

the

# Life Scientist

*UMD Biology Department News*

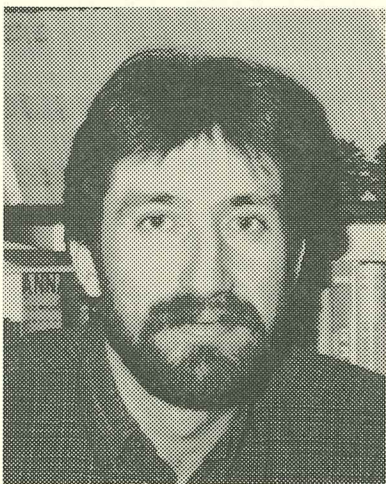


## Dr. Paul M. Monson Retires From Teaching

Dr. Paul M. Monson is looking forward to retirement at the end of May, 1990, but has no plans to change his lifestyle or residence at that time or in the foreseeable future. He will be keeping a "fist in the pot" by virtue of remaining the curator of the Olga Lakela Herbarium at UMD. He has finished his study of the flora of Grand Portage National Monument, and has no further contract obligations. However, according to Monson, "There are unnumbered thousands of places in northern Minnesota (not to mention elsewhere) where I can be kept occupied for hours and days

with questions about 'what grows here?'. He expects to do a lot of poking around in lakes and swamps, among other habitats, with some emphasis on the rare and endangered flora. An unusually large number of previously unknown (at least in this area) "goodies" pop into view when snorkling, most of which is passed off as "yuck" by swimmers, but Monson has discovered that by taking time for close examination, one can be delighted by what is to be found there. Much of his recent interest has been in the Itasca County area

See MONSON, Page 3.



## Botanist Larry Hufford Joins UMD Faculty

Dr. Larry Hufford, a new member of the UMD Biology Department faculty this year, has research interests in understanding the relationships between evolutionary patterns and processes and how these are interpreted in systematics; he is primarily interested in the roles of developmental changes in creating diverse evolutionary patterns; most of his research has focused on the evolution of flowers.

Dr. Hufford grew up in Iowa and attended Iowa State University (1976-1980) as a Botany major. He was a PhD student at the University of California, Berkeley, (1980-1986); his PhD dissertation was on the evolution of flower developmental patterns and the roles of particular developmental changes in creating different conditions for reproduction; his dissertation focused on *Eucnide* (Loasaceae), a genus composed of a small number of species distributed in arid regions of the southwestern United States and Mexico.

Dr. Hufford held a postdoctoral

position at the Institute of Systematic Botany, University of Zurich, Switzerland (1986-87); this research involved the evolution of flower structure among primitive flowering plants. He returned to the United States early in 1988 for a position as a Visiting Assistant Professor in the Department of Botany at the University of Kansas where he taught plant anatomy.

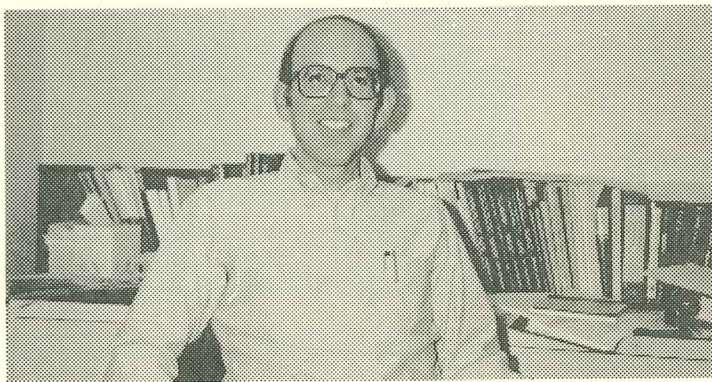
In 1988 Dr. Hufford received a National Science Foundation Postdoctoral Fellowship; he remained at Kansas for part of this work, and went to the University of Arizona at Tucson at the beginning of 1989 to continue the fellowship research.

Since arriving in Duluth, Dr. Hufford has continued the research for his NSF Fellowship. He will begin teaching duties spring quarter, 1990. His courses will include those in systematics previously taught by Dr. Paul Monson and morphology courses, an area previously covered by Dr. John Carlson who retired in 1988.

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# Happenings in the Department



Dr. David Schimpf is adjusting to his new post as Department Head while continuing to teach General Ecology and General Biology. During the summer of 1989 he evaluated the vegetational effects of wastewater discharge into a bog. The city of Biwabik, MN, recently began passing its treated domestic sewage effluent through a large peat bog, in an effort to improve water quality downstream in Embarrass Lake. Funding came from the EPA, Minnesota PCA, and IRRRB.

Dr. Don Christian has completed his four year term as an editor of the Journal of Mammalogy, and is looking forward to having more time to devote to his own research. Four of his graduate students completed degrees in the last year so he has been kept busy reading theses. He taught a course in Field Studies in Mammalogy at Lake Itasca Biological Station last summer and will teach the course again in 1990.

Dr. Andy Klemer is the lead scientist in a research project, "Nutrient interactions affecting blue-green algal dominance in lakes", recently funded by the National Science Foundation. Total NSF funding for the project is \$250,000 over three years of which \$171,500 will come to UMD. The project will feature lake experiments in conjunction with the Experimental Limnology Section of the Freshwater Institute at Winnipeg, Manitoba and laboratory experiments at UMD. Graduate students Michael Mageau, JoAnn Thompson and Grace Tinderholt will be involved in both lake and laboratory aspects of the study.

Dr. Randall Hicks has had two proposals funded this year. One is to study bacterial community changes and polysaccharide biogeochemistry in Lake Superior, funded by the Minnesota Sea Grant College Program. The other is to study the biological community of Lake Superior - the land/water interface, funded by Minnesota Future Resources Commission. During Fall 1989, while Randy was on quarter leave, he gave two presentations at other universities, and spent five weeks at the U. of Illinois where he learned molecular methods of assessing microbial diversity.

Dr. Steve Hedman's current research interests are in fish cytogenetics using fathead minnows, white suckers, largemouth bass, and yellow perch. MacChromosome<sup>TM</sup>, a computerized chromosome analysis program which he helped develop, is now being marketed by Media Distribution, University of Minnesota. The program is applicable both in research and teaching. In September Steve presented

a lecture on biotechnology for UMD's University for Seniors, a new program for persons over 50.

Dr. Anne Hershey has received continued financial support for the research using the submersible in Lake Superior this summer. The research is to study the PCB transfer through the benthic food web and to the fishes. Anne is also still involved in the arctic project and in the mosquito project. The year has been an especially busy one with the arrival of daughter Eileen born December 13.

Dr. Mel Whiteside is still doing research at Lake Itasca, Minnesota, and has begun a research project on Lake Superior in conjunction with a project sponsored by the State of Minnesota to scientists at NRRI, UMTC, and UMD-Biology (Hicks and Whiteside). The study involves feeding relationships between zooplankton and larval fish. The overall project is to study transfer of materials from the watershed to the lake. Sampling will begin in April, ice permitting.

Prof. Helen Hanten is looking forward to teaching in the UMD Study in England Programme in Birmingham, England fall quarter 1990. She will be teaching courses in Biology and Society, and Biological Principles/Contemporary Issues. The program is designed for 50 UMD students to spend a year of their undergraduate studies in England when courses taught both by UMD faculty and U. Birmingham faculty are adapted for the English setting.

Lyle Shannon currently has two research projects going. One is an evaluation of the effects of mosquito control agents, methoprene and Bti on zooplankton communities, funded by the Metropolitan Mosquito Control District. The other involves development and field validation of laboratory microcosms for testing and survival and effects of introduced microorganisms, funded by the USEPA. In his spare time Lyle takes care of the departmental computer problems.

## SEMINARS

Biology Department Seminars provide opportunities for the academic community to hear Biology Department faculty, graduate students, and outside speakers present and discuss their research. Seminars during fall and winter quarters have included the following speakers and topics:

DR. J. W. SUTTIE, Department of Biochemistry, University of Wisconsin, Madison - "Mechanism of Action and Control of the Vitamin K-dependent Carboxylase". Cosponsor: Biochemistry

DR. ROBERT TAMARIN, Biology Department, Boston University - "Kinship and Population Regulation in Voles".

DR. CARL WATRAS, Center for Limnology, University of Wisconsin - "The Acidification of Little Rock Lake: Current Status".

DON RUBBELKE, St. Joseph, MN - "Photography and the Biologists". Don teaches the Nature Photography course at the University of Minnesota, Lake Itasca Biology Session.

# Happenings in the Department

## From The Department Head

On behalf of the students, faculty, and staff of the department, I want to publicly thank those of you who made contributions in 1989 to the Biology gift account or the Jack Hargis Lecture Fund. The Hargis fund allows us to sponsor a visiting lecturer each year. This year's event, featuring Dr. Joseph Shapiro, is profiled on page 3. The gift account serves a variety of other purposes. In 1989 we received University funds to replace a set of compound microscopes used in advanced courses. By drawing upon the gift account, we were able to equip those instruments with an oil-immersion lens of higher quality, giving sharply improved images at high magnification. We are grateful to the alumni and friends whose generosity helps us achieve educational excellence.

Those who contributed in 1989 are listed below. I apologize if your name was omitted through an oversight in record-keeping. Contributions may be sent at any time to the UMD Development Office, Darland Administration Building, designated for "Biology Department" or "Hargis Fund".

David Bearman, Memphis, TN  
William Bellamy, Duluth, MN  
Edward Bersu, Madison, WI  
Jon Birch, Durhamville, NY  
Beverly Cackoski, Hibbing, MN  
Daniel Croke, Duluth, MN  
Kirk Davidson, Duluth, MN  
Barbara Davy, St. Paul, MN  
Lorinda Doesken, St. Paul, MN  
Margaret Dooley, Tuttle, OK  
Mary Ebert, Cincinnati, OH  
Mitchell Forstie, St. James, MN  
Julie Hustad, Fayetteville, NY  
Christopher Jacobs, Tucson, AZ  
Donn Johnson, Fayetteville, AZ  
Gary Johnson, Northfield, CT  
Julie Jordan, Hibbing, MN  
Elsa Nisswandt Keeler, Shoreview, MN  
John Kohlstedt, Finland, MN  
Edward Lance, Rochester, MN  
Philip Loucks, Tampa, FL  
Joseph Mayasich, Somerset, NJ  
William McCollough, Corvallis, MT  
Beth Middleton, Ames, IA  
Rodney Mowbray, LaCrosse, WI  
Richard Osgood, St. Paul, MN  
Pelican River Watershed District,  
Detroit Lakes, MN  
Mark Schalberg, Maplewood, MN  
Jane Dickson Schnabel, New Brighton, MN  
Daniel Sherry, Ellsworth, WI  
Harold Swennes, III, Buhl, MN  
Francis Trcka, Sheboygan Falls, WI  
Timothy Velner, Minnetonka, MN  
Janice Wicklund, Wayzata, MN  
Paul Wicklund, Wayzata, MN  
Steven Wilkowski, Aitkin, MN

*David J. Schimpf*

## Faculty and Staff — 1989-1990

George E. Ahlgren, Associate Professor  
Donald P. Christian, Associate Professor  
Hollie L. Collins, Professor  
Conrad E. Firling, Associate Professor  
Helen B. Hanten, Assistant Professor  
Stephen C. Hedman, Associate Professor  
Anne E. Hershey, Assistant Professor  
Randall E. Hicks, Assistant Professor  
Linda L. Holmstrand, Associate Professor  
Larry D. Hufford, Assistant Professor  
Andrew R. Klemer, Associate Professor  
Paul H. Monson, Professor  
David J. Schimpf, Associate Professor & Head  
Lyle J. Shannon, Research Fellow  
Melbourne C. Whiteside, Professor  
Phyllis Jensen, Accounts Supervisor  
Elizabeth MnNamara, Lab Services Coordinator  
Deb Shubat, Greenhouses Director  
Ruth Hemming, Secretary  
Mike King, Jr. Scientist  
Paul Mickelson, Jr. Scientist

### MONSON From Page 1.

around Grand Rapids, with thousands of lakes which have seen little botanical exploration at any time.

Dr. Monson is also continuing with his activity in the Association of Biology Laboratory Education (ABLE), where he is presently a Board member, the Membership Chair, and a member of the Workshop Selection Committee.

Dr. Monson earned his PhD at Iowa State University, Ames, Iowa in 1959 and joined the UMD faculty in 1958.

Dr. Conrad E. Firling, Associate Professor of Biology, received the 1989 Jean G. Blehart Distinguished Teaching Award. This award is presented annually to a UMD faculty member who has demonstrated excellence in teaching and advisement, academic program development and educational leadership. Firling's research interests currently are in in-vitro studies of bone tissue mineralization using osteosarcoma monolayer cell cultures, and the influence of aluminum salts upon in-situ long bone formation in the embryonic chick. He has also recently started collaborative research with UMD Medical School faculty members to examine the influence of viral infection on the induction of Paget's Disease in skeletal tissue.

### SEMINAR

DR. JOSEPH SHAPIRO presented the 1989 JACK R. HARGIS lecture in Biology on October 12 at UMD. Dr. Shapiro is the Associate Director of the Limnological Research Center, and Professor of Biology and Geology at the University of Minnesota, Minneapolis. His lecture was entitled "Current beliefs regarding dominance by blue-greens: the case for the importance of CO<sub>2</sub> and pH".

This lecture was the third in a series established by the University in recognition of contributions in teaching, research, and service by JACK R. HARGIS, Associate Professor of Biology at UMD, who died on March 31, 1984.

# Happenings in the Department



## Bette McNamara Stresses Safety

Bette McNamara, the laboratory services coordinator, has been with the department ten years. This year she has spent much time and energy upgrading the chemical storage areas as well as improving the overall safety of teaching and research laboratories in the Life Science building.

Phyllis Jensen, the most senior non-academic staff member has been with the department eighteen years. She finds the office a comfortable, nice place to work especially since the remodeling. Her main struggle has been learning the computer programs. Phyllis is the grandmother of three girls and two boys and expects two more grandchildren in 1990.

Deborah Shubat (Shuby), a horticulturist with the department for five years, is expanding the greenhouse plant collections to include more tropical plant families. Shuby was involved in making two blueberry promotion videos last summer with funds from the U.S. Forest Service and Minnesota Dept. of Natural Resources. These will be shown at tourist centers in the summer.

Ruth Hemming, does most of the typing for the department including the newsletter and has been with the department for about one and a half years. Other talents include remodeling her house (herself) a project which has been in progress some five years.

Paul Michelson, is working as Jr. Scientist in Dr. Anne Hershey's research laboratory on the effects of Methoprene and Bti on non-target insects. Paul is a 1989 graduate of the masters degree program in biology at UMD.

Chris Ernst, has left her position in Dr. Hershey's lab to pursue a Masters of Library Science degree at the University of Iowa.

Mike King, came to UMD from the University of Wyoming where he earned an M.S. under the supervision of Dave Duvall while working on a radiotelemetry project designed to determine migratory biology of the Prairie Rattlesnake. At UMD he has assisted on several limnological projects and spends most of his time collecting and enumerating zooplankton samples in Dr. Mel Whiteside's research lab.

Dr. Conrad E. Firling and Biology undergraduate students Roger K. Aronson and Ann M. Seguin attended the Third National Conference on Undergraduate Research held April 1989 on the campus of Trinity University in San Antonio, Texas. Dr. Firling sponsored the students research, the results of which were presented at the conference as a poster titled "Mineralized and Demineralized Bone Matrix Induced Chondrogenesis and Osteogenesis on the Chick Embryo Chorioallanotic Membrane". A paper based

## STUDENT EMPLOYEES

Working under the supervision of Deb Shubat in the UMD greenhouse are student employees, Mike Rogers, a major in engineering who has a strong interest in plants, and Doug Fairchild, a biology major with interests in horticulture, soil and plant ecology and gardening. Working for the department under Bette McNamara are Rachel Barthel a sophomore majoring in special education; Jim Schneider, who started working for the department last summer and left during winter quarter to do student teaching in Life Science; John Lorenz who takes care of the aquarium room is a freshman in pre-engineering. Tracy Davidson who has worked in the microbiology laboratory is a junior in the Dental Hygiene program. Working in the research laboratory of Dr. Anne Hershey are Milton Vollmer, and industrial engineering major, who has done work on the arctic project; Phyllis Holmbeck, a chemical engineering major and Tanya Kauti, a pre-nursing major, who are involved with Dr. Hershey's research in the mosquito project.

## GRADUATE ALUMNI NEWS

Sheila Arimond, M.S. 1979, is back living in Minnesota, Address: 1032 St. Clair Ave., St. Paul, MN 55105.

Kriste Ericsson, M.S. 1984, is a naturalist at Indiana Dunes National Lakeshore. Address for Kriste: 125 Hawleywood; Chesterton, IN 46304.

John Krenz, M.S. 1988, is in a PhD program at the University of Georgia. Address: Institute of Ecology, University of Georgia, Athens, GA 30602.

Mei-yao Louis, M.S. 1989, is in her second year at the School of Veterinary Medicine at the University of Minnesota, St. Paul. Address: 1020-23rd Ave. S.E., Minneapolis, MN 55414.

Steve Mayer, M.S. 1983, is a forensic serologist for the Indiana State Police. Address: 711 North 700 E; Greenfield, IN 46140.

Joan McKearnan, M.S. 1986, is working on a PhD at the University of Maryland. She has switched the focus of her research from colonial water birds to songbirds in the riparian zone. Address: Appalachian Environmental Lab: Gunter Hall; Frostburg State College, Frostburg, MD 21532.

Beth Middleton, M.S. 1984, Completed a PhD degree in Botany at Iowa State University in May 1989. Her dissertation topic was: "Succession and goose

See GRAD ALUMNI, Page 6.

# Undergraduate Education

## BIOLOGY CLUB NEWS

During fall and winter quarters the Biology Club went on two field expeditions. The first was a weekend camping trip to Jay Cooke State Park which included a trek to beautiful, secluded Lost Lake, and a big spaghetti dinner. The latest trip was a January venture to the Twin Cities to visit the Minnesota Zoo and the Science Museum.

On the service front, the club has been tutoring Biology 1102 students, maintaining graduate school information and displaying local fish species in the aquarium room display window.

Spring quarter promises to be busy and productive for the Biology Club. Plans include a trip to Chicago over the first weekend of spring break, a spring Biology Club smelt fry and a year-end beach party.

On the agenda for the journey to Chicago are visits to the Shedd Aquarium, Field Museum of Natural History and the Museum of Science and Industry as well as other points of interest. Amtrack will be the mode of transportation to Chicago. Last year, the view from the train included sightings of bald eagles and a great variety of waterfowl.

Dates and final plans for the smelt fry and beach party have not been solidified as of yet, but both should offer faculty and students an opportunity to get to know each other and have a good time in a less formal atmosphere.

So far the 1989-90 school year has been an eventful and interesting one for the club. We have increased our membership and are looking forward to spring quarter and to the next school year.

## T. O. ODLAUG AWARD

The 1989 T.O. Odlaug Award for the outstanding student in biology was given to Lynn Gillie. The award is given annually to a student, chosen by the faculty, for scholastic achievement and service to the Biology Department. Lynn was a B.S. Biology major with a minor in Chemistry. She participated in Biology Club activities all four of her college years. She is a member of the Honor Society of Phi Kappa Phi.

## DEATH CLAIMS FORMER BIOLOGY STUDENTS

The Biology Department faculty and staff were saddened to learn of the accidental death of two former students during the fall of 1989, and offer sympathy to their families and friends. JAMES G. SWANSON died on October 4 in an accident during a camping trip at the Pigeon River. He was born in Fairmont, MN and had lived in Duluth for 16 years. He worked at a halfway house for young people and at the Highland Super Value. He earned a B.S. degree in Biology at UMD, finishing degree requirements in 1987. GREGORY IRONS died November 11 in a deer hunting accident. He earned a BAS degree in Teaching Life Science at UMD in 1987. Greg was born in Denver and lived in Duluth since 1965. He taught part time at Washington Jr. High in Duluth and substituted at various schools in Duluth and Two Harbors.

## HONORS PROGRAM

Janelle Lauer, a Biology Honors Program student received a summer honors stipend in 1989 to pursue research on vitamin K and aluminum effects on bone, under the direction of Dr. Conrad E. Firling.

The following College of Science and Engineering Honors Program students with majors in Biology, graduated with distinction in 1989. Each completed an honors project.

Roger Aronson, Nola Englehorn, Terry Gokee, Mike Mageau, Ann Marie Seguin.

## Congratulations 1989 Graduates!

### B.S. Degrees in Biology

Richard William Anderson  
Roger Kent Aaronson II  
Pravin Aturaliya  
David Parker Backstrom  
Aileen Jo Bartels  
Craig Alan Black  
Lisa Yvonne Bogatzki  
Natalie Ann Bright  
Grant Bruce Brown  
John Robert Cain  
Stephanie Kay Carlson  
William Joseph Cournoyer  
Joseph Robert Dierkes  
Kevin S. Drydahl  
Nola Ruth Englehorn  
Douglas David Falk  
Kathryn Marie Fossum  
Colleen Marie Fredrickson  
Lynn Louise Gillie  
Terry Lee Gokee  
Thomas R. Gries  
Robert Wilburt Hegerman  
Elizabeth Rosemary Kohn  
Suzanne Marie Larson  
Kari L. Maas  
Michael Thomas Mageau  
Michael John Maruca  
Jason Stuart McCrea  
Eric S. Mead  
Glen Robert Meints  
Kevin Paul Michalick  
Niel Fredrick Morton  
Michael Wayne Nordin

Brian Scott Olson  
Christopher J. Owen  
Tammy Jo Peyton  
Stephanie Louise Polo  
Timothy Curtis Rathje  
Darrem Lee Saari  
Ann Marie Seguin  
Michele Ann Tafelski  
Wayne Lawrence Terry

### B.A. Degrees in Biology

Christopher John Barsness  
Jill Marie Jacobson  
Richard Wayne Kargel, Jr.  
Jane Patricia Keyport  
Melissa Lee Krause  
Monica Van Der Viern

### BAS Degrees, Teaching Life Science

Timothy Alan Bates  
Mary Christine Bussey  
Michael John Carlstad  
Daniel Joseph Cronin  
Jill Marie Jacobson  
Melissa Lee Krause  
Ross William Magnuson  
Peter Joseph McKenzie  
Rodney O. Raymond  
Bradley L. Salo  
Diane Rose Schulte  
Wayne Lawrence Terry  
Zoe Elizabeth Thouin

## NEWS OF RECENT GRADUATES

Steve Hughes, a biology major who graduated in 1988 and who worked as a UROP student, is entering the M.D./Ph.D. program at the Mayo Medical School, Mayo Clinic, Rochester, Minnesota.

Elizabeth Kohn, a 1989 Biology graduate, is currently attending the UMD Medical School as a first year student.

Crystal Stephas, a 1988 biology graduate, is currently employed in the environmental laboratories of Braun Engineering and Testing in Minneapolis. She currently is doing PCB and pesticide analyses and assays.

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.

For further information write to:

Director of Graduate Studies  
Department of Biology  
University of Minnesota  
Duluth, MN 55812-2496

Paul A. Mickelson received a certificate for outstanding teaching as a Biology Graduate Teaching Assistant at a May 9, 1989 fiesta for teaching assistants in the College of Science and Engineering.

#### GRAD ALUMNI From Page 4.

herbivory in monsoonal wetlands in India". Address: 139 Bessey Hall; Botany Department, Iowa State University; Ames, Iowa 50011.

Meg Shaughnessy, M.S. 1989, and Tom Manning, M.S. 1988, are living in Bishop, California. Tom is studying bighorn sheep and Meg is working as a biologist in various positions.

Nancy Rusinko Tich, M.S. 1985, completed her PhD in physiology at the University of Minnesota in 1989. Her thesis advisor was Dr. H.C. Lee. In 1989 Nancy was the recipient of the 1st Annual Allan Hemingway Endowed Scholarship, awarded at the Minnesota Medical Foundation annual awards ceremony. She relocated to Washington, D.C. in summer 1989 with her husband, Stephen Tich, who is pursuing an MBA degree at Georgetown University. Address: Dr. Nancy R. Tich; 1504 Lincoln Way #205; McLean, VA 22102.

Dick Osgood, M.S. 1979, is an environmental planner with the Metropolitan Council in St. Paul. He had two articles published in 1988, "Lake mixis and internal phosphorus dynamics" published in Arch. Hydrobiol., and "A hypothesis on the role of Aphanizomenon in translocating phosphorus" published in Europe. The work in the first paper mentioned was dedicated to the memory of Jack Hargis, former UMD aquatic biologist, under whose direction Dick did his graduate research.

## Congratulations Graduates!

### M.S. DEGREES IN BIOLOGY, 1989

Chris Domeier. Thesis: A comparison of haul seining and wire-mesh trapping for sampling young-of-the-year gamefish.

John Hastings. Thesis: Effects of low sodium and high potassium on adrenal-gland indices of mineral balance in herbivores.

Craig Haut. Thesis: The effects of short-term aluminum exposure on demineralized bone matrix (DBM)-induced bone formation.

Dave Johnson. Thesis: The effects of dietary fiber on mineral balance in meadow voles.

Mao Louis. Thesis: The status and reproductive success of Forster's terns in Minnesota.

Glenn Merrick. Thesis: Lake Trout and benthic epifaunal predation in an arctic ecosystem.

Paul Mickelson. Thesis: Influence of dietary potassium on diet selection in meadow voles.

Meg Shaughnessy. Thesis: The influence of dietary potassium on sodium appetite in meadow voles.

Nineteen new and returning graduate students in Biology were in attendance Fall quarter 1989. All are either teaching assistants or research assistants, or else are in the final stages of their programs. In attendance this year are:

Peter Aas	Deb Hinterleitner
Rebecca Boley	David Johnson
Pat Collins	Mike Mageau
Pam Elf	Susan Olson
Ivy Foo	Charles Rose
Andy Goyke	Greg Schmidt
Kristi Hanson	Kristin Schmidt
Cal Harth	Jo Thompson
John Hastings	Grace Tinderholt
Bonnie Hatten	

Bonnie Hatten recently gave her M.S. seminar on "Cytogenetic Studies on the White Sucker". She currently is enrolled in the M.S. program in genetic counseling at the University of Minnesota, Minneapolis.

Kristi Hanson is a second year teaching assistant. She is continuing coursework and continuing her research on the behavioral interactions of arctic fishes. Her goals for the future include pursuing a summer internship in outdoor education, and avoiding the "five-year plan".

Andy Goyke is a second year graduate student and teaching assistant. He expects to finish his thesis on "The effects of fish predation on Chironomid (Chironomidae, Diptera) communities in Arctic lakes" this spring. His fieldwork was conducted by coring the bottoms of twelve lakes and ponds near the Toolik Lake long-term ecological site in northern Alaska during the summer of 1989. His samples have now been processed and the Chironomids are being identified. Andy reports that he enjoyed the field work more than the lab work, and that his writing has been slowed down since his 6 week old son, Noah, joined the family.

# Graduate Studies

Pam Elf still drives too far (from McGregor) every school day. She is a teaching assistant this year, and is in the second year of her research under the direction of Dr. Conrad Firling, studying the effects of aluminum and fluoride in bone cells. Pam hopes to complete her research and thesis this summer.

After working at a Bible camp in northeast Iowa last summer, Grace Tinderholt and her husband came to Duluth last fall where she began her coursework as a graduate student and her duties as a teaching assistant. This summer Grace will be doing a phytoplankton research project in the Experimental Lakes Area of Ontario.

Jo Thompson is a second year teaching assistant and finds she particularly likes teaching botany. Her research for her thesis is a study of algal toxicity, under the direction of Dr. Andrew Klemmer.

Pat Collins completed his fieldwork for his thesis in the summer of 1989. This involved collecting almost 400 forest floor leaf litter samples and 200 samples of shrub layer foliage, as well as completing 5 breeding bird surveys at each of 10 study sites. Over the past year he has had two technicians sorting the samples to remove invertebrates, which Pat identifies and measures. In non-degree related work, Pat had a paper "Surviving the winter: thermoregulation in winter birds" accepted for publication in Wisconsin's bird journal, The Passenger Pigeon. He has also been working on getting a nature center established in this area and was recently elected to the board of directors for the Hartley Nature Center, Inc.

Peter Aas graduated from Duluth East in 1982 and from Macalester College in St. Paul in 1987. For two years he worked as a plant ecologist at the University's Cedar Creek Field Station, and for the Fish and Wildlife Service in the Arctic National Wildlife Refuge on a bird project. Peter started in June of 1989 as a research assistant with Dr. Randall Hicks. Together they recently had an abstract accepted for a paper they are writing on thymidine incorporation in heterotrophic bacteria, which will be presented at the winter ASLO meeting in New Orleans. They are also working on some degradation of Lake Superior algae in an attempt to classify the inputs of organic materials in the Lake Superior water column. Peter attended a two week

course/conference last summer at the University's Gray Freshwater Biological Institute where he learned to use DNA probes in analyzing the bacterial composition of environmental samples. Hobbies include windsurfing, skiing, hunting, and playing a guitar; (he can occasionally be found doing this at some of Duluth's less reputable watering holes).

After two years as graduate students at UMD, Kristin Schmidt and Greg Schmidt were married in August of 1989. (Schmidt-Schmidt?). Kristin expects to finish the requirements for her M.S. degree this spring. Her thesis is on "Porcupine winter feeding ecology", a study conducted at the Hemlock Ravine Scientific and Natural Area in Carlton County under the direction of Dr. Donald Christian. She hopes to find a position in bird or mammalian research or field biology. Greg is finishing his M.S. degree in March. His study of mammalian physiological ecology has been under the direction of Dr. Donald Christian. Greg also did a Boreal Owl survey in northeastern Minnesota from March to September, 1989, in a joint project of the Minnesota DNR and the United States Forest Service.

Mike Mageau is a first year graduate student and teaching assistant. He plans an environmental biology major with a minor in hydrogeology. He expects to begin his research this spring, studying the effects of inorganic carbon on algal speciation, dominance and biomass. The amount of inorganic carbon increases along a natural gradient from southern Ontario to southern Minnesota. Mike hopes to select lakes from points along this gradient to study the effects of the inorganic carbon concentration.

Chuck Rose, a former Jr. and Sr. High teacher and former BWCA canoe guide began his graduate studies at UMD this year. He has been a teaching assistant in ecology and general biology. Chuck was married on December 30, 1989 to Barb Rosene, a fifth grade teacher from Alexandria.

Deb Hinterleitner Anderson, who was married to Mike Anderson on September 2, 1989, returned to UMD as a teaching assistant fall quarter. She finished her thesis defense and seminar in January, and has accepted a job as a science instructor at Lac Courte Prielles Community College in Hayward Wisconsin. Her new address is RR 3, Box 3190A, Hayward, WI 54843.

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 \_\_\_\_\_

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

Daniel Belgum, B.S. 1982, has been serving as a research agronomist with the Mennonite Central Committee in Bangladesh since 1982. He expects to work in this agricultural development project until August 1991. Address: Mennonite Central Committee; Box 13, Fehi; Bangladesh.

Storm Carroll, B.S. 1972, District Administrator for the School District of Laona, WI, wrote to say he enjoyed the last copy of *The Life Scientist* which he found interesting and informative. Address: School District of Laona; P.O. Box 57; Laona, WI 54541-0057.

Delores Selners Greenwald, B.S. 1983, has finished a teaching certificate at UMD and is working as a biologist for ASCI, a contractor for EPA. Her husband, Gregory Greenwald, B.S. 1985, works as an applications programmer at the NRRI. They have a child, Daniel, born in September 1988. Address: 135 W. Owatonna; Duluth, MN 55803.

William A. Haapala, B.A. 1971, returned to Minnesota from Portland, Oregon where he served as Operations Superintendent for the Bureau of Environmental Services, in July 1989. He now lives in St. Paul and has accepted a position of Director of Operations for the Metropolitan Waste Control Commission, which provides water pollution control service to the seven county metropolitan area. Will writes that he and his family are glad to be back in Minnesota and that he enjoys news about the Biology Department at UMD. Address: 1573 Arundel Street; Apt. 204; St. Paul, MN 55117

James (Howie) Hughes, B.S. 1984, is working as a Senior Programmer/Analyst for Northwestern National Life Insurance Company in Minneapolis and is also a

licensed realtor with Century 21, working in residential and investment property. He and his wife, Ann, have a two year old son, Jeffrey Daniel. Address: 2916 - 132nd Ave. N.W., Coon Rapids, MN 55433.

Becky Norlien, , wrote to say she really enjoyed the *Life Scientist* and thought it is a good way to have some contact with that piece of her life. She sends "hello" and "happy spring" to the Biology Department and to alumni friends. Address: 568 Brimhall St.; St. Paul, MN 55116.

Tammy Peyton, B.S. 1989, is enrolled as a first year student at the College of Podiatric Medicine in Des Moines. Address: College of Podiatric Medicine and Surgery; 3200 Grand Ave.; Des Moines, IA 50312.

Peter Stenehjem, B.S. 1986, is in his third year as a medical student at the University of Minnesota Medical School in Minneapolis. He wrote to say he thought the Mac Chromosome computer program by Dr. Hedman and Glen Andreas was a super idea. Address: 1037 Cromwell Ave.; #10; St. Paul, MN 55114.

Valerie Thelen, B.S. 1984, is currently living in West Virginia where she has a job as a lab operator at Goodyear Polyester. She sends greetings to friends. Address: P.O. Box 164; Apple Grove, W VA 25502.

Jim Wiinanen, B.S. 1971, is the Associate Director of the Wilderness Canoe Base, where he has worked for fifteen years. Address: Box 940; Grand Marais, MN 55604.

Gwen Zehm, B.S. 1979, and Dr. Arthur Zehm, B.S. 1980, sent only a change of address this year. Address: P.O. Box 845; Superior, WI 54880.

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## Life Scientist

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