

Department of Biology Newsletter



December 2007

Historical Casterter Hall Construction and Ribbon Cutting

With \$7M in funding provided by a student bond in 2005, Biology began a monumental and much needed overhaul of its dilapidated teaching facilities, which had remained essentially unmodified since the 1950s.

For this endeavor, faculty research laboratories and offices, museum facilities, agency offices, and a few outdated classrooms were cleared from the basement of Casterter Hall.

The ~18,000 SF of vacated space was then completely gutted to make room for seven lecturer offices, five teaching labs, three lecture halls, two student study areas, an advising complex, a lab-prep room, a graduate student computer pod, and a conference room/kitchenette.

In addition, the courtyard area on the east side of the basement was fully renovated to provide an amphitheater-like area with many sitting spaces for outside use by students.

Construction of the new facilities by the Brycon Corporation commenced in January, 2007. While the remodel proceeded, the newly renovated Microbiology facility in the southwest corner of the basement remained open for business, and both the Micro lab and the rest of the department learned to endure intense noise and general construction-associated havoc.

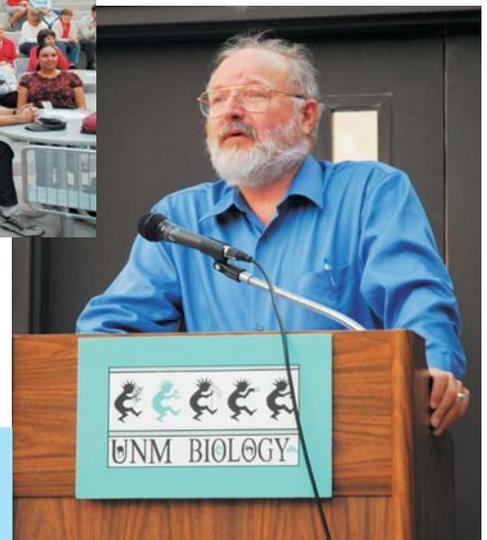
We are delighted to end the nine-month gestation and welcome to this world a brand-new suite of student resources that we feel represent top-of-the-line facilities capable of

greatly improving undergraduate education here in Biology.

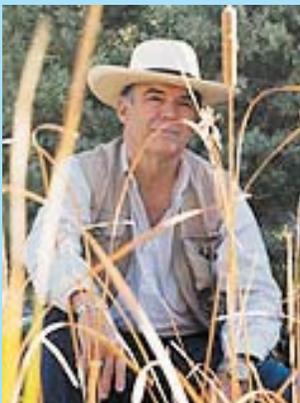
The renovation of our teaching facilities could never have been completed without the generous financial investment by UNM students, the strong support of various administrators, some key guidance throughout construction from several UNM entities such as the Office of Capital Projects, the architects, engineers and contractors who performed the work, as well as the general patience, tolerance, and good-natured attitudes of all the Biology folks who endured this.



*Dr. Reed Dasenbrock,
N.M. Cabinet Secretary
of Higher Education,
at our ribbon-cutting
ceremony on Nov. 9.*



IN MEMORIAM



Terry L. Yates

17 March 1950—11 December 2007

*On the day our newsletter went to press,
we learned that Dr. Yates had passed away.
He was the UNM Vice President for
Research & Economic Development,
a past Chair of Biology,
and a Professor of Biology.
Terry has had an enormous impact
on UNM's development,
and he will be greatly missed.*

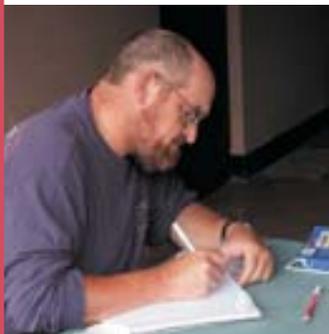


THE UNIVERSITY of
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Holiday Greetings, Alumni and Friends of the Biology Department!

**IN NOVEMBER, 2008, VOTE FOR THE NEW MEXICO
GENERAL OBLIGATIONS BOND ISSUE!**



Sam Loker

2007 has been an eventful year for the Biology Department. As you will read in the following pages, we have many new people in our department—students, staff and faculty—all of whom offer great promise for keeping exciting things happening within the department. Included among our new faculty are UNM’s President and the Dean of the College of Arts and Sciences!

With great cooperation from the UNM administration and the Office of Capital Projects, thanks to the considerable efforts of Associate Chair **Steve Stricker** and our Facilities Manager **John Cox**, and with the financial

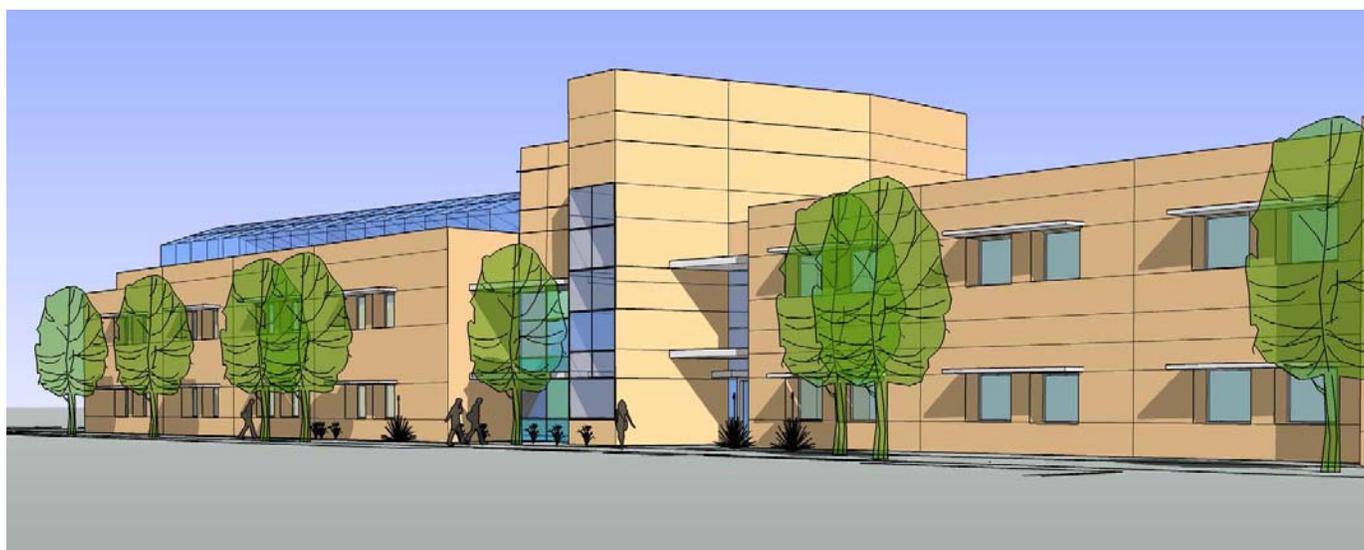
support of the student-funded bond issue, we now also have a beautiful, new, 18,000-SF teaching facility in the basement of Castetter Hall. If you live nearby and have not had a chance to see it, please come by and check it out! This facility will be the scene of many formative learning experiences for years to come.

In January, 2008, we will continue the momentum generated by the basement-remodel project by initiating construction of Phase I (see below) of the Castetter addition project that is to house new faculty research labs. This past year, we secured an addition \$2.8M from the State Legislature to add to the \$5M we already have in hand for this project from the student bond issue. Our goal is to secure another ~\$10M to complete the addition. As of this writing, the New Mexico Higher Education Department has recommended that the Biology Castetter addition project be included in this year’s NM General Obligations bond issue for \$7.6M. We then would need to secure only an additional \$2.3M from the legislature to finish the entire Castetter addition, currently envisioned as a 45,000-SF project. The addition will house several of our prominent grant-funded programs, including the folks now working in our venerable, but aging Annex, and some other prominent programs, like CETI, and the PIBBS program run by **Jim Brown** and **Felisa Smith**.

So, come November, 2008, assuming our fortunes have not plummeted, look for the Biology addition project in the GO bond issue. If you are a NM citizen, your support of the bond would be greatly appreciated and of great assistance to our ongoing efforts to upgrade and expand our teaching and research capabilities. *Have a great 2008!*

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SEEDS AND E-MRGE: BIOLOGY REACHES OUT TO THE COMMUNITY

In 1996, the Ecological Society of America established SEEDS (Strategies for Ecology Education, Development and Sustainability) to stimulate and nurture the interest of under-represented students in ecological research through mechanisms such as research field trips, leadership workshops, and research Fellowships. UNM Biology established a local SEEDS Chapter, with **Dr. Scott L. Collins** as the faculty representative. In 2007, the Sevilleta LTER hosted a SEEDS Research Fellow, and in spring of 2008, it will host the annual SEEDS Leadership Conference.

In 2006, Scott and **Dr. Laura Crossey** (UNM Earth and Planetary Sciences) also started an NSF-funded GK-12 program, “Ecohydrogeology in the Middle Rio

Grande Environment” (E-MRGE). Graduate Fellows in our E-MRGE program work in partnership with middle-school teachers in three rural New Mexico communities (Belen, Socorro and Laguna Pueblo) and the Sevilleta National Wildlife Refuge (NWR) outreach program. The Fellows work in partnership with teachers to develop inquiry-based projects that provide hands-on science experiences for middle-school students. The UNM Fellows bring enhanced science content to the classroom and learn better teaching and communication skills from the teachers. In July 2007, nine middle-school students attended a week-long summer internship at the Sevilleta NWR. These students were selected from 7th grade classes at Belen Middle School, where

Sevilleta LTER graduate student **Juliana Medeiros** participated as a GK-12 Fellow working with life science teacher Kenda Meathenia. Students participated in projects involving the study of grasshopper populations, lizard collection (assisting UNM Ph.D. candidate **Robin Warne**), sensor installation at the Piñon-Juniper study site (with post-doctoral associate **Dr. Enrico Yapez** and **Prof. William Pockman**), and mammal trapping (see photo) with UNM graduate student and GK-12 Fellow **Jason Thomas**. The program was a great success, and student interviews indicated that the program greatly increased their knowledge and interest in biology.



A summer-institute middle-school student holding a Kangaroo Rat after a small-mammal-trapping experience at the Sevilleta Long Term Ecological Research site.

In 2006 and 2007, a summer Research Experience for Undergraduates (REU) program was created at the Sevilleta LTER. There were seven REU students in 2006 and eight in 2007. Students live at the Sevilleta during the summer and interact frequently with their mentors. In addition to conducting an independent research project, the program includes a weekly journal club and seminar series, and informal events to foster interactions among the various researchers and staff working at the Sevilleta. The program is coordinated by **Jennifer Johnson**, a Research Scientist with the Sevilleta LTER.



Summer-institute middle-school students collecting lizards at the Sevilleta with LTER graduate student and GK-12 Fellow Robin Warne.

PROGRAM UPDATE

MARC

One of our most important and distinguished programs for assisting our undergraduate students is the NIH-funded **MARC (Minority Access to Research) Program**. MARC is an honors research program for under-represented students planning to go to graduate school and on to a career in research. MARC is fortunate to have **Dr. Mary Anne Nelson** serving as Program Director. She is ably assisted by **Ms. Julie Torres**, who offers support at many levels, including stepping in and being a friend whenever the scholars need her. Currently, the MARC Program has five students, and an additional five students to be recruited. The current MARC scholars are: **Christine Chee, Christopher (C.J.) Giron, Christopher Marquez, Madina Nourestani** and **Nicholas Santistevan**.

MARC scholars enter the program in their junior year, when they are matched with a mentor on Main Campus or at the Medical School.

Research is conducted in the broad arena of biomedical sciences, including molecular biology, genetics, developmental biology, computational biology, neuroscience and genomics. Our MARC scholars work with their mentors for four semesters, during which time they take the normal complement of undergraduate classes. In addition, they spend one summer conducting research with their mentor at UNM,

and another summer participating in research at any of hundreds of institutions across the country. Most MARC scholars complete an honors thesis in their major, and all scholars present their research both locally and at national meetings. For example, all of our MARC students attended the national Society for Advancement of Chicanos and Native Americans (SACNAS) meeting in Tampa, Florida in October. They take a course in Research Ethics, as well as preparation courses for the GRE and graduate school.



MARC research is conducted in the broad arena of the biomedical sciences, including molecular biology and genetics, developmental biology, computational biology, neuroscience and genomics. Students dedicated to a research career in the biomedical sciences should really consider taking on the challenge, and apply to become a prestigious MARC scholar!

MARC is a very generous program in providing students a monthly stipend, tuition and fees, travel to local and national meetings and funds for laboratory supplies. The program also continues to offer support throughout the careers of these budding scholars—they remain eligible for special graduate fellowships, as well as later career development support.

STAFF PROFILE

Catherine St. Clair

Catherine St. Clair joined the Biology Department in May 2007, replacing Yvonne Martinez-Ingram as Assistant to the Chair. A recent transplant from New England, she was born in Methuen, MA, and raised in New Hampshire. Catherine received her bachelor's degree in political science from Cedar Crest College in Allentown, PA, and completed a semester abroad studying government at the Sorbonne in Paris. Her professional experience includes working as executive assistant to the pro-



ducer of NOVA/WGBH in Boston, and as an assistant to the marketing director of a small medical equipment manufacturing company in Santa Barbara, CA. Prior to joining us, she worked as an administrative manager for the Director of the Vitamin D, Skin, and Bone Research Laboratory and the Director of the General Clinical Research Center at the Boston University Medical Center. She likes diversity and a challenge, and feels that this job offers both.

Professor Larry L. Barton

For the past 36 years, **DR. LARRY BARTON** has studied the mineral metabolism of microorganisms. The process of obtaining energy by bacteria metabolizing sulfur compounds has been a central focus of his work. He also has studied iron transport activities in mycorrhizal fungi, cyanobacteria, rhizospheric bacteria and nitrogen-fixing rhizobia. Dr. Barton's studies on nutrient limitation of algal growth in natural waters are being used by the New Mexico Environment Division to establish standards for rivers and streams throughout the state.

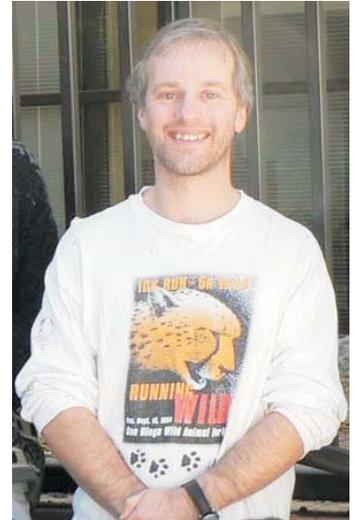


Larry's work has been interdisciplinary, featuring collaborations with several UNM faculty members, as well as with scientists from the University of Georgia and Marseilles, France. International fellows hosted by his laboratory have included Francisco Tomei from Puerto Rico and Kwang-Sung Bae from South Korea. He also has collaborated with the Los Alamos National Laboratory concerning the use of bacteria for remediation of toxic sites containing heavy metals. With members of UNM's College of Engineering, Larry's laboratory developed immobilized bacterial systems to convert soluble toxic metal ions to insoluble compounds of reduced toxicity. Geologists at the University of Nanning, China became interested in his biogeochemical studies with anaerobic bacteria and invited him to assist in their development of processes for environmental bioremediation.

In response to the need for publications dedicated to reporting biochemical activities of unusual bacteria, Larry started the international journal *Anaerobe*, published by Academic Press. Over the years, Larry has published eight books on the chemistry of microorganisms (that's right, eight books!), all of which are still in print. In 1988, he co-hosted an international symposium of "Iron Nutrition and Interactions in Plants," which was held at UNM. In 1995, along with a colleague at the University of Calgary, Larry started the international symposium "BioMetals." Currently, he is on the international steering committee for both of these symposia.

When asked about his tenure in the Biology Department, Larry replied, "I appreciate the opportunity to direct students in the study of microbiology at UNM and am fortunate to be surrounded by many interested in this subject."

DR. RICHARD CRIPPS is an Associate Professor of Biology, and is in his second two-year term as one of our two Associate Chairs. Richard regularly contributes to our teaching mission by introducing Biology majors to the principles of genetics, as well as by contributing to upper-level courses focused upon gene expression and development. Richard grew up in Robin Hood country: in Nottingham, England, and boasts that he once met the Sheriff of Nottingham (nothing illegal involved!). Richard received Bachelor's and D.Phil. degrees from the University of York before moving to the U.S. and doing post-doctoral work at San Diego State University. During this early part of his career, Richard was interested in how the muscles of fruit flies function to control flight. He then took another post-doctoral position at University of Texas Southwestern Medical Center in Dallas, where he worked for National Academy member Eric Olson, studying how the muscles of the fly originate in the body. "Moving from San Diego to Texas was a *real* culture shock!" he quips, yet Richard decided to remain in the Wild West when he joined our faculty in 1998. The work in Dallas laid the groundwork for Dr. Cripps' current research focus, which has been to study the development of muscles, rather than their function. Richard also has



been one of the pioneers in using the fly as a model system to study heart development. He has contributed significantly to a body of work showing that the genes that fashion heart tissue in the fly also function to control human heart development. This was highlighted by papers this year where Richard's group showed that a cardiac gene named Tinman ("Mutants for this gene have no heart—geddit?!") works by switching on a cadre of other genes responsible for making the heart. Richard also spends a great deal of time serving the scientific community by being an active grant reviewer for the American Heart Association and the National Institutes of Health. When he is not haunting the Biology Building, Richard likes to spend time tending to his goldfish pond and small collection of heirloom tomatoes.

David Schmidly



Dr. David J. Schmidly became UNM's 20th president in October, 2007. As President, he is responsible for UNM campuses in Gallup, Los Alamos, Taos, and Valencia as well as at the UNM Health Sciences Center, which includes the nationally renowned UNM Cancer Center.

Before UNM, Schmidly was CEO and 17th president of the Oklahoma State University System, beginning in November, 2002. Prior to that, he was the President of Texas Tech University, where he also served as Vice President for Research and Dean of the graduate school.

An accomplished zoologist, he earned his B.S. and M.S. in Zoology at Texas Tech University, and his Ph.D. in Zoology from the University of Illinois–Champaign/Urbana in 1971. He has been inducted into the Texas Hall of Fame for Science, Mathematics and Technology, and has a species of deer mouse named for him, *Peromyscus schmidlyi*.

Dr. Schmidly's research interests involve the natural history of mammals of the Southwest, especially Texas, New Mexico and Mexico; mammalian systematics, particularly those of the genus *Peromyscus*; and conservation of habitats. Currently, President Schmidly is working on a new edition of *Bats of Texas*, and a new book about the historical changes in the landscape of New Mexico over the past 100 years.

Brenda Claiborne



Dr. Brenda J. Claiborne is the Dean of the College of Arts and Sciences and a Professor of Biology at UNM. She also holds a secondary faculty appointment in the Department of Neurosciences in the School of Medicine at the University of New Mexico. She received her baccalaureate degree in Zoology from the University of California–Berkeley, her master's degree in Biology from the University of Oregon, and her doctoral degree in Neurobiology from the University of California–San Diego. She was a post-doctoral fellow in Developmental Neurobiology at the Salk Institute for Biological Studies.

From 1986 to 2007, Dr. Claiborne served as a faculty member and administrator at the University of Texas at San Antonio, a Hispanic-serving institution with ~27,000 graduate and undergraduate students. During her tenure at UTSA, she attained the rank of Professor of Biology and served as Dean of Graduate Studies and Associate Vice President for Research. In the latter position, she was responsible for all graduate programs and research development on campus, as well as for research centers and institutes. She was instrumental in establishing six new graduate degree programs and played an important role in increasing graduate enrollments and research funding.

Dr. Claiborne also served as founding Director of the Institute for Aging Research at UTSA. As a faculty member, Dr. Claiborne has taught undergraduate and graduate courses, has participated in minority student training programs, and has mentored numerous students in research. She has served on review panels for the National Institutes of Health and the National Science Foundation, and has been a member of three committees of the Society for Neuroscience, including the Minority Education, Training and Professional Advancement Committee, the Education Committee and the Finance Committee.

Dr. Claiborne has received funding for her research from the National Institutes of Health, the National Science Foundation, the Texas Higher Education Coordinating Board and the Office of Naval Research. Recently, she and her colleagues demonstrated that the environment influences brain development in very young animals and that estrogen improves learning and alters neuron structure in both young and aged rats. Currently, her research efforts are focused on elucidating how neurons change in the aged brain and on discovering the molecular basis of “left brain/right brain” differences during development.

NEW FACULTY

Dr. **Vaishali Katju** is an evolutionary geneticist who employs molecular and bioinformatic tools to study microevolutionary processes at the level of populations and genomes. Her research interests encompass a wide range of topics, including gene duplication and its role in the origin of novel phenotypes, the evolution of reproductive incompatibility and the evolution of organellar and nuclear genomes.

Vaishali received her bachelor's degree in Ecology and Evolutionary Sciences in 1993 from the University of Rochester in upstate New York. She spent her final semester abroad in Kenya studying wildlife ecology and management through the School for Field Studies. In 1999, she moved to Eugene, Oregon to pursue her doctorate with Dr. Michael Lynch. In 2001, she moved to the Department of Biology at Indiana University, Bloomington with her doctoral advisor and received her Ph.D. in 2004. For her dissertation research, she focused on elucidating the structural characteristics and subsequent evolutionary properties of a large sample of young gene duplicate pairs within the genome of the nematode, *Caenorhabditis elegans*. In addition, using a comparative genomic approach with the congener *C. briggsae* as an out-group, she was able to determine the mechanisms leading to the origin of novel genes within the *C. elegans* genome and identify the ancestral genomic sequences from which they are derived.

Vaishali initially joined the Department of Biology at UNM in the Spring of 2005 as a post-doctoral researcher with Dr. James Brown. Subsequently, she was funded by an NSF post-doctoral research fellowship in Biological Informatics. She commenced her current position as an Assistant Professor in Biology in the Fall of 2007. Assisting Dr. Katju in her research are research technician **LeAnne Lovato** and graduate student **Annette Evangelisti**. Current research in her lab group combines molecular, experimental and bioinformatics approaches to study gene duplication, including the fixation of gene duplicates at the species level, and evolutionary analysis of gene duplicates in the human-chimp and *D. melanogaster-simulans* genomes.

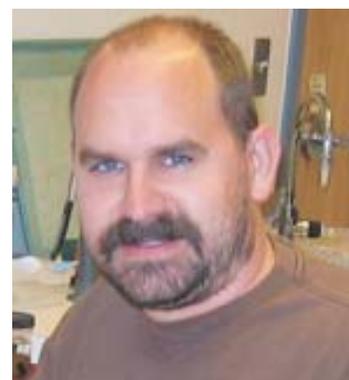
Vaishali Katju



Dr. **Kelly Miller** is an Assistant Professor and Curator of the Division of Arthropods in the Museum of Southwestern Biology. He received his Ph.D. in Entomology in 2001 from Cornell University. He then went to Brigham Young University, where he was first a post-doc and then a research associate. He works extensively at the alpha-taxonomic level revising genera and species groups, and also conducts higher taxonomic phylogenetic work using cladistic analyses of morphological and molecular data to improve classifications and examine evolutionary scenarios. Kelly most enjoys acquiring, describing and analyzing morphological data, but also is interested in getting high-quality molecular data, especially nuclear protein-coding genes.

The focus of research in Kelly's laboratory is study of the systematics of insects. Systematics is the subdiscipline of biology that documents the diversity of living things, no small task when it comes to insects! Work by members of his lab has involved several groups of insects including slime-mold beetles, fungus beetles, diving beetles, whirligig beetles, longhorned beetles, band-wing grasshoppers and webspinners, among others. A primary goal of the lab is to examine the evolution of sexual conflict (diving beetles), mating behavior (diving beetles, band-wing grasshoppers), sound production, karyotype and habitat choice (band-wing grasshoppers) and silk spinning behavior, maternal care and silk gene sequence features (webspinners). Many of these projects are undertaken in collaboration with other labs.

Kelly Miller



Helen Wearing



Dr. **Helen Wearing** grew up on Morecambe Bay in northwest England, in a small town that was home to the Merlewood Research Station, part of the U.K.'s Institute of Terrestrial Ecology. Despite an early exposure to ecological research, Helen went on to pursue her love of mathematics and language at the University of Manchester (Institute of Science & Technology). During her bachelor's degree, she spent a year working for a financial and legal firm in Paris, where she briefly flirted with the idea of a career in the financial sector.

In 1997, she completed her B.Sc. in mathematics and French, and entered a master's program in applied mathematics at Heriot-Watt University in Edinburgh, Scotland. There she met Prof. Jonathan Sherratt, who inspired her interest in mathematical biology and agreed to supervise her Ph.D. research. Over the next four years, Helen studied the dynamics of cell-cell signaling and aspects of its role in development and repair, but became increasingly interested in the interface between mathematics and ecology.

In the fall of 2001, she completed her Ph.D. and accepted a post-doctoral position at the University of Cambridge to work with Drs. Pejman Rohani and Steven Sait on the population dynamics of a laboratory host-parasitoid-pathogen assemblage. This position led to a move to the University of Georgia, where she continued her post-doctoral training and developed her research in infectious disease dynamics.

In August 2007, Helen joined UNM as an Assistant Professor with a joint appointment in Biology and Mathematics & Statistics. Her current research is directed toward understanding the ecological and evolutionary interactions between parasites at multiple scales: within individual hosts, within host populations, and within the communities in which their hosts reside. In collaboration with researchers from fields that span virology to public health, her approach uses mathematical models to combine a theoretical perspective with observational and experimental data.

Christopher Witt



Dr. **Christopher Witt** comes to us as a broadly trained ornithologist with expertise in molecular systematics and specimen-based evolutionary studies. Originally from Philadelphia, he got his start in museum ornithology at the Academy of Natural Sciences under the tutelage of Frank Gill. In 1997, he obtained his undergraduate degree in Human Ecology from College of the Atlantic, in Bar Harbor, Maine.

A lifelong passion for birds and an early appreciation for museums eventually led Chris to an academic career studying bird evolution using natural history collections. His graduate and post-graduate training were at perhaps the two best university-based bird collections in the country: he earned his Ph.D. at Louisiana State University-Baton Rouge in 2004, then he was a two-year post-doc at the Museum of Vertebrate Zoology, University of California-Berkeley.

At UNM, Chris is an Assistant Professor; he is also the Curator of the Division of Birds in the Museum of Southwestern Biology (MSB), where he plans to expand the collection and enhance its importance to biodiversity science on an international scale. Another of his goals is to connect the tremendous body of amateur talent in bird biology that exists in New Mexico to scientific studies at UNM and the rich specimen collections of the MSB. His current scientific research relates to hummingbird evolution, high-altitude adaptation, and the biogeographical history of Andean birds.

NEW FACULTY

English-born **Paul Farnsworth** was educated at Queen Elizabeth College and the Middlesex Hospital Medical School, both of which are within the University of London System. After post-doctoral research at the University of California–San Diego, Paul decided to remain in the U.S. and has taught and done research at UCSD, the University of Texas–San Antonio, and the Southwest College of Medicine in Phoenix. He has designed and taught dozens of courses at both the undergraduate and graduate levels, published 30 peer-reviewed research papers and two books, and spoken at conferences worldwide.

Paul is now a Lecturer III in the Biology Department. He is firmly committed to improving undergraduate education and has designed novel didactic and laboratory courses in Life Science.

Paul's research interest is in the field of applied microbiology—the detection and removal of pathogens from foods and beverages and the design and operation of industrial food processes to minimize food-borne hazards. To this end, Paul not only does research at the bench level, but also works directly with industry to design and build food and beverage plants and to establish quality-control systems and laboratories.

Paul Farnsworth



Marieken Shaner joined Biology Department as a Lecturer II in August of 2006, and has taught Biology 110 (Biology for Non-Majors), Biology 123 (Biology for the Health Related Sciences) and Biology 239 (Microbiology for the Health Sciences). She is almost a New Mexico native, having moved here from the Bay Area more years ago than she cares to admit. She received both her B.S. and M.S. in Biology from UNM in 2001 and 2003, respectively. Her primary research interest focuses on the evolutionary ecology of plant reproduction, although she also has a persistent fascination with most microorganisms. During her off-hours, Marieken would prefer to be found stomping around the mountains and rivers of New Mexico, but if that fails, she is usually found making messes in her kitchen or curled up with her nose in a book.

Marieken Shaner



FACULTY HIGHLIGHT



ROB MILLER'S LAB CONTRIBUTES TO THE PUBLICATION OF THE MARSUPIAL GENOME PROJECT

One of Biology's significant research accomplishments this past year was the publication in *Nature* of the first marsupial genome project. Biology professor **Robert D. Miller**, also co-director of CETI (the Center for Evolutionary and Theoretical Immunology) was a key participant in the project. Rob and colleagues **Michelle Baker** and **Zuly Parra**, both also in Biology, were instrumental in revealing several components of the immune system in the marsupial genome.

STUDENT PROFILE

Monica Moya



Monica is an international student from Venezuela earning a B.S. in Biology, with a minor in Chemistry. She works as an undergraduate research assistant in **Dr. Diana Northrup's** cave microbiology lab. Monica studies the bacterial composition and diversity of desert varnish. Currently, her work involves the comparison of the microbial diversity found in lava tubes from two geographically distinct regions, one in El Malpais National Monument (Grants, NM) and in Beall's Lava Tube (Hawai'i). Recently, Monica was co-awarded the Cave Conservancy of the Virginia's Undergraduate Research Grant, which will allow her to expand her research objectives to include the microbial community composition found in the Azores' lava tubes (Portugal). Monica hopes to take the research experience she has gained to further her academic career in graduate school.

RESEARCH FACULTY

How do phosphorus, nitrogen and other environmental factors affect the food resources of the federally listed endangered Rio Grande silvery minnow? While research has been done on genetic and population dynamics of this famous fish, little is understood about the algal resources that support this omnivorous minnow. **Dr. Becky Bixby**, Assistant Research Professor, along

with **Dr. Ayesha Burdett**, Postdoctoral Fellow, and undergraduates **Nathan Daves-Brody** and **Greg Hurley**, recently has been funded by the Middle Rio Grande Endangered Species Act Collaborative Program to examine the effects of nutrients on algae in the Rio Grande.

Algae often live within narrow environmental conditions, making them

important environmental indicators in aquatic ecosystems. Algae can be important environmental indicators as they respond rapidly to environmental change (often in days), seen as changes in biomass and shifts in taxa. Understanding the diversity and role of algae in arid-land rivers are crucial to our understanding of how management in the Middle Rio Grande watershed affects this riverine ecosystem.



Congratulations to This Year's Scholarship Winners!

Undergraduate Scholarship Winners

THE COCALINA MEMORIAL SCHOLARSHIP assists women students in their pursuit of science. This year's recipient is *Nailah Cooper*.

Graduate Scholarships

THE MELINDA BEALMER MEMORIAL SCHOLARSHIP is awarded to attend and present at conferences. The award winners for this year are *David Dean* and *Etsuko Nonaka*.

THE CRAWFORD RIO GRANDE SCHOLARSHIP assists those conducting research related to the Rio Grande Bosque. The award winner this year is *Thomas Kennedy*.

THE DR. LYNN A. HERTEL GRADUATE RESEARCH AWARD was established to support the research program of those completing their thesis or dissertation. The recipient of this year's award is *Christopher Bickford*.

THE DR. HARRY WAYNE SPRINGFIELD SCHOLARSHIP provides funds to conduct research in plant ecology. The year's winner is *Sarah Koerner*.

THE ALVIN AND CAROLINE GROVE SCHOLARSHIP awards those who show scholastic and academic achievement in their primary research field. This year's award recipient for the Doctoral scholarship is *Andrea Porras-Alfaro*. The award winners for the Summer scholarship are *Casey Gilman*, *Angela England*, *John Delong*, and *Kenneth Letendre*. The Grove Research scholarship winners are: *Alaina Pershall*, *Cindy Mathiasen*, *Melanie Barnes*, *Melissa Franklin*, *Karen Gaines*, *Ian Murray*, *Etsuko Nonaka*, *Alison Boyer* and *Diana Andres*.

Undergraduate/Graduate Scholarships

JOSEPH GAUDIN SCHOLARSHIP is awarded to students studying mammals, in particular members of the cat family (Felidae). The scholarship winner is *Angela England*.

THE THELMA EVANS TRUST SCHOLARSHIP provides support for those pursuing a career in Veterinary medicine. The recipients this year are *Consuela Conley* and *Patricia Warne*.

STUDENT PROFILE

Armand E. Dichosa, Ph.D. Candidate

Armand began his graduate career in the Biology Department in 2001 as a Master's student, then chose to pursue a Ph.D. working on exotic prokaryotes. He has been a Teaching Assistant for Genetics, the Molecular Biology Facility, and the Microbiology labs for both Biology and Health Science majors.

Armand conducts his research in Spider Cave, a karst cave system located in Carlsbad Caverns National Park, NM. He focuses on the diverse microbes adapted to thrive in an energy-limited,

sunlight-deprived environment. He studies secondary speleothem formations called ferromanganese deposits (FMD). Armand is able to identify the microbes that reside in Spider Cave and, more importantly, infer how they are able to survive in such an extreme environment. His research has many implications, including conservation of our national parks, public education and awareness, the potential to discover novel microbial species, thus furthering our understanding of unique microbial metabolic pro-

cesses, evolution, and even astrobiology. To help investigate the many aspects of his research, Armand was awarded funding from the New Mexico branch of the Geological Society of America and from NASA's New Mexico Space Grant Consortium.

What makes his research most enjoyable is the immense collaboration and support he receives from the Biology faculty members and from other academic institutions. With guidance from **Drs. Diana Northup, Larry**



Barton, Robert Sinsabaugh, Mike Spilde (Institute of Meteoritics, UNM), and **Penny Boston** (New Mexico Tech.), to name a few, Armand investigates cave microbiology from many scientific facets. As Armand notes, "The experience I've gained from working with such talented professors is immeasurable."

STAFF PROFILE

John Cox, Facility Services Manager

John Cox is one of Biology's many valued employees who daily makes all of our lives easier and more productive. John's value has never been more evident than during the construction phase Biology is passing through right now. We all know John as the person to turn to when we have an electrical or plumbing problem in our labs, but our recent basement remodel project and the planned Casterter addition clearly have revealed another dimension of John's already multitalented personality. He has proven himself to be a superb organizer of major building projects, providing the critical daily oversight needed to keep contractors, Physical Plant, administrators and the end users all in line. It is safe to say that without John's Herculean efforts guiding the new construction in Biology, we would still be many months away from occupying our new teaching laboratories in the basement.



John was born and raised in Albuquerque, and has been associated with UNM for his entire life. His father, Berry Cox, was the Chief of UNM Police and Director of Parking Services until his retirement after 18 years of service, and his stepmother, Sada Cox, retired after many years with the Student Financial Aid Office. John joined UNM as a staff member in 1983, initially as a Custodian at the Children's Psychiatric Hospital, where he worked his way up to a Facility Services Technician. In 1993, he joined the Biology Department as a temporary employee. Six months later he was hired permanently as a Facility Services Technician, then as a Shop Supervisor, and more recently as the Biology Department's Facility Services Manager. John serves as the central liaison for all aspects of building operation, construction, maintenance and safety in Casterter Hall, Marron Hall, the Biology Annex, and occasionally in the CERIA building. John's collection of power tools is a constant attraction to those of us who fancy ourselves as handy, but when we need a construction job done well, we know to whom to turn for professional work!

Although John's job takes a great deal of his time—he has been seen on mop duty on Christmas Eve during a major flood—he still finds time to practice his blues licks on his electric guitar . . . which can occasionally be heard emanating from his office during lunch or after hours. *Thanks, John!*



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We want to most sincerely thank our donors for their generous gifts in 2007–08. Your continued support to the Department of Biology allows us to provide resources needed to sustain students & faculty through scholarships, research funding, capital project improvements, & other general needs.

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