patrick Collins, Duluth, MN
Jack Erickson, Walnut Creek, CA
Mark Hermeling, Minnetonka, MN
Michelle Kuns, Owatonna, MN
Susan Olson, Buffalo, MN
Roland Sigurdson, Cambridge, MN

'92 Bachelor of Science Degree

Mark Anderson, St. Cloud, MN
Teresa Arnold, Spicer, MN
Jeffrey Bieter, Cottage Grove, MN
Carmen Chapin, Lakeland, MN
Roberta Daughters, St. Cloud, MN
Brian Erickson, Hastings, MN
Jack Felland, Mora, MN
Denise Fish, Duluth, MN
Christopher Gebeck, Coon Rapids, MN
Anne Gingery, Duluth, MN
Marcie Jagoe, Crookston, MN
Christine Jankovich, Duluth, MN
Rhonda Johaneson, Blaine, MN
Jennifer Johnson, Duluth, MN
Michelle Jondreau
Shannon Kowal
Courtney Kowalczak, Ft. Worth, TX
Connie Lutkevich, Duluth, MN
Jodi Mantini, Chisholm, MN
Kurt Mead, Plainview, MN
Kim Meyer-Salo, Hibbing, MN
Kristi Morris, Duluth, MN
Gary Phleger, Mound, MN
Cindy Radel, Owatonna, MN
Melissa Reed, Chisago City, MN
Chad Richardson, Andover, MN
Laura Rioux, St. Cloud, MN
Heather Rood, Bloomington, MN
Kristine Schmalenberg, Crookston, MN
Edwin Sheils, Grand Marais, MN
David Sohlstrom, St. Cloud, MN
Jill Spoden, Cold Spring, MN
Timothy Studer, Wadena, MN

Kevin Tanner, Rochester, MN
Traci Thaumert, Hugo, MN
Anne Thomas
Patrick Warner, Hibbing, MN
Christopher Westberg, Eau Claire, WI
John Wheeler, Roseville, MN
Craig Wilson, Duluth, MN
Maryls Winandy, Lake Elmo, MN
Renee Zeroth, Princeton, MN

'93 BIOLOGY GRADUATES

Bachelor of Applied Science Degree

Lisa Jokela, Pengilly, MN
Chad Kaddatz, Mora, MN
James Keal, Duluth, MN
Michelle Latterell, Bigfork, MN

College of Liberal Arts

Bachelor of Arts Degree

David Gelineau, Duluth, MN
Thomas Hitchcock, Hibbing, MN
Scott Kircher, Monico, WI
Andrew Kross, St. Paul, MN
Rachel Murzyn, Mpls, MN
Brian Poppenberg, Hermantown, MN
Randy Skiba, Blaine, MN

Master of Science Degree

Peter Aas, Duluth, Mn
Kristi Hanson, Bass Lake, CA
Michael Mageau, Duluth, MN
Marlys Reuvers
Charles Rose, Roseau, MN
Jo Thompson

'93 College of Science and Engineering

Bachelor of Science Degree

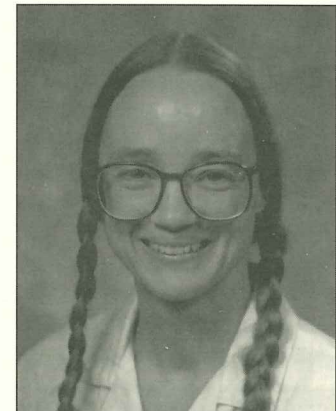
Nicholas Anthony Alioto
Anthony Eugene Altieri, Duluth, MN
Shannon Marie Ament
Greg Andrusak, Victoria, BC Canada
Julie Boyden, Cottage Grove, MN
Lisa Caron, Cottonwood, MN
Tami Elton, Roseau, MN
Jeffrey Ferguson, Big Falls, MN
Karla Northfield, MN
Anthony Flint, Champlin, MN
Michael Gabler, Duluth, MN
Scott Goodno, Duluth, MN
Kathryn Gronlund, Neenah, WI
Kate Gunderson, Forbes, MN
Kristin Hartman
David Hell
Jerald Henneck, Little Falls, MN
Theresa Hill, Sandstone, MN
Cheryl Homuth, Owatonna, MN

"Graduates" continued on p.12

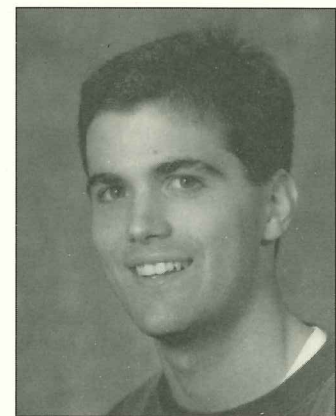
GRADUATE TEACHING ASSISTANT AWARDS

The Biology Department Faculty selected Ann Sigford and Dan Weaver, respectively, for the Graduate Teaching Assistant Awards for 1992 and 1993. Both Ann and Dan participated in a variety of laboratory courses in the department. Congratulations to both!

Ann now works for ILS, a contractor to the EPA lab, as a specialist in educational programs and science outreach. Dan is currently completing his master's degree and is working on a research grant with Lyle Shannon.



Ann Sigford

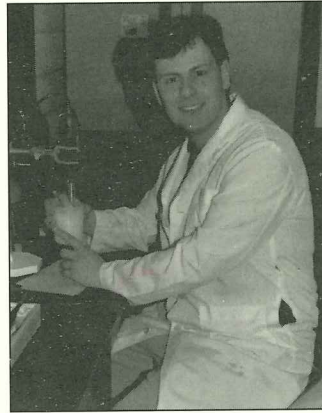


Dan Weaver

Continued from p.11

Carrie Howard, Duluth, MN
Philip Johnson, Princeton, MN
Lisa Jokela, Pengilly, MN
Kari Kavajecz
Michael Kingland, Owatonna, MN
Jon Krecklau, Farmington, MN
Patricia Lear, Duluth, MN
Mark Lehnert, Burnsville, MN
Mark Lisowski
Jill Liukkonen, Duluth, MN
Noelle Lowrie, Inver Grove Hts., MN
Lief Lunde, Duluth, MN
Jessica Meehan, Duluth, MN
Sherri Monroe, Cook, MN
Kristine Mosher, Duluth, MN
Bryan Nelson, Duluth, MN
Kristen Nelson, Duluth, MN
James Nordlof, Baudette, MN
Arne Nystuen, Menomnie, WI
Melissa Platteter, Duluth, MN
Jason Prokop, St. Croix Falls, WI
Amy Puglisi
Kristin Reed, Esko, MN
Randall Rude, Duluth MN
Rusty Schmidt, Little Falls, MN
Sarah Schumacher, Winona, MN
Scott Sepp, Mendota Hts., MN
Tamara Slinkard, New Prague, MN
Mark Steinbrecher
Christopher Stevens, Lake Elmo, MN
Kimberly Strong, Fridley, Mn
Geri Tesser, Proctor, MN
Derin VanLoon, Hermantown, MN
Christof vonRabenau, Duluth, MN
Colleen Weed, Woodbridge, VA
Chad Whiterabbit, Andover, MN

UMD HOSTS 61ST MINNESOTA ACADEMY OF SCIENCE MEETINGS



Bryan Nelson

Three undergraduate UMD Biology majors, in competition with fifty-four undergraduate students from fourteen Minnesota colleges and universities, gave oral presentations at the 1993 Annual Meeting of the Minnesota Academy of Science held in the Spring on the UMD campus. **Gary B. Walton**, working under the direction of Dr. Larry Hufford presented "The evolution of the shoot system of *Dicentra cucullaria*", **Theresa A. Hill** and **Bryan A. Nelson** working in the laboratory of Dr. Conrad Firling presented "The effect of aluminum on embryonic bone matrix synthesis" (Hill) and "Alkaline phosphatase activity in the tibiae of aluminum treated chick embryos" (Nelson). Bryan, a Biology/Chemistry major, received one of the six 1993 Winchell Undergraduate Research Awards. His research was sponsored by a University of Minnesota UROP award. **Congratulations Bryan!**

Dr. David Schimpf of the Biology Department was the local program chair. Contributed papers, in addition to those cited above, were given by Biology graduate students Joseph Austin and Scott Stai, and faculty member Donald Christian. Several Biology faculty, including Larry Choate, Stephen Hedman, Raj Karim and Gerald Niemi, were among the judges for the undergraduate competition.

THE SENIOR SPOTLIGHT By Tracy Giller

It's fall, and college grads around the world are still adjusting to the enigma called "the real world". Big decisions, relocations, and all sorts of readjustments—it's enough to make a graduate want to be a freshman again. Some have already begun their careers; others find themselves struggling with the lousy job market. For those with an appetite for academia, graduate and professional schools are a popular option. A sampling of UMD biology grads reveals a patchwork of chosen career paths.

Penny Jeunemann is one who plans to brave the overflooded job market. Currently finishing her senior year at UMD, she will receive a BAS in teaching life-sciences along with her BS in biology. Penney and her husband Jamie will be moving out west where she will search for a teaching job. Her backup plan—a necessity for any graduate—is to enlist the aid of her second degree to find a job in biology.

Many are postponing the job search by heading to graduate or professional school; medical school is one popular goal for biology majors. With the application count reaching record proportions and admission criteria stricter than ever, many pre-med biology graduates are finding themselves in limbo after spending their undergraduate years planning for medical school.



Tracy Giller

Continued "Department," from p.1

dents advised by biology faculty. Also, the Biology Graduate Program, with 42 students enrolled this fall, has grown to the second largest at UMD. Our lectures and laboratories are literally bulging with students, and we continue striving to increase the quality of our educational efforts in the face of capacity enrollments. We are working to convince the administration of our need for further faculty positions in the department, and for increased funding for equipment, supplies, and staff, to help us provide a top-quality education for our students.

At the same time our student numbers have grown, research activity has increased substantially. Articles on following pages of this newsletter describe the diversity of

"Department," continued to p.15

Bryan Nelson is in that familiar predicament. Having graduated in May of 1993 with a BS in biology and completed the requirements for a BA in chemistry, he has applied to several medical schools (and survived several interviews) but has not yet been admitted. With research experience (he's worked in Dr. Firling's embryology lab) and a competitive GPA, he's excellent proof of just how tough it is to get into professional or graduate programs. If not accepted, he will most likely spend the '94-'95 school year working in the UMD chemistry department and will possibly reapply to medical school.

Tammy Slinkard and **Dave Hell**, on the other hand, will not have to utilize their backup plans. Slinkard was one student admitted to the UMD medical school out of more than 3000 applicants. True to UMD med school tradition, she plans to go into family practice.

For Dave Hell, acceptance into the twin cities medical school means a chance to go further with medicine after 5 1/2 years as a registered nurse. Not sure what area of medicine he wants to specialize in, he says "I've never been more excited about anything in my life."

Master's and doctorate degrees are options for hard-core biology lovers. Genetics fan **Scott Goodno** will begin a journey deep into academia this fall when he moves to Iowa City, Iowa to begin work on his Ph.D. The University of Iowa program will most likely require five years, after which Scott will do the usual "professor stuff".

Kitty Gronlund is following a similar path, only closer to home. She has been accepted into the biology master's degree program at UMD where she will also serve as a graduate TA. Kitty hopes to eventually get her Ph.D. The many options available to seniors can be overwhelming, as evidenced by **Glen Gehrke**, Graduating after fall quarter, he will be applying to medical, dental, physical therapy, and optometry

schools. Until then, most of his free time will be spent preparing for the corresponding standardized exams. Glenn is also considering following in his father's military footsteps by going to Naval Officer Candidate School.

No doubt, seniors lost a lot of sleep pondering the huge "life decisions" facing them. The hard part, as Glenn Gehrke puts it, is "not knowing until the last minute!" Ten years from now, many graduates will be firmly ensconced in their chosen careers—but many others will be pursuing something totally different from their original choice. Then there's always some who never really make a decision as to where they're going—they just go. And so, all you brand-new UMD biology alumni: take it easy and go with the flow. There will be plenty of time for worrying later.

BIOLOGY CLUB HELPS COMMUNITY AND ENVIRONMENT by *Mark St. Louis*

In an effort to divide leadership opportunities and responsibilities within the Biology Club, Bob Olson and Tami Elton shared the '92-'93 chairperson position; the remaining duties fell to secretary-treasurer Jeff Leusman. These officers led the club through an active year.

According to Tami, historically the club has kept its activities within the department; this past year, they have aimed for more campus and community involvement. For

example, club members volunteered for this year's Salvation Army Christmas Fund Drive. Some other club activities have had an environmental theme - the sale of T-shirts with the earth and "LOVE YOUR MOTHER" logo emphasized this. Plans are underway to become involved with the "Adopt a Stream" program, a newer version of the better-known "Adopt a Highway".

As part of the community outreach efforts, co-chair Bob Olson organized and led tours of the Life Sciences area for local elementary students. These tours, which included the geology and animal display cases, in addition to the greenhouses, are intended to familiarize the younger students with science in particular and college in general.

The Biology Club got off to a great start this fall as more than 100 students responded to an invitation to a mixer and election meeting. New officers for the coming year are: President - Birt Turnwall, Vice-President - Barb Beau and Historian - Beth Brandstrom. A variety of social and educational activities are being planned for the coming year including field trips, movie nights, hikes and snowshoeing. The club will continue its departmental duties and invites interested students to consider membership. The Biology clubroom is located in 235 LSci.



Biology Club Officers



Focus on:

For **Kris Saxrud**, fall quarter marks the end of a distinguished undergraduate career. A double major in Biology and Chemistry, she is finishing up the requirements for her B.S. while beginning work on her Master's degree in Chemistry. She is also serving as a teaching assistant in the Chemistry department.

Kris's undergraduate years have been distinguished by numerous accolades. As an honors student in Chemistry, she conducted a research project under Dr. Paul Andersen of the Biochemistry department. In the spring of '93, she was awarded the Gary E. Glass Award for excellence in Chemistry. While working as a research assistant with Dr. Randall Hicks, she spent August of '93 on the EPA vessel *Lake Guardian* as part of a crew taking bacterial samples of the Great Lakes.

Though unsure what direction her career will take, Kris hopes to eventually earn her Ph.D.



Kris Saxrud

AWARDS

Darcee Munsterteiger, a senior Biology major, has received a renewal for the 1993-94 James M. and M. Martha Ryan Scholarship.

T.O. Odlaug Award

Tammy Slinkard won the 1993 T.O. Odlaug Award from the Biology Department. Given in honor of a longtime former department head, the award recognizes high scholarship, leadership, and service to the department.

In 1993 Tammy was a senior biology major from New Prague, Minnesota. She was active in the Pre-Med Club for two years and she served as president this last year. She has been a tutor and undergraduate teaching assistant for Biology, and a mentor to other students for CSE's Women's Mentoring Program. Tammy has conducted research with Dr. Lois Heller in Physiology and Dr. Conrad Firling in Biology. She presented portions of the work she did with Dr. Firling at the National Conference of Undergraduate Research in March of 1993.



Dr. David Schimpf and Tammy Slinkard

The Odlaug Award consists of a reference book chosen by the student, inclusion on plaque in the Life Science Building, and a certificate. Tammy is currently enrolled in UMD's Medical School.

ALUMNI VIEWPOINT by Mark St. Louis

Through a correspondence survey, several alumni from the Biology Department have written describing their post-college pursuits. The questions asked if there really is life after UMD. From these respondents it is clear that there has been a high level of success achieved by many Biology graduates.

Some of the alumni are involved in the medical profession. **Brian Kobilka** was a graduate in 1977, and he went on to medical school at Yale and residency in Internal Medicine at Barnes Hospital in St. Louis. From there he gained a Research Fellowship at Duke University and went on to become an Assistant Professor of Medicine and Molecular and Cellular Biology at Stanford University Medical Center. Brian's most beneficial experience from UMD was "working with Dr. Firling on several research projects."

Cassandra Knoblauch graduated in 1988 and then went to Pharmacy School to become a Doctor of Pharmacy. She says that her years at UMD helped her "mature enough to make it through Pharmacy School." Also, she claims that it gave her good experience in lab work.

Thomas Herzig went to dental school after graduating in 1985. He says that after UMD, "jobs were plentiful, depended on where to locate." He also adds that his UMD Biology experiences were beneficial because "many dental school classes build on biology classes."

Other alumni have positions working with animals. **Terri Nord** went to the University of Minnesota College of Veterinary Medicine, and then achieved an internship at Angell Memorial Animal Hospital in Boston. Terri currently is a staff doctor at Framingham Animal Hospital in Massachusetts. The experiences at UMD, Terri says, have "helped shape my post college work ethic."

Lynn Gille graduated in 1989 and went on to graduate

school at Southern Illinois University at Carbondale, concentrating on animal behavior. Lynn says that a positive thing about the UMD Biology Department is that "the breadth of the program helps people keep from being too specialized too soon."

ALUMNI NEWS

Bernie Penner is a County Executive Director for Crow Wing and Cass Counties for the USDA's Agriculture Stabilization and Conservation Service. He is located at 512 N.E. C Street in Brainerd, Minnesota.

David Nessa (BA'90) is working as a Biologist Project Leader for ASCI Corporation in Duluth.

Scott Rauvola (BS'86) received his D.D.S. degree from University of the Pacific, San Francisco, California.

Beth Anderson (MS '83) edited the 2nd edition of *The National Wildflower Center's Handbook: A Resource for Native Plant Landscapes*. Beth is a resource botanist for the Center, located in Austin, Texas.

Mei-yao C. Lewis is a graduate of the University of Minnesota Veterinary School and is now employed as a mixed animal veterinarian in Plover, Wisconsin.

Jere Mossier is the producer and writer of educational videos for his company, Life Studies Productions, in Coeur d'Alene, Idaho.

Larry Skog (BA'65) is a curator of the herbarium at the Smithsonian Institute.

David Baker (BS'75) is employed by the Minnesota DNR as a programmer analyst. He provides computer programs for a variety of purposes including field services and fleet management.

Thomas Becker (BS'81) recently completed his residency and finished a fellowship in pediatric cardiology at Riley Hospital for Children, Indianapolis. He is currently in private practice in Des Moines, Iowa where he lives with his wife Caroline Boehnke Becker, who has a private practice in obstetrics and gynecology, and two young daughters.

Karla Fischer (BS'93) is a first year student at the University of Minnesota Medical School in Minneapolis.

Tammy Slinkard and **Cherie Homuth**, both '93 graduates of the department are first year students at UMD's Medical School.

Gifts and Donations

Our records show that the following alumni and friends made a donation to the Biology Gift Account or the Jack Hargis Lecture Fund during 1992. We appreciate their thoughtfulness and generosity.

Edward Bersu, Madison, WI
Jon Birch, Durhamville, NY
Margaret Dooley, Tuttle, OK
Mary Ebert, Cincinnati, OH
Edward Lance, Rochester, MN
Joy and Scott Eskuri, Rochester, MN
Julie Hustad, Fayetteville, NY
Christopher and Kara Jacobs, Sacramento, CA
Cynthia and Gary Johnson, Northford, CT

Julie Jordan, Hibbing, MN
David Lurye, Winter Park, CO
Steven Matejka, Woodbridge, VA
Joseph Mayasich, St. Paul, MN
Lawrence Peterson, Saginaw, MN
Margery Salmon, Cuttingsville, VT
Mark Schaberg, Maplewood, MN
Lorinda Stevens, Lakeville, MN
Gayle Stroup, Duluth, MN
Margaret, Thomas, Duluth, MN
Lloyd Turtinen, Eau Claire, WI
Timothy Velner, Duluth, MN
Paul and Janice Wicklund, Wayzata, MN

Continued "Department," from p.12 research projects engaged in by biology faculty and students. Departmental faculty have continued their many service contributions to the university, the state, and to regional, national, and international professional organizations.

Throughout this growth phase, the department and its faculty and staff have worked to maintain a "small university" atmosphere. Faculty continue to teach undergraduate laboratory sections, go on field trips with students, and work with both graduate and undergraduate student research projects. Many students and faculty continue to get to know each other on a one-to-one basis.

Continuing support from friends and alumni has made a real difference in our efforts to serve students well, especially during recent years when institutional funding has not kept pace with the growth of our program, activities, and numbers of students. On behalf of the students, faculty, and staff in Biology at UMD, I want to thank friends and alumni throughout the country for their generous contributions to the Biology gift account and the Jack Hargis Lecture Fund during 1992. We are deeply appreciative of your philanthropy. Last year the Biology gift account supported the T. O. Odlaug Award for outstanding Biology majors (see page 14), this newsletter, and the purchase of several items of audiovisual equipment for use in our classrooms. The lecture fund supported the visit to UMD by Dr. Kenneth Neelson, a well-known aquatic ecologist from the University of Wisconsin-Milwaukee.

Contributions may be made at any time to the Development Office, Darland Administration Building, UMD, Duluth 55812, earmarked "Biology Department" or "Hargis Fund." Donations to the Hargis Lecture Fund are used solely to fund the annual lecture visit to UMD of a distinguished environmental scientist. The department uses contributions to the gift account for a variety of purposes related to the undergraduate educational mission, and for preparing this newsletter. Of course, contributions may be earmarked for other particular educational or research uses in the department that you specify. We remind you that many corporations and organizations will match individual donations to educational institutions, and urge you to inquire whether your employer will match a contribution you might make to UMD Biology.

I send you, our friends and alumni, the best wishes of the Department and our thanks for your continuing moral and financial support. We always welcome a visit when you are in the region, or a letter or card letting us know where you are and what you are doing.

Ed. 2 No. 1; Fall/Winter '93-94

the Life Scientist

published by the
UMD Biology Department

Editor.....Linda Holmstrand
Student InternsTracy Giller
Mark St Louis
Typists.....Ruth Hemming
Karin Holmstrand
Photos.....Ken Moran
Linda Holmstrand
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ALUMNI UPDATE

(Please return so we can update our files.)

_____ New address

Name _____

Class of _____

Address _____

What's News? (promotions, special recognitions, change of job, civic involvement,
family, research activity, travel, etc.)

Detach and mail to:

Biology Department Newsletter
Life Science 211
10 University Drive
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Duluth, MN 55812