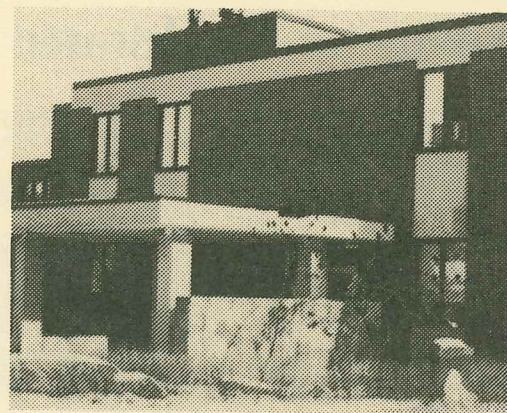


the

# Life Scientist

*UMD Biology Department News*



## Focus on Freshwater Research



Hershey



Hicks



Klemer



Niemi



Whiteside



Shannon

Six members of the UMD Biology Department, Professors Anne Hershey, Randall Hicks, Andrew Klemer, Gerald Niemi and Mel Whiteside and Research Fellow Lyle Shannon, focus their research in the area of freshwater biology. Associated with these department members are a number of other scientists, graduate students, and undergraduate students who are given an opportunity for hands-on research. The faculty members interests and methods are diverse as might be expected in this region where swamps, ponds, streams and small lakes as well as Lake Superior provide study sites for freshwater researchers. There are also possibilities for those working at UMD to collaborate with personnel at the Natural Resources Research Institute (NRRI) and the U.S. Environmental Protection Agency (EPA) laboratory both in Duluth, and with faculty members at other colleges and universities. Some do occasional contract work for agencies, thereby adding an applied science component to their basic research.

The Minnesota Sea Grant College Program has provided some of the funding for aquatic research. The Minnesota Sea Grant is a statewide program which funds projects related to Lake Superior and Minnesota's water resources. During the summer of 1990, for example, this program together with the National Undersea Research Center (NURC) funded researchers who used the submersible Johnson-Sea Link II, which has set records for the deepest dives in Lake Superior. The sub is transported to research sites aboard a 170 foot parent vessel, the R/V Seward Johnson. The Sea Link has been in use on Lake Superior since 1985, and Anne Hershey and Randall Hicks of UMD have both made use of it in research.

Other funding sources for aquatic research by UMD faculty have been the EPA, the National Science Foundation (NSF), the Legislative Commission on Minnesota Resources (LCMR), the Metropolitan Mosquito Control District (MMCD) and the University of Minnesota Graduate School.

One project with multiple facets studied by different researchers is being funded by the Metropolitan Mosquito Control District. New methods of controlling mosquitoes with Bacillus thuringiensis israelensis (Bti), a biological control, and with Methoprene, an analog of insect juvenile hormone, are being tested for possible side effects on other organisms. Researchers involved in studying these effects on non-target organisms are Gerald Niemi who is looking for possible side effects on birds, Anne Hershey who is looking for effects on other insects and Mel Whiteside and Lyle Shannon who are studying effects on zooplankton. Working on this project under Anne Hershey in her laboratory is Paul Mickelson, a graduate of UMD Biology's Masters Program. Working under Lyle Shannon on the effects on zooplankton are Mike King, Jr. Scientist, and Nancy Kirsh, a Sr. Laboratory technician and graduate of Macalester College. Their work involves studying samples collected in Wright County, Minnesota.

Former undergraduate and graduate student Gerald Niemi joined the faculty of the Biology Department in conjunction with his accepting of the position of Director of the Center for Water and the Environment at UMD's Natural Resources Research Institute (NRRI). The Center currently has more than 60 employees including scientists, technicians, students, and support personnel. The Center has

# Focus on Freshwater Research

more than 25 funded research projects ranging from the development of analytical techniques for detecting ultra-low concentrations of organic chemicals to ecosystem studies on effects of large herbivores on forest communities. The Center is primarily focused on understanding the environmental consequences of economic development of Minnesota's natural resources. Funding is obtained from a variety of sources including the National Science Foundation, the U.S. Environmental Protection Agency, Department of Energy, and a variety of state programs.

Jerry received the B.S. in 1974 and M.S. in 1977 from UMD, then the Ph.D. in Biology from Florida State University in 1983. While in the graduate program at Florida State, he was a Fulbright-Hays Scholar at the University of Helsinki, Finland. Although the bulk of Jerry's time is spent at NRRI, he teaches Ornithology for the department and serves on the Biology Graduate Program Committee. He is the advisor for several graduate students and serves as a vital link between the campus and the NRRI. Many students find biology-related employment at NRRI, both before and after graduation.

Other research by Lyle Shannon is funded by and carried out at the EPA laboratory in Duluth with the assistance of David Janssen, a 1986 UMD Biology Department MS graduate, and Nancy Kirsch. In that project the researchers develop aquatic microcosms to predict survival and ecological effects of introduced microorganisms, and then do field validations to compare results of the laboratory tests with the results obtained in outdoor aquatic environments.

Anne Hershey is currently involved in several projects besides the mosquito control study. One is to determine how sculpin (fish) become contaminated from feeding on prey near the bottom of Lake Superior. Hershey made a week-long trip on the Johnson/Sea-Link II in 1990, and both Jason McCrea, a Jr. Scientist, and Jeff Schuldt who is a new PhD student in Forest Resources at the St. Paul Campus and a former masters student here, made trips to the bottom of Lake Superior to collect sediment samples and sculpin and to make visual estimates of sculpin abundance.

Nan Allen, a new graduate student this year, is working with Jeff Schuldt on another of Dr. Hershey's projects, studying nutrient limitations of North Shore stream ecosystems. Nan first became interested in streams while conducting an Undergraduate Research Opportunity Project (UROP) last year.

Dr. Hershey continues to be involved in an arctic lakes and stream project in Alaska where she has returned for eleven years during the summer, and has involved a number of graduate students in studies of fertilization of small streams. Undergraduate student John Wheeler participated as a UROP student in 1990, and plans to return there this year.

Mel Whiteside spent last spring and summer collecting material for a study to determine how young fish affect near-shore zooplankton

communities, and how the interaction might change due to stream discharge. The study was partly funded by LCMR. Michelle Kuns, a first year graduate student, is working under his direction, on spacial distributions of zooplankton populations. Her research on freshwater biology began when she participated in an internship, working under Whiteside's direction, at Lake Itasca Biological Station, as part of her bachelors degree from UMTC. Roland Sigurdson, another first year graduate student, is looking at barge traffic on the Mississippi River and the harmful effects of this traffic on young fish. This work is being funded by the U.S. Fisheries and Wildlife Service. Mike King, with funding from the Sea Grant, has been following the potential invasion of Zebra Mussels into Lake Superior. Although this exotic mussel has been found in St. Louis Bay, it has not yet spread into the lake.

Dr. Whiteside is presently helping to develop 'Superior Lakewatch', which is a citizens' monitoring program for Lake Superior. The program is being organized by Whiteside together with Mary Balcer of UWS, Charles Kerfoot of Michigan Tech and scientists from the Ontario Ministry of the Environment. It will be administered through the Lake Superior Center in Duluth, with the support and cooperation of EPA, National Park Service, Sea Grant Programs of Michigan, Wisconsin and Minnesota, Minnesota DNR, U.S. Fish and Wildlife Service and the NRRI. Information regarding this program is available through the Lake Superior Center; 353 Harbor Drive; Duluth, MN 55802.

Andrew Klemer is the lead scientist in a research project on nutrient interactions affecting blue-green algal (Cyanobacterial) dominance in lakes, which was funded recently by NSF. Collaborating in the research is Allen Konopka of Purdue University. The project will feature lake experiments, in conjunction with the Experimental Limnology Section of the Freshwater Institute in Winnipeg, Manitoba, and UMD laboratory experiments. The project is based on experiments and hypotheses that Klemer has been invited to discuss at several scientific meetings recently.

Michael Mageau and Grace Tinderholt, graduate students in Biology, participated in lake experiments at the Experimental Lakes Area in northwestern Ontario during June and July as part of Andy Klemer's NSF sponsored research on blue-green algal dominance in eutrophic lakes. Randy Mahlberg, an undergraduate biology major, worked on a summer project in this area, supported by an Honors Program stipend.

Randall Hicks, a microbial ecologist, has made use of the Johnson-Sea-Link II during the past three summers to collect material for his study on heterotrophic bacteria in Lake Superior and their role in decomposition of organic matter. Besides a weeklong cruise in 1990 there were additional dives in which Peter Aas and David Pascoe, graduate students, participated in studying the bottom of Lake Superior. David Pascoe has also been working

See Research page 4

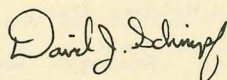
# Happenings in the Department

## From The Department Head

It is a pleasure to acknowledge publicly the contributions made in 1990 to the Biology gift account or the Jack Hargis Lecture Fund. Although scheduling obstacles prevented us from sponsoring a Hargis Lecture in 1990, we expect to hold this event in 1991. The Biology gift account was used in 1990 to add a videotape player and two slide projectors to the department's instructional equipment. These are improving our presentations to a large number of students. In combination with ongoing support by the campus administration, the gifts from friends and alumni provide for continuing betterment of our educational product. The gift account also allows us to bring this newsletter to you. Finally, the gift account funds the T.O. Odlaug Award for outstanding undergraduate Biology majors (see page 5).

We appreciate all of the votes of confidence that we get. Those who cast those votes in monetary form during 1990 are listed below. I hope we didn't forget anyone. Contributions may be made at any time to the Development Office, Darland Administration Building, UMD, Duluth, MN 55812, earmarked "Biology Department" or "Hargis Fund".

William Bellamy, Duluth, MN  
Edward Bersu, Madison, WI  
Jon Birch, Durhamville, NY  
Daniel Croke, Duluth, MN  
Lorinda Doesken, Woodbury, MN  
Margaret Dooley, Tuttle, OK  
Mitchell Forstie, St. James, MN  
Betty Foster, Crystal, MN  
Bruce Highland, Jr., Two Harbors, MN  
Kenneth Holmstrand, Cloquet, MN  
Julie Hustad, Fayetteville, NY  
Christopher Jacobs, Tucson, AZ  
Donn Johnson, Fayetteville, AR  
Gary Johnson, Northfield, CT  
John Kohlstedt, Finland, MN  
Edward Lance, Rochester, MN  
Philip Loucks, Tampa, FL  
David Lurye, Winter Park, CO  
Joseph Mayasich, Somerset, NJ  
Beth Middleton, Carbondale, IL  
Lawrence Peterson, Saginaw, MN  
Margery Salmon, Shrewsbury, VT  
Daniel Sherry, Ellsworth, WI  
Richard Subra, Duluth, MN  
Timothy Velner, Duluth, MN  
Steven Wilkowski, Aitkin, MN  
Arthur Zehm, Superior, WI



## Faculty Members Promoted

Among the UMD faculty who received promotions and tenure effective in 1990-91 academic year were the following biology department members: Promoted from associate professor to full professor were Donald P. Christian, Conrad E. Firling, Stephen C. Hedman and Andrew R. Klemer. Anne E. Hershey was promoted from assistant professor to associate professor with tenure.

## Faculty and Staff — 1990-1991

George E. Ahlgren, Associate Professor  
Donald P. Christian, Professor  
Hollie L. Collins, Professor  
Conrad E. Firling, Professor  
Helen B. Hanten, Assistant Professor  
Stephen C. Hedman, Professor  
Anne E. Hershey, Associate Professor  
Randall E. Hicks, Assistant Professor  
Linda L. Holmstrand, Associate Professor  
Larry D. Hufford, Assistant Professor  
Andrew R. Klemer, Professor  
Paul H. Monson, Professor Emeritus (Herbarium)  
Gerald Niemi, Associate Professor  
David J. Schimpf, Associate Professor & Head  
Lyle J. Shannon, Research Fellow  
Melbourne C. Whiteside, Professor

Ruth Hemming, Sr. Secretary  
Phyllis Jensen, Accounts Supervisor  
Mike King, Jr. Scientist  
Nancy Kirsh, Jr. Laboratory Technician  
Jason McCrea, Jr. Scientist  
Bette McNamara, Lab Services Coordinator  
Paul Mickelson, Jr. Scientist  
Pat Oman, Jr. Laboratory Technician  
Deb Shubat (Shuby) Greenhouses Director  
Dan Weaver, Sr. Laboratory Technician

Dr. Conrad Firling received three research grants to fund his studies of the relationship between aluminum toxicity and embryonic bone development. Dr. Firling received an Academic Research Achievement Award of \$90,000 from the National Institutes of Health, National Institute of Environmental Health Sciences for the project "Embryonic Bone Formation during Aluminum Toxicity". He also received a NIH Equipment Grant of \$4,800 and a grant of \$4,200 from the University of Minnesota Graduate School. The research will investigate the influence of aluminum upon embryonic bone growth and differentiation, biochemical markers of skeletal tissue formation, and levels of hormones and other agents known to regulate bone development. The results of the research may provide information on aluminum induced embryonic skeletal abnormalities.

Dr. Firling has also been selected a faculty project leader for the Research Explorations (REX) Program for Secondary School Teachers administered by the University of Minnesota, Twin Cities, Continuing Education and Extension Program. The REX program is sponsored by grants from the National Science Foundation and the US Department of Education of the University of Minnesota. The program will provide twenty secondary teachers the opportunity to participate in ongoing research projects in the sciences and social sciences under the direction of University of Minnesota faculty.

Helen Hanten was selected for the UMD Study in England Program at Birmingham, England, where she instructed two courses during the Fall 1990 academic quarter for the program, Biology and Society, and Biological Principles/Contemporary Issues. This was the second time that Prof. Hanten was selected for the program.

# Happenings in the Department

## Research continued

in Hicks' laboratory to develop a method for estimating similarity of bacterioplankton communities using DNA probes and nucleic acid hybridizations.

Pat Oman and Dan Weaver are technicians working in Hicks' laboratory on separate projects. Pat analyzes the neutral sugar composition of sediments, plants and plankton from Lake Superior for projects funded by Sea Grant and the National Undersea Research Program. Dan worked in early 1990 at measuring bacterial densities and production for a project at the Duluth EPA laboratory, and was later transferred to another project funded by EPA (Washington) to investigate microbial recycling of contaminants at the sediment-water interface in freshwater.

Christine Wendt Jankovich has worked in Hicks' laboratory for two years as an undergraduate, and together with graduate student Peter Aas, co-authored a paper with Hicks, which he presented at the 1990 Ocean Sciences meeting in New Orleans. The paper was entitled "Relationship Between Thymidine Incorporation and the Frequency of Dividing Cells in Lake Superior".

In another project Dr. Hicks has been investigating the influence of Guthion, a pesticide, on bacterial density and production at the EPA experimental ponds near the airport, in collaboration with EPA lab researchers.

Members of Dr. Hicks' laboratory staff made about a dozen trips on Lake Superior during 1990 using a new UMD research vessel. The boat was designed and equipped specifically for research on Lake Superior. It has a twenty five foot aluminum hull and a single inboard Ford V-8 engine with jet drive. The boat, as yet un-named, is equipped with LORAN navigation, a depth sounder, VHF radio, a davit with single spool electric salmon gurdie and two hundred meters of wire cable, and an A-frame capable of supporting at least one thousand pounds, pivoting a load onto or from the rear deck, using hydraulic pistons.

Dr. Hicks assisted in developing an operation and maintenance plan for the vessel and also serves on the Research Boat Coordination Committee.

In January 1990 Dr. Hicks was appointed as the Sea Grants new co-ordinator for the coastal and environmental processes sub-program.

All of these folks are spending a significant amount of their work time on the study of freshwater biology. Most of the collecting is limited by seasons, but the examination of specimens, analysis of data, laboratory experiments, grant writing, preparation of reports and articles for publication and writing of theses by graduate students are all part of the year-around efforts in the UMD Biology Department.

## Monson Continues in Herbarium

Despite his retirement as a UMD faculty member in spring 1990, Dr. Paul Monson is still upgrading and updating the Olga Lakela Herbarium. Undergraduate assistants have been assisting with the backlog of specimens to be accessed. When this is complete the herbarium will house over 40,000 specimens. Dr. Monson has been continuing with his studies of flora of northern Minnesota, especially marsh and aquatic species, and has been doing contract work with the National Park Service preparing a report on relative abundance of vascular plants in Voyageur's National Park (600 + species) and in Grand Portage National Monument (260 + species). He also works as a volunteer with the Superior National Forest providing help with identifications, and doing field surveys in areas where rare or endangered plants may be present. He expects to become involved in field training for Forest Service Staff who are not familiar with the plants in their work areas. In the area of teaching, Dr. Monson taught an Elderhosted program at Gunflint Lodge in September 1990 and expects to be involved in another week-long program this May. (Sounds like a busy retirement!)

Students working with Dr. Paul Monson in the Olga Lakela Herbarium include George Perslin, a junior majoring in Biology, who is working on herbarium development. During the past summer George was involved in a project mapping the location of all specimens of cultivated woody plants on the UMD campus; Mary Stromdahl, a sophomore in library science is particularly valuable as an assistant to Dr. Monson because of her ability to read his handwriting and turn field notes into herbarium labels. Mary is married, has two children and is president of the Humane Society of Duluth; Dan Townsend, who graduated in November 1990 with a BS degree in Biology, worked particularly with flora of Grand Portage National Monument, and did independent work on plants of Clearwater County (MN) during the summer of 1990.

Deb Turner is a junior majoring in Sociology/Criminology, who is a student worker in the UMD greenhouses under Deb Shubat. Deb has just returned to UMD after five years away, some of it spent in Charlotte, NC. She finds she really likes working with plants and the "great" people in the department. (!)

Russ Sticha who expects to complete requirements for a BS degree in Biology in May, 1991, has been accepted to the College of Podiatric Medicine and Surgery at the University of Osteopathic Medicine in Des Moines, Iowa.

Five Biology majors were honored by the UMD Department of Intercollegiate Athletics for earning the highest grade point averages in their sports during 1989-90. They are: Jason Bortulussi, hockey, Thunder Bay, Ont.; Brian Johnson, men's track and field, Chisago City, MN; Kristen Nelson, women's basketball, Duluth; Paul Shromoff, men's golf, Two Harbors, MN; and Shannon Wright, women's cross country, Maple Grove, MN. Paul Shromoff also won Academic All-America honors for his combined athletic and academic performance.

# Undergraduate Education

## Congratulations 1990 Graduates!



**Sue Vanschaick**

### T. O. ODLAUG AWARD

The 1990 T.O. Odlaug Award for the outstanding student in biology was presented to Sue Vanschaick. The criteria for this annual award, named after our former longtime department head, are outstanding scholastic achievement and service to the Biology Department. The Biology faculty choose the awardees, who receive a reference book of their choice and engraving of their names on a plaque displayed in the Life Science Building. A stalwart member of the Biology Club, Sue received a B.S. major in Biology. She is now a first-year student in the UMD School of Medicine, and chose to receive Atlas of Human Anatomy by Frank Netter.

### UROP Awards

Congratulations to the students who submitted proposals to the Undergraduate Research Opportunities Program (UROP), whose proposals were chosen for funding.

A UROP award carries a stipend of \$750 and an expense allowance up to \$250 depending on the nature of each project.

Following are the UROP award winners, their departments, project titles, and the faculty member with whom they will work:

Mark W. Anderson (Dr. Don Christian): Effects of Associated Anions on Avoidance of High  $K^+$  Diets by Meadow Voles.

Brian G. Johnson (Dr. George Trachte): Neuromodulatory Effects of CANF in the Rabbit Vas Deferens.

Ed O. Reese (Dr. Don Christian): Boreal Owl Food Habits during the Nesting Season in Northeastern Minnesota.

John T. Tonsager (Dr. Jean Regal): Effect of Depletion of White Cells and Platelets on the Mediators of C5a Induced Airway Contraction.

John Wheeler (Dr. Anne Hershey): Effects of Predatory Caddisflies on Prey Density.

Daniel Brekken (Dr. Stephen Hedman): Isolation and Characterization of Mitochondrial DNA from Fathead Minnows.

### B.S. Degrees in Biology

Julie Amesbury  
Laura Angelo  
Suzanne Boase  
Timothy Harold  
Elizabeth Hemmersbaugh  
Valerie Hess  
Gunnar Johnson  
Yoshihiro Kagami  
Julie Kelm  
Lyne Lincowski  
Valerie Lindbeck  
Francis Misiak  
Jill Moland  
Mark Neva  
Willard Niemi  
Kimberly Noyes  
Patry Oman  
David Pascoe  
David Pond  
Susan Randall  
Sherry Scheie  
Paul Skromoff  
David Smart

Joyce Staples  
Daniel Stingle  
Daniel Townsend  
Mary Ulmer  
Susan Vanschaick  
Daniel Weaver

### B.A. Degrees in Biology

Karen Amlie  
Douglas Ellingsen  
Milan Fillmore  
Martha Larson  
David Nessa  
Timothy Patterson  
Deborah Pomroy-Petry  
Paul Ramnarine  
Sherry Scheie

### BAS Degrees, Teaching Life Science

Robert Naughton  
Cherokee Roza  
James Schneider  
Robin Whaley

### HONORS PROGRAM

Among undergraduate students who received summer stipends in the CSE Honors program were Lyle (Randy) Mahlberg who worked under Dr. Andrew Klemer on "Blue-green Algal Dominance", and Kristin Sufka who is working with Dr. Conrad Firling on "Effects of Aluminum on Blood Coagulation in Chick Embryos".

Also studying the effects of aluminum on chick embryo development under the direction of Dr. Firling were Dan Brekken, funded by part of a NIH grant, and Andrea Converse whose research was funded by the Indians into Research Careers Program of the UMD School of Medicine.

Three biology undergraduate students will present the results of research conducted in the UMD Biology Department at the Fifth National Conference for Undergraduate Research (CUR) at the California Institute of Technology, Pasadena California, on March 20-24, 1991. William R. Schutt, working under the direction of Dr. Donald P. Christian will present a poster titled "Studies on Adrenal Gland Morphology in Meadow Voles". Michelle D. Marko and Kristin M. Sufka, working in the laboratory of Dr. Conrad E. Firling will present a poster titled "The Influence of Aluminum Upon Embryonic Bone Calcification". Ms. Sufka will also present a poster titled "Reduced Prothrombin Time in Aluminum-Treated Chick Embryos".

### Darland Scholarship

Christine Wendt Jankovich was the recipient of a Raymond W. Darland All-American Scholarship for 1990-91. The \$1,400 scholarships are awarded annually to outstanding UMD juniors. Christine has academic majors in both Biology and Chemistry. Christine has been working in the research lab of Dr. Randall Hicks for two years and was a co-author of a paper presented at the 1990 Ocean Sciences Meeting.

# Graduate Studies

## Congratulations Graduates!

M.S. DEGREES, 1990

Mary Schubauer-Berigan. Thesis: Abundance, production and mercury resistance of bacteria in the surface microlayers and water columns of Lake Superior, the Duluth Harbor, and the St. Louis River.

Andy Goyke. Thesis: The effects of fish predation on Chironomid Communities in Arctic lakes.

Jeff Schuldt. Thesis: Daily ration estimates for young-of-the-year yellow perch and sunfish from Lake Itasca, Minnesota.

Brian Wolff. Thesis: Effects of aluminum ingestion on reproductive success in Japanese quail.

Kristin Schmidt. Thesis: Winter feeding of porcupines in a protected stand of Eastern Hemlock in northeastern Minnesota.

Greg Schmidt. Thesis: Effects of dietary sodium and potassium content on gut morphology of captive meadow voles.

Debra Hinterleitner-Anderson. Thesis: The effects of river fertilization of mayfly (Baetis sp) drift patterns and population density in an arctic ecosystem.

## Graduate Students

Nineteen new and returning graduate students in Biology were in attendance Fall quarter 1990. All are either teaching assistants or research assistants, or else are in final stages of their programs. In attendance are:

Peter Aas	Susan Olson
Nan Allen	Dave Pascoe
Pam Elf	Charles Rose
Ivy Foo	Marlys Reuvers
Pat Collins	Jeff Schuldt
Kristi Hanson	Scott Stai
Cal Harth	Jo Thompson
Michelle Kuns	Grace Tinderholt
Mike Mageau	Joe Whittaker

The Department was saddened by the sudden death of graduate student Bert Wendling in November 1990. He was working on his masters degree in environmental biology.

Pam Elf still drives the 80 miles from and to McGregor, MN each day, but she promises to have completed the writing of her thesis by the time you read this newsletter. Her thesis research, supervised by Dr. Conrad Firling, involved the effects of aluminum and/or fluoride on bone cells maintained in cell culture. Pam will present the results of her research at a conference on the "Molecular Basis of Bone Physiology, Transcellular Signaling", in April at the Washington University School of Medicine, St. Louis, MO.

The Graduate Program in Biology offers study leading to the M.S. degree with or without thesis. The degree is awarded by the Graduate School of the University of Minnesota. The program draws its faculty from the Department of Biology, the School of Medicine, and the Natural Resources Research Institute, all part of the Duluth Campus of the University.

PLAN A -- This program is research-oriented, and recommended for those who wish to concentrate on some specific aspect of biology (Botany, Cellular and Physiological Biology, Environmental Biology, or Zoology). Requirements include coursework in one of these four areas of concentration and in a minor or related field, plus the thesis.

PLAN B -- This program serves those seeking a background in a greater variety of subjects. More course credits are required than for the Plan A, and one of these must be in non-Biology courses. One or more Plan B projects must also be completed.

The Graduate Program in Biology draws its faculty from the Department of Biology, the School of Medicine, and the Natural Resources Research Institute, all part of the Duluth Campus of the University. Faculty other than those from the Biology Department include:

Alice Adams-School of Medicine-Molecular Biology  
Richard Axler-NRRI-Aquatic Ecology  
Stephen Downing-School of Medicine-Cell Biology  
Donna Forbes-School of Medicine-Neurobiology  
Richard Leino-School of Medicine-Cell Biology and Histopathology  
Michael McDonald-Chemical Engineering-Ecology of Fishes

David Mladenoff-NRRI-Plant Ecology  
John Pastor-NRRI-Ecosystems Ecology  
Lillian Repesh-School of Medicine-Bio med Anatomy  
Arlen Severson-School of Medicine-Cell/Developmental Biology

## Hedman Appointed

Effective December 15, 1990, Dr. Stephen Hedman was appointed UMD Associate Dean of the Graduate School. This is a 50% time administrative appointment which means his UMD Biology Department appointment has been reduced to 50% time. During the summer of 1990 Dr. Hedman served as a test consultant for the Educational Testing Service for the purpose of designing and writing questions for the Cell and Molecular Biology section of the Graduate Record Examination. In November, 1990, Dr. Hedman demonstrated his chromosome analysis software program MacChromosome<sup>TM</sup> at the Instructional Technology Fair sponsored by the University of Minnesota Medical School. In current research, preliminary approval has been given to an EPA project entitled "Metal Toxin Introductions with DNA, RNA and their Nucleic Bases" on which Dr. Hedman expects to work with other principal investigators from the EPA Water Quality Laboratory.

# Graduate Studies



Jo Thompson

## Outstanding TA Award

The 1990 Outstanding Biology TA award was presented to Jo Thompson in May of her second year as a TA. She particularly enjoyed teaching botany. Her thesis research is in the area of algal toxicity. Congratulations, Jo!

Patrick T. Collins, Biology graduate student and research assistant at the Natural Resources Research Institute, had a paper "Surviving the Winter: The Physiology of Thermoregulation in Winter Birds" published in the Passenger Pigeon.

Peter Aas will finish his graduate coursework in winter 1991 and hopes to finish his thesis on "degradation of natural organic matter by Lake Superior microbes" by mid summer. He hopes to continue aquatic research on Lake Superior.

Kristi Hanson is completing her thesis, "A Comparison of Slimy Sculpin Populations in Arctic Lakes", and preparing for a 10-week missions trip to Eastern Europe and the Soviet Union. She'll be spending this spring: teaching christian youth-leaders wilderness techniques in the mountains of Romania and Poland, accompanying a World Vision team to film the medical treatment of young Chernobyl victims, providing logistical support for a scientist on a university speaking tour, and assisting on various other projects. She'll then return to Summit Adventure in June to spend another summer leading trips in the Sierra Mountains. Fall and beyond is a big "?", but settling down is not a probable option!

Marlys Reuvers, a first year graduate student and teaching assistant, is planning her master's program in environmental biology under the direction of Dr. Don Christian. She has had extensive experience as a teacher, a guide for wilderness outings, and supervising student volunteer trail crews in summer work in Voyagers National Park. She says her own favorite toys are a solo canoe, a mountain bike, cross country skis, snowshoes, a backpack and a compass, and a dog-selene.

Joe Whittaker came to UMD from De Pauw University in Guencastle, IN, where he participated in biology programs in forest ecology of Colorado, marine mammals in Maine, primate behavior in Mexico and winter ecology at the Northwoods Audobon Center, Sandstone, MN. After graduation from De Pauw he attended the UM Biological Field Station at Itasca where he started a field project under Dr. Don Christian of UMD. Joe is continuing that project as a master's student under Dr. Christian at UMD.

## GRADUATE ALUMNI NEWS

Beth Middleton, M.S. '83, is an Assistant Professor of Plant Biology at Southern Illinois University-Carbondale. She is spending the first three months of 1991 as a Fulbright Fellow in India.

Nancy Larson, M.S. '85, works in water resources management for the Wisconsin DNR in Spooner. She is the Wisconsin coordinator for the St. Louis River Remedial Action Plan.

Jeff Schuldt is enrolled in a Ph.D. program in Forest Resources, University of Minnesota-St. Paul.

Tom Manning and Meg Shaughnessy moved from Bishop, CA, where Tom had been studying bighorn sheep and Meg had been working on a variety of research projects, to the Sequim, Washington. Tom's new job involves assessing the small-mammal prey base for spotted owls. Meg worked on this project during the summer and presently is exploring other opportunities.

Kristin Schmidt and Greg Schmidt have been living and working in northern California where they have been working with the USDA Forest Service on spotted owls.

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WE WOULD BE DELIGHTED TO HEAR FROM YOU and in particular ask you to let us know of:

News of yourself \_\_\_\_\_

Name \_\_\_\_\_ Degree and year (if applicable) \_\_\_\_\_

Address \_\_\_\_\_

Information or addresses of other friends or alumni who would like to receive newsletters \_\_\_\_\_

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Send the above information to the newsletter editor at the department address on the mailer.

Alumni and friends who wish to contribute to the Hargis lecture series or to undesignated support of the department are urged to do so. Such contributions may be sent to the UMD Biology Department.

# Alumni Notes

Kim Pulling, a 1988 Biology graduate, is currently in a Ph.D. program at the University of Idaho in molecular biology and microbiology.

Monica Madden, a 1989 Biology graduate, is currently employed as a research assistant in the Nutritional Chemistry Section of Hazelton Laboratories in Madison, Wisconsin.

Dan Fitzsimmons, a 1986 Biology graduate, is currently a secondary school teacher in Lew Beach, New York.

Russell Turner, a 1990 Biology graduate, has now entered the Logan College of Chiropractic Medicine in Chesterfield, Missouri.

Lynn Gillie, B.S. 1989, was awarded a doctoral fellowship in animal behavior at Southern Illinois University, Carbondale, IL, beginning fall 1990.

Dr. William J. Schmidt II, B.S. 1977, is working at the Shell Development Company in Houston as a research engineer in the area of process control and modeling. He says not too many UMD grads make it to Houston! Address: 2206 Old Dixie Dr., Richmond, TX 77469.

Jeff Engelsingjerd, B.S. 1983, sent word of his graduation from U of MN Medical School in June 1990. From there he transferred to the U of Nebraska Medical Center in Omaha, NE to begin residency training in urologic surgery.

Brian Sullivan, B.S. 1985, has completed his work at Iowa State University and is now with the Wisconsin Cooperative Wildlife Research Unit. Address: 226 Russell Labs; UW Campus; Madison, WI 53706.

Steve Hughest, a 1988 Biology graduate, has recently been accepted in the M.D.-Ph.D program at the Mayo Medical School.

Susan Vanschaick, a 1990 Biology graduate, is a first year medical student in the UMD Medical School.

## SEMINARS

Biology Department Seminars presented during fall and winter quarters 1990-91 have included:

John O'Brien, University of Kansas, "Implications of Saltatory Search, a Newly Recognized Foraging Strategy"

Ned Friedman, University of Georgia, "Double Fertilization in Ephedra and its Bearing on the Origin of Flowering Plants"

Don McNaught, Department of Ecology and Evolutionary Biology, UMTC, "Innovative Zooplankton Bioassays: Toward an Ecosystem Approach"

Richard Leino, Department of Anatomy and Cell Biology, UMD, "Environmental Acidification: Effects on Fish"

Jay Hatch, General College and Bell Museum of Natural History, UMTC, "Fish Life Histories: Matching Empirical Data to Theory"

Joseph DiSalvo, Department of Physiology, UMD, "The  $^{60}\text{C}^{-32}\text{P}$  Tyrosine Kinase: Fact and Fancy"

Kristi Hanson, Department of Biology, UMD, "A Comparison of Slimy Sculpin (Cottus cognatus) Populations in Eight Arctic Lakes"

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