



Department of Botany

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Oklahoma State University

Life in the Salt Plains

Dr. Bill Henley, postdoctoral associate **Dr. Kelly Major**, and graduate student **Janice Hironaka** are off and running on their NSF-funded research project, *Response of Photosynthetic Microbes of the Salt*



Henley



Major



Hironaka

Plains National Wildlife Refuge to Dynamic Extreme Conditions. Janice successfully defended her M.S. Thesis in November; her work included isolation of a tiny green alga, about the size of a large bacterium, which appears likely to be a new species of *Nannochloris*. Collaborator Dr. Mark Buchheim from the University of Tulsa is conducting DNA sequencing to help with the species identification and

description. Bill is back from a year sabbatical at Horn Point Laboratory in Cambridge, Maryland, where he worked on physiological characterization of two algal isolates from the Salt Plains. The *Nannochloris* has incredible salinity and temperature tolerance, ranging from fresh water to about 4X seawater, and up to 45°C (113°F) for brief periods, an ability that makes it well suited to the widely fluctuating conditions at the Salt Plains.

A paper is currently being written based on this work. Another isolate,



Dan Ratcliff drawing samples of groundwater at the Salt Plains.

Dunaliella, even has the remarkable ability to survive for months inside of salt crystals! Kelly has conducted both laboratory experiments and fieldwork under the brutal summer heat at the Salt Plains near Cherokee, assisted by Environmental Science graduate student Dan Ratcliff. Kelly is also working closely with undergraduate student Tamba Stevenson and Stillwater High School student (and National Merit Scholar semi-finalist) Julie Ward on laboratory experiments.

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Bluestem is published annually to inform alumni, faculty and friends about the issues, activities, and news of the Botany Department.

Comments and inquires should be directed to Paula Shryock, Botany Department, 104 LSE, Stillwater, OK., 405-744-5559 or E-mail pshryoc@okstate.edu

Changing of the Guard

With the retirement of Jim Ownby last May, **Dr. Becky Johnson** became the new department head.

Johnson is the first woman to lead the Botany Department at OSU. Becky, who has graduate degrees in Physiology, has been at OSU since 1972. She started as an instructor in the BiSci program and joined the Botany department in 1978.



Becky Johnson

She developed methods for tissue culture of peanuts and other plants, before becoming Dean of Undergraduate Studies in Whitehurst. Becky returned to the Botany department in 1999, where she continues to teach Ethnobotany, an Honors class in scientific inquiry, and Survey of Human Diseases. She also offered the second year of the Regents' sponsored Oklahoma Principals' Science Scholars Academies for pre-college students. Two Academies were held at OSU, one in June and one in July, 2000. Twenty four students attended each symposium and special efforts were made to recruit participants from populations that are under-represented in the sciences.

Becky was invited to the Kiowa Care Symposium at Chickasha in September 2000 to present her research on plant poisons that are used by Native Americans to kill fish. The symposium, organized by the Kiowa Tribe, brings together individuals to explore traditional native American knowledge.

New Faculty Member

The newest member of the Botany Department is **Dr. Gerald Schönknecht**, a plant physiologist from Germany who joined the faculty in November, 2000. Gerald received his Ph.D. in Natural Science in 1990 from the University of Osnabrück where he studied the primary processes of photosynthesis. These past years, he has worked as a research assistant in the Botany Department at the University of Würzburg. His areas of study are the molecular mechanisms of ion transport and signal transduction in plant cells. Applying electrophysiological techniques, he wants to understand the regulation of ion channels, which play a key role in such vital processes as growth, hormone and pathogen perception, and nutrient uptake from soils.



Gerald Schönknecht

Gerald, a native of Germany, is married, with two little daughters, Luise (3 years) and Siri (1 year). His wife, Uli, has studied Art History in Freiburg and Berlin, specializing on the late 19th and early 20th centuries. The family joined Gerald in the United States in December. In addition to caring for their daughters, Gerald and Uli enjoy antiques, good food, and long walks.

New Adjunct Faculty

Kay Scheets joined the Botany Department as an Adjunct Assistant Professor in January, 2000. Her research focuses on two areas. One area involves improving wheat by producing transgenic plants that either accumulate new products in the seed by introducing novel genes under the control of a wheat storage protein promoter, or by introducing new genes for expression in the leaves of the plants. Another research area involves studying RNA viruses that infect cereals. The goal is to understand how each viral gene functions and to identify cellular proteins and subcellular organelles with which they interact.



Kay Scheets

FacultyNotes

Anne Cross continues her research on nitrogen cycling in collaboration with the Long Term Ecological Research (LTER) site at the Sevilleta National Wildlife Refuge, in northern New Mexico. In addition, she has received funding from IPEC (International Petroleum Exploration Consortium) and DOE (Department of Energy) for bioremediation of oil and brine spills in tallgrass prairie ecosystems. Dr. Cross has been re-appointed to the board of trustees for the Oklahoma Chapter of The Nature Conservancy and serves as Chair of the Conservation Committee. Dr. Cross and her husband, Rob, also have a new addition to their family, Natalie H. Cross, who was born December 7, 1999.



Anne Cross

Biao Ding has left the Botany Department and taken a position at Ohio State University in Columbus, Ohio.

David Meinke, finished his "tour of duty" with the Plant Genome Program at NSF in September, 1999 and helped to coordinate the annual awardee meeting for that program in Washington. He continues his research collaborations with Novartis Agribusiness Biotechnology Research, Inc. of North Carolina, in a project that focuses on the func-



David Meinke

tional genomics of seed development in *Arabidopsis*. His primary collaborator in this effort has been David Patton, a former OSU undergraduate and Ph.D. student. Meinke has also begun serving as a member of the executive committee for the new *Arabidopsis* database known as TAIR (The *Arabidopsis* Information Resource), which should provide a central reference point for all plant genome databases in the future. This involved travel to the National Center for Genome Resources (Santa Fe, NM) and Carnegie Institute of Washington (Palo Alto, CA). He continues to help coordinate efforts to complete the *Arabidopsis* Genome Project before the end of the year 2000. He also recruited a visiting technician (Audrey Martinez) from Perpignan, France and several high school students to work in the lab with funding from NSF's Life in Extreme Environments (LexEn) program.

Michael Palmer was promoted to Full Professor in July 2000. He presented two plenary lectures, entitled, "Quantitative Tools for Perfecting Species Lists," on two continents this past summer – one for the Quantitative Methods in Applied Science meeting in Siena, Italy, in June, and the other for the International Association of Vegetation Science, in Nagano, Japan, in July. Mike is also a member of the founding editorial board for the new journal, *Community Ecology*. This summer, Mike has finished the plant



Mike Palmer

biodiversity survey on the network of 151 permanent plots at the Tallgrass Prairie Preserve in Pawhuska, OK. Finally, Tom Wohlgemuth, one of Dr. Palmer's former postdoctoral research associates, is now part of an international task force on alpine biodiversity.

Ron Tyril has managed to keep busy as usual this past year. Although he completed his term as president of the Oklahoma Academy of Science, he continues to serve as Copy Editor of the



Ron Tyril

society's *Proceedings* and to admonish authors about their inability to follow instructions. His copy and production editors probably say the same about him as *Toxic Plants of North America* nears completion. The book, co-authored with toxicologist George Burrows, is to be released by Iowa State Press in January 2001. *Range Plants of Oklahoma* is scheduled for production as well, as Ron and co-authors Ron Masters and Terry Bidwell complete final editing of the manuscript. Progress on the *Flora of Oklahoma* continues but at a slower pace. Ron is coordinating editor of the project and collaborates with taxonomists from throughout the state, including departmental graduates Susan Barber (M.S., 1975), Rahmona Thompson (Ph.D., 1988), and Bruce Smith (Ph.D., 1997).

*Note: The Botany Dept. will be adding two new faculty members this year in the areas of Molecular Genetics and Cell Biology.

Graduate Student Notes

Raelene Crandall, master's student, received her B.S. degree in Biology and Chemistry in May 1997 from Butler University, Indianapolis, Indiana. She has held several interesting positions before coming to OSU this fall to study plant taxonomy with Ron Tyrl: an environmental chemist at Accurate Labs in Stillwater; a forestry technician for the U.S. Forest Service; and a greenhouse assistant at the Rocky Mountain Native Plant Co.



Raelene Crandall

Charriss Hayes is also working with Ron Tyrl as a master's student in plant taxonomy. She received her B.S. degree in Biology in May 2000 from Truman State University, Kirksville, Missouri. Besides taxonomy, she is also interested in wetland ecology and conservation ecology.



Charriss Hayes

Jerad Linneman, master's student, is studying community ecology with Mike Palmer. A native of Wisconsin, Jerad received his B.S. degree in Environmental Science from the University of Wisconsin, Green Bay before coming to OSU this fall.



Jerad Linneman

Adam Ryburn, doctoral student in plant taxonomy working with Ron Tyrl, was recognized as the Outstanding A&S Graduate Teaching Assistant last spring at the A&S Awards banquet. He was elected President of the Graduate and Professional Student Association and was highlighted in OSU's Leadership Legacy series in September 2000. Adam presented his research, "The History of Echinaceae," at the 23rd Annual Wildflower Workshop in Tahlequah in May. He and his wife Miranda are expecting their first child next May.



Adam Ryburn

Chris Sellers, master's student in biogeochemistry working with Anne Cross, received funding from the McPherson Fund and IPEC to continue his research on nitrogen, carbon, and phosphorus cycling at the Tallgrass Prairie. Chris celebrated his wedding to Patricia Pachon, a native of Colombia, South America, in June.



Chris Sellers

Botanical Society Formed

The Oklahoma State University Botanical Society (OSUBS) is a new student organization on campus. It is a mixed constituency student organization comprised of graduate and undergraduate students. OSUBS was launched by Jerad Linneman, a botany graduate student, to establish and promote a wide foundation of botanical knowledge through research, intellectual, professional, and personal development. To meet that end, OSUBS intends to bring in speakers from other institutions, as well as highlight research currently being done here at OSU. Presentation topics range from ethnobotany and taxonomy to molecular biology and ecology.

At the inaugural meeting, Jerad Linneman and graduate student Chris Sellers presented, "Hot Topics in Plant Sciences," focusing on the oldest recorded mushroom fos-

sil and carbon sequestration. Since then, Dr. Kelly Major presented her work on photosynthesis in algae and marine angiosperms, and graduate student Philip Taylor gave a talk entitled, "Spiritual Botany."

The next meeting is scheduled for January 30 and our scheduled speaker is zoology graduate student Eric Maichak. In addition, OSUBS is planning group outings in conjunction with the Native Plant Society.

The organization is sponsored by Dr. Ron Tyrl and is headed by its appointed officers: President Jerad Linneman, Vice President Chris Sellers, Secretary Charriss Hayes, and elected Historian Catherine Sonleitner.

If anyone is interested in membership or more information, contact Jerad Linneman at ljerad@okstate.edu or the Botany Dept. office at 744-5559.

Alumni Notes and News

Linda Gatti Clark

(Ph.D. in Botany, 1997, under Ron Tyrl) teaches Biology and Botany part-time at the University of Central Arkansas in Conway. She also serves on the editorial committee for the Flora of Arkansas Project. She and her husband Mike have three daughters, Shelby (6 years), Cate (3 years), and Lindsey (3 months).



Linda Gatti Clark

George Heine

(B.S. in Botany, 2000) is pursuing a graduate degree in the Biochemistry & Molecular Biology Department at Pennsylvania State University. George brought his undergraduate career to a climaxing end this past May when he married Twila the day before his graduation from OSU.



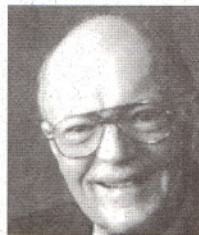
George Heine

Louise Higgins

(Ph.D. in Botany, 1964, under Jan DeWet) lives in Roanoke, Texas. She is the Director of the Electron Microscope Labs in the Department of Biology at Texas Woman's University, Denton, Texas.

Myron Ledbetter

(B.S. in Botany, 1948) was honored this past spring with one of two Distinguished Alumnus Awards at the College of Arts & Sciences Honors Banquet. Dr. Ledbetter was born in Ardmore, Oklahoma, and currently lives in Port Jefferson, New York. He retired in 1989 from the Brookhaven National Laboratory, where he still serves as guest senior cell biologist. In 1996, he received the distinguished scientist award from the Microscopy Society of America.



Myron Ledbetter

Bruce Smith

(Ph.D. in Botany, 1997, under Ron Tyrl) received the *Anne Long Memorial Award* at the fall 2000 annual meeting of the Oklahoma Native Plant Society. This award honors his instructional and professional activities that contribute to "... the study, protection, propagation, appreciation, and use of Oklahoma's native plants." Bruce teaches biology at McLoud High School and is a contributor to the Flora of Oklahoma project.



Bruce Smith

Steve Thompson

(M.S. in Botany, 1986, under Jerry Crockett) is Assistant Professor in the Biology Department at Northwestern Oklahoma State University, Alva, Oklahoma, where he teaches the General Biology course. He is actively pursuing his Ph.D. in Plant Sciences at Oklahoma State University under the tutelage of Botany Professor Michael Palmer. Steve and his wife Margaret are enjoying the new addition to their family, a son, Isaac, born June 12, 2000. Isaac has three sisters - Amanda (16 years), Karolyn (10 years), and Lydia (5 years).



Steve Thompson

Patricia Risk Weigant

(M.S. in Botany, 1979, under Ron Tyrl) pursued the "mosaic approach" to life and combined raising a family (son Brian, 24, and daughter Julia, 17); completing graduate coursework at the University of North Carolina, Chapel Hill; working as a full-time faculty member at Peace College in Raleigh, North Carolina; and summers of research on high elevation communities in the Appalachian Mountains. Her Ph.D. under Dr. A.E. Radford was completed in 1993, and she just completed a seven-year stint as Chair of the Division of Mathematical, Natural and Health Sciences at Peace College. Patricia now spends summers studying species diversity in the tundra communities of the Front Range of the Rocky Mountains.

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Alumni information requested

The department is currently updating information from alumni. Please take a moment to complete the questionnaire and return it to the address above.

name

home address

home phone

current professional position

business address

business phone

education/degrees

achievements and awards