



Department of Botany

College of Arts and Sciences

Oklahoma State University

Spring 2003

Volume 9

McPherson Preserve – A Registered Natural Area

The McPherson Preserve, owned and managed by Oklahoma State University's Department of Botany, was added this year to the Oklahoma Natural Areas Registry. The Preserve is named in honor of the late Dr. James McPherson, who was a professor in the department.

The 160-acre site near Lake Carl Blackwell is dominated by crosstimbers vegetation, a mosaic of post oak/blackjack oak forest and tallgrass prairie. The site initially qualified to become part of the Oklahoma Natural Areas Registry because of the populations of *Pentstemon oklahomensis* (Oklahoma beardtongue) in the prairies. This



Iris McPherson, wife of the late Dr. James McPherson, stands at the northwest corner of the McPherson Preserve.

small, white-flowering, perennial is a member of the Scrophulariaceae (Snapdragon family) and is one of Oklahoma's few endemic plants.

Stewardship and restoration projects on the McPherson Preserve consist of the removal of many eastern red cedars and prescribed burns on the northwestern portion of the property. Mike Palmer oversees the stewardship activities. He and other professors also use the preserve for research and as a study site for class field trips.

The invitation to become part of the Registry was issued by Kim Shannon, a Conservation Specialist with the Oklahoma Natural Areas

Registry, a program of the Oklahoma Biological Survey. Kim received her Master's Degree in Natural Science from Oklahoma State University in 1997 working under Ron Tyrl.

The Oklahoma Natural Areas Registry now has 31,979 acres registered on 67 sites. The largest site is The Dempsey Divide (9,100 acres) in Roger Mills County, and the smallest consists of 2 acres on which the Mexican free-tailed bat is protected in Greer County. The first site was registered in 1984 and protects a prairie dog town in Major County. For more information about the Registry Program, go to www.biosurvey.ou.edu/heritage/registry.html.



Mike Palmer, Botany professor and manager of the McPherson Preserve, receives the plaque from Kim Shannon, conservation specialist with the Oklahoma Biological Survey.



Dr. James McPherson, 1937-1994

Botanists Involved in Databases

Mike Palmer is currently involved in a project to compile a bibliography of all floras in North America and to use them to answer macroecological questions. This project, "Patterns of Richness in North American Floras," also involves: Peter Earls (OSU Botany), Mark Withers (University of Georgia), Paul Neal (University of the Natal), Peter White (University of North Carolina at Chapel Hill), and Gary Wade (USDA Forest Service, Burlington).

Floras are being located through electronic and paper bibliographic tools (Worldcat, SASA, dissertations); relevant journals such as *Castanea*, *Rhodora*, *Aliso*, *State Academy of Sciences*; bibliographies of known floras; and direct communication with other scientists.

The bibliography now contains 7608 references, but this may represent only half of the total floras. Many of the remainder are difficult to obtain by standard means, and there may be hundreds of floras of which they are not even aware. If you have access to obscure floras, Mike would certainly like to hear from you. You may contact him by e-mail at carex@okstate.edu. You can also find more information about this project by going to the departmental web site at: www.okstate.edu/arts/botany and clicking on "faculty," "Palmer," and "Floras of North America."

Ron Tyrl is a co-principal investigator on a \$250,000 grant recently funded by the Biological Research Collections Program of the National Science Foundation. The money will be used to develop a centralized database and associated web site that contains information about approximately 350,000 specimens of plants located in several state herbaria.

Collaborating with Ron are Bruce Hoagland, in OU's Geography Department and the Oklahoma Biological Survey; Wayne Elisen and Amy Buthod, in OU's Department of Botany and Bebb Herbarium; and Ian Butler, with the Oklahoma Biological Survey. Tyrl and his co-workers have been working on computerizing this plant information for several years. They already have created an electronic database that contains information on about 80,000 of the state's plant specimens. When the database is complete, researchers will no longer have to travel to various herbaria across the state to locate specimen information for their work. In addition to the electronic database and website, the accumulated information will be published in a book, titled *Atlas of the Flora of Oklahoma*.

When this three-year cooperative effort between OU, OSU and other herbarium curators is completed, Oklahoma will have one of few databases in the country that encompasses an entire state's collections of plant specimens and will serve as a model for others.

Alumni News

Linda Gatti Clark (Ph.D. 1997) has been appointed Assistant Professor of Biology at Hendrix College in Conway, Arkansas, where she teaches biology and botany courses.

Susan Barber (M.S. 1975) has been promoted from Head of the Biology Department to Assistant Vice President for Academic Affairs at Oklahoma City University.

Tom Cason (M.S. 1974, Ph.D. 1977) is president of Kingston Environmental Services, a full service environmental management company based in Kansas City, Missouri. Because Tom is a member of the Choctaw Nation of Oklahoma, the company is also a minority business enterprise. Much of their business is based in Oklahoma; their first large contract was at the Tar Creek Super-fund site in Picher, Oklahoma.

Patricia Weigant (M.S. 1979) presented results of her research titled "Vascular plant diversity of mafic and felsic fields: a preliminary report of

comparisons between sites at Niwot and Rocky Mountain Park," at the Rocky Mountain National Park Research Conference in April 2002. Her research on *Aletis*, a genus in the lily family, was recently published in the *Journal of the North Carolina Academy of Paper and Science*. She is currently studying biodiversity in the tundra at the Mountain Research Station, located an hour north of Boulder, Colorado.

Judith Mellor (B.S. 1966) is self-employed in Chesterland, Ohio, as a licensed mass therapist in the field of women's wellness.

Robert Adcock (M.S. 1935) is retired and living in Lakeland, Fla. He was an agricultural attache for twelve years.

Rahmona Thompson (Ph.D. 1988), Professor of Biology at East Central University in Ada, received the university's 2002-2003 Teaching Excellence Award.

OSU Botanical Society

Members of OSUBS had the opportunity this year to put their botanical knowledge to use by helping the Kaw Nation with a survey of wetlands sponsored by the Environmental Protection Agency. The students spent two days in the Kaw Lake and Chilocco School areas collecting and identifying plant specimens. Other activities this year included sorting cans of food for the Stillwater community's Harvest Food drive, staffing an informational booth at Earth Day, and interacting with incoming students at the Freshman Fair. OSUBS members also presented their research at the OAS fall technical meeting and attended the spring field meeting, which gave them the invaluable opportunity to interact with state botanists and scientists. This year's officers were: President Charriss Hayes, Vice-President Dorothy Moman, Secretary/Treasurer Allyson Fry, and Historian Jessica Rivers.

New Faces

Dr. Michael Berg joined the department in September 2002 to start a post-doctoral fellowship in David Meinke's lab. He is a native German and received his M.Sc. and Ph.D. in Biology from the University of Darmstadt, Germany. Michael came to OSU in 1999 to work as a post-doctoral fellow in Jacqueline Fletcher's lab in the Department of Entomology and Plant Pathology. His main research focus has been plant diseases caused by phytoplasmas and spiroplasmas. He went to Germany in 2001 to work for BASF in Ludwigshaven before returning to Oklahoma. His current research project deals with essential genes for seed development in *Arabidopsis thaliana*.



Dr. Michael Berg



Dr. Kang Liu

Dr. Kang Liu was born in eastern China and received her Ph.D. degree from China Agricultural University in Plant Molecular Biology. She joined David Meinke's lab as a post-doctoral fellow in August 2002 to work on gene functions associated with embryo development in *Arabidopsis thaliana* and *Medicago truncatula*.

Dr. Andrea Kirkwood came to the department in September 2002 to start a post-doctoral fellowship in Bill Henley's lab. Born and raised in Toronto, Canada, Andrea received a B.E.S. in Environment and Resource Studies and Biology from the University of Waterloo and a M.Sc. in Freshwater Ecology from McMaster University. She subsequently received a Ph.D. in Environmental Microbiology from the University of Toronto. Andrea's main research focus is the characterization of algal communities from the Salt Plains National Wildlife Refuge in north-central Oklahoma. She is currently gearing up (with some trepidation) for her first year of field sampling during an Oklahoma summer.

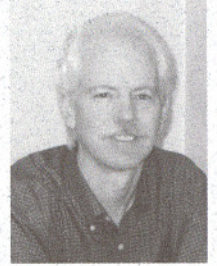


Dr. Andrea Kirkwood

Donations—

Thank you for your contributions. Your continued support of the department is greatly appreciated. Remember to make your checks payable to the OSU Foundation and specify the fund: McPherson Fund or general Botany Dept. fund.

Dr. David Demezas received his Ph.D. from Oregon State University and held post-doctoral positions at CSIRO in Canberra, Australia, and Michigan State University. He was an assistant professor in the Department of Microbiology & Molecular Genetics before coming to the Department of Botany as the Plant Bionet Coordinator. He is also earning his teaching credentials in elementary and secondary education, specializing in science and math.



Dr. David Demezas



Dr. Rosanna
Pena Muralla

Dr. Rosanna Pena Muralla is another post-doctoral fellow in David Meinke's laboratory. She is originally from the Philippines. After receiving her Ph.D. in Microbiology from Tokyo University, she was an associate professor at Ateneo de Manila University. Rosanna's interest in microbes has led to fruitful research on endophytic fungi with colleagues at Hokkaido University and The University of Hong Kong. She came to OSU in 1999 to do a postdoc on fungal genetics of plant cell wall degradation in Rolf Prade's laboratory (Dept. of Microbiology and Molecular Genetics). She joined the Meinke lab in April 2002 and is currently working on SMC (structural maintenance of chromosomes) genes that encode condensins. She is also doing expression analysis profiling of essential seed genes in *Arabidopsis* that code for proteins with unknown functions and those that give a titan phenotype.

Dr. Gnanambal Charmaine Naidoo began working as a post-doctoral fellow with Gerald Schoenknecht in October 2002. She earned her Ph.D. in Microbiology and Plant Pathology from Texas A&M University and has worked at the University of Illinois (Champaign, IL.), Ciba Seeds (now Syngenta, IL.), Marquette University (Milwaukee, WI.) and the Department of Plant & Soil Sciences at OSU. After working with sugarcane, sorghum, soybean, corn and wheat, she is enjoying working with *Arabidopsis* which has a short generation time. Charmaine was born in Pietermaritzburg, South Africa, and completed her B.S. with honors in Microbiology at the University of Durban-Westville, Durban. For her M.S. she worked with an ecophysicologist on coastal sand dune microflora at the University of Natal, Durban. Charmaine is married to Dr. Rathin Sarathy, a faculty member in the Department of Management Science and Information Systems (MSIS) in the College of Business, and they have one daughter, Nirupama.



Dr. Gnanambal
Charmaine Naidoo

Microbial Observatory Research at the Salt Plains National Wildlife Refuge

Bill Henley (Botany), Bob Miller (Microbiology and Molecular Genetics) and their colleagues Mark Buchheim (University of Tulsa) and Mark Schneegurt (Wichita State University) have established the Salt Plains Microbial Observatory (SPMO) at the Salt Plains National Wildlife Refuge in north-central Oklahoma. With multi-year funding from the National Science Foundation, this group of investigators plan to identify and characterize for the first time a microbial community from a terrestrial, non-marine hypersaline system. In the summer, the Salt Plains can experience severe fluctuations in surface temperature, salt concentration, and UV exposure, all of which classify it as an extreme environment. By combining classical microbiology techniques with new molecular approaches, the SPMO group will generate a repository of unique microbial isolates that can survive and/or thrive in the harsh salt plain environment. Fundamental ecological questions will also be addressed by

studying whole microbial communities *in situ*. Andrea Kirkwood (post-doctoral fellow) and Andy Potter (master's student) are gearing up for a season of sampling trips to the SPMO to collect data on environmental conditions and algal communities. Andy will focus on the dynamic diatom populations of the salt plains and how their community structure varies with changing conditions. Allyson Fry (undergraduate) and Nana Annan (master's student) will conduct separate research projects involving an interesting algal isolate (*Nannochloris sp.*) from the Salt Plains. Karen Ray, a recent botany graduate and new master's student, plans to look at the distribution of salt tolerant plants. The SPMO group will also be running a month-long workshop this summer on microbial diversity for upper-level undergraduates. For more information, see the web site at www.okstate.edu/artsci/SPMO.

Schoenknecht Receives Grant for Classroom

Gerald Schoenknecht, Assistant Professor in the department since 2000, recently received a Curriculum Development Award as part of OSU's grant from the Howard Hughes Medical Institute. This grant for the "Retention of Students in the Biological Sciences" helped fund Gerald's project, "Improving Plant Physiology Teaching." The objective of this grant was to innovate the plant physiology courses with the use of multimedia technology.

A website was created that integrates text, graphics, audio, and video in order to enhance the student's learning. Two complete introductory biology textbooks are now available to students on-line, as well as nearly 100 review articles from scientific journals covering the field of plant physiology. Each class lecture is recorded with the accompanying PowerPoint presentation, and these are made available via the website. Interactive quizzes and tutorials were added to the website as well.

Class lecture presentations have been impacted with this grant by the improvement of the graphics and artwork. Video clips have been generated to illustrate dynamic processes in plant physiology. For example, as Gerald lectures about the flowering of a plant, students can see it happening. The lab manual has been greatly improved by digitizing the existing instructions and then rearranging, reformulating, and supplementing them.

B-Team Places 2nd

The Botany Department's coed softball team, the B-Team, played its third season this past summer. Because we had never won a game in the previous two seasons, we were just hoping for a win. Instead, we earned the 2nd Place trophy in our league! We were so excited! We had a really good team, and we worked well together. Our effort and comradery paid off. We look forward to our fourth season this July and August. Play ball!



In Memoriam

Dr. John Thomas

Dr. John E. Thomas, 88, retired professor and head of the Department of Botany and Plant Pathology at OSU, died Sunday, Sept. 15, 2002, in Stillwater, OK. Thomas was born July 15, 1914, in Youngstown, Ohio, to Homer and Cassel



Dr. John Thomas

(Phillips) Thomas. He graduated from Youngstown High School, received his bachelor's degree in 1941 from Ohio State University, and earned his doctorate in 1947 in plant pathology from the University of Wisconsin.

Thomas married Della Farmer in 1942, and the family moved to Stillwater in the spring of 1950 where he accepted a position at Oklahoma A&M. During his career here at OSU, he served on the faculty council as counselor, secretary, and chairman. He was named Outstanding Agricultural Instructor in 1958 and was a recipient of the Fellows Award from the Oklahoma Academy of Science. In 1967, he was appointed head of the department. The Department of Botany and Plant Pathology separated in 1974, so Thomas retired in 1980 as professor and head of the Department of Plant Pathology.

Bits and Pieces

Fumiko Shirakura is this year's Outstanding Botany Student. She was recognized and received her certificate at the annual Arts and Sciences Awards Banquet in April.

Raelene Crandall was selected Outstanding Graduate Teaching Assistant in the College of Arts and Sciences.

Mary Gard was the 2002 recipient of the Betty and Richard Spears Jr. Fellowship in Botany. The 2003 recipient is **Crystal Small**.

Allyson Fry received the department's Junior Scholarship Award.

Andy Potter, Karen Ray, and Fumiko Shirakura graduated May 2003 and received their B.S. degree in Botany. All three students have been admitted to the master's program and will start their work this fall.

Charriss Hayes, a student of Ron Tyrl, received her M.S. degree in Botany in May 2003. Her thesis title is "A Vascular

Flora of the Sally Bull Hollow Tract of the Ozark Plateau National Wildlife Refuge, Adair County, Oklahoma."

Two other students of Ron Tyrl will be finishing their advanced degrees in the summer. **Rae Crandall** will receive her M.S. degree in Botany and **Adam Ryburn** will receive his Ph.D. degree in Plant Science. Rae and Adam were also finalists for the Phoenix Award, an award sponsored by the Graduate College which recognizes the outstanding master's degree candidate and outstanding doctoral degree candidate.

Jim Ownby, retired professor and head, has been busy with his hobby – nature photography. His travels have taken him to Central and South America, Canada, Australia, and New Guinea, as well as throughout the United States. His beautiful pictures can be seen on his web site www.ownbyphotography.com.

Ron Tyrl is the co-author of a new book, *Field Guide to Oklahoma Plants*.

Ron's co-authors are Terry Bidwell, Professor in the Department of Plant and Soil Sciences, and Ron Masters, Director of Research at the Tall Timbers Research Station in Tallahassee, Florida. Ron is also leading another wildflower tour in England this summer. The tour is in June and Ron will spend the rest of the summer doing research at the Royal Botanic Gardens Kew.

Sue McAlister travelled to Tenerife last fall for three weeks to continue her collaboration with colleagues at the University of La Laguna. She is studying the bryophyte communities of laurel forest trees in the Canary Islands, Spain.

Kay Scheets traveled this April to the Ohio State University's OARDC/USDA campus in Wooster, Ohio, to visit with her collaborator, Peg Redinbaugh. She also gave a talk for the Plant Virology Seminar class and another seminar for the Wooster Area Molecular Biology Association.

Ron Tyrl Receives Anne Long Award

Ron Tyrl received the 2002 Anne Long Award at the annual meeting of the Oklahoma Native Plant Society held at Camp Egan, Tahlequah on October 19. Anne Long was one of the founders of ONPS and an early state leader in wildflower protection. In warm remembrance and honor of her, this award was established in 1988 and is given to an individual or group who has made outstanding contributions to the ONPS.

Ron has been a vital part of ONPS from its very beginning. He served on its first board, presented the program at its first annual meeting, and developed the first Indoor Outing, which was held at OSU. Since then he has continued to support ONPS by presenting workshops,



Ron Tyrl receives the Anne Long Award from Betty Kemm, past ONPS president.

leading field trips, and presenting lectures and programs to the public. He also organized and led the Cross-Timbers Chapter of ONPS here in Stillwater.

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

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Alumni information requested

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Please send information about your professional
activities and personal life.

name

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home phone

current professional position

business address

business phone

education/degrees

achievements and awards