GEORGE MASON UNIVERSITY

Where Innovation Is Tradition

Periodic Elements

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A Magazine from the College of Science

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Periodic Elements

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On the Cover

June 2012 wildfire in Colorado Springs, Colorado. Data provided by the East FIRE Lab helps agencies prepare for the annual fire season.

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photo: © iStockphoto.com

Supporting Mason

COS Sets a New Course for Philanthropic and Alumni Engagement

Nurturing a college or university and helping the institution realize its vision takes time, commitment, and people who want to make a difference. In the brief history of the College of Science (COS), many alumni, donors, and volunteers already are leaving their mark on the college. They have shared their expertise to develop degree programs that prepare students for futuristic careers in science, provided unique internships and other experiential learning opportunities for students, and supported COS through donations that support world-class research.

To build on these successes, COS introduces a new team of professionals to take the college to the next level of philanthropic support and create new opportunities for engagement between alumni and the college.

Aurilla "Dee Dee" Fusco serves as assistant dean for development and alumni affairs. She brings nearly three decades of management and fund-raising expertise from private, government, and academic sectors to her role, and most recently served as associate director of development at Georgetown University Law Center.

Michele Drumm is now associate director of development, formerly the manager of annual giving for the Association of Fundraising Professionals Foundation for Philanthropy. She has managed development programs for a variety of nonprofit organizations for more than twenty years.

Photo: Courtesy of Aurilla Fusco

Aurilla "Dee Dee" Fusco, Assistant Dean Development and Alumni Affairs

Periodic Elements Q&A

PE: Why is it important to attract private funding for COS when Mason is a state-supported university?
Fusco: That's a great question. While Mason is a state-supported university, like most universities it is not fully funded. Grants, individual gifts, corporate sponsorships, and so forth help supplement the greatest need, financial aid for the students, as well as research opportunities and other complementary programs that enhance their college experiences. The greater the opportunity for all students regardless of ability to pay, as well as the quality of the programs that Mason offers, the better we are as a stepping-off point for the next generation.

PE: How does private funding benefit COS, and how are these funds used?
Fusco: Private funding can benefit us in a variety of ways. As I mentioned before, it can support scholarships and financial aid that directly affect students. It can enhance a research program. It can support a unique project that helps set Mason apart. Any current or potential donor has the opportunity to meet with us at the college to learn about our programs, research, and future ideas. We encourage them to meet students, discuss opportunities, and experience a bit of what we have to offer. Often these conversations, activities, and events lead to discussions about gifts of support, and the result is an agreement that defines the donor's interests.

PE: What types of individuals or organizations donate to COS?
Fusco: Alumni, parents, friends, and organizations with like interests donate to the college. Sometimes it's a match of ideas and research as well. It's a chance for donors to invest in the future.

PE: In addition to offering financial support, what other opportunities are available to donors who want to contribute to the success of COS?
Fusco: We welcome volunteers and collaborators to help us find jobs for students, assist with events and activities, and share knowledge and experiences with our students and faculty. It's also great to have alumni assist with admissions interviews. In this instance, we are better able to identify students who are the best match for Mason. Sharing time and talent is tremendously valuable to us in the college.

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Funding Q&A, from page 2

PE: What fund-raising goals have you set for COS, and how will they be implemented?
Fusco: We, along with the entire university, are going through a visioning process with our new president, Ángel Cabrera. He is helping us fine-tune the overarching goals, at which point I will be working with our college dean, Vikas Chandhoke, to incorporate the COS goals into the overall vision for the university. Regardless of this outcome, undesignated funds are always appreciated because they can be used to support the unexpected opportunities that arise in any given year. In addition, scholarship and financial aid support is always welcome. I would encourage anyone with interest in giving back to COS in any way to reach out. We'd love to have a conversation.

Photo: Courtesy of Michele Drumm

Michele Drumm
Associate Director of Development

PE: Why are active alumni vital to the success of COS?
Drumm: An institution's alumni network can be a powerful tool in providing mentoring, professional guidance, and employment opportunities for its students and graduates. Members of alumni chapters, clubs, and classes serve as university or college ambassadors, providing a crucial link between the university or college and the communities in which they reside and work.

PE: What types of opportunities are available to alumni to support and strengthen COS students and programs?
Drumm: Alumni support is essential in building a strong future for COS and for Mason. Gifts from our alumni help provide scholarship support for current and future students, and help maintain and create outstanding facilities for learning and research. Support from our alumni helps the college attract and retain faculty members who excel in their fields,

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Funding Opportunities for the College of Science

Saroj K. Chandhoke Memorial Fund: This fund was established by COS colleagues in memory of the mother of Vikas Chandhoke, current and founding dean of COS, to support special needs of the college.

Dean's Visionary Fund: Donations to this fund allow the dean to quickly respond to opportunities that will position the college at the forefront of science education and research.

Scholarship and Fellowship Funds: These resources are used to competitively attract the best and brightest students—future scientists who will make discoveries that positively affect society.

Deanship, Chair, Professorship Funds: These funds provide support in recruiting and retaining outstanding faculty members who engage in research of consequence, stimulate the minds of our students, and are committed to making a difference in the world through science.

Department and Center Funds: COS departments and centers use these resources for specific needs, such as equipment, student and faculty support, special programs, and speakers series. Through this fund, faculty members can respond to unique opportunities that affect their educational and research goals.

Annual Fund: Mason's Office of Annual Giving reaches out to alumni, parents, and faculty and staff members once a year through phone, mail, and e-communication campaigns. Gifts of all sizes may be designated to COS through support of the university's Annual Fund.

In addition, a variety of naming opportunities are available for specialized facilities, buildings, program endowments, and other needs. These gifts begin at $10,000, and payment of pledges can be extended over five years.

Supporting Mason
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Photo: Courtesy of Jolanda Luksenburg

Newly described owl species, Otus Jolande, *perch for a picture in Indonesia*

Whoo are You?

Most people bring back a memento or two from their travels, a little something to remember a special place or event. For Jolanda Luksenburg, PhD Environmental Science and Public Policy '12, the souvenir from her 2003 vacation to Indonesia is a new species of owl named for her, *Otus jolandae*.

Luksenburg has been studying marine mammals throughout her career. Her husband, George Sangster, is also a biologist—a bird taxonomist working toward his doctorate at Stockholm University. They plan their vacations so that she can dive and research marine mammals and he can research birds, so they often visit islands.

Photo: Courtesy of Jolanda Luksenburg

George Sangster and Jolanda Luksenburg

In September 2003, Luksenburg and Sangster were on the island of Lombok in Indonesia to collect sound recordings of the local population of a species of nocturnal bird called Large-tailed Nightjar (*Caprimulgus macrurus*). Instead, they captured the vocalizations of an owl that was unfamiliar to them. "Initially we weren't sure whether it was perhaps a previously known species from Java and Bali that for some reason had been overlooked on Lombok," says Luksenburg. That possibility was quickly ruled out when Luksenburg and Sangster played back these sound recordings.

The owls responded strongly to the recorded calls and approached the loudspeakers, affording the researchers a good view. These owls looked nothing like those on Java and Bali, but more like the Moluccan Scops Owl (*otus magicus*), the species that was supposed to occur on Lombok—which they had recorded only a few nights earlier on the island of Flores. However, the whistle of this owl sounded completely different from the raven-like call of the Moluccan Scops Owl.

Two years after Luksenburg's and Sangster's initial discovery, Sangster was contacted by Ben King, a research associate and ornithologist at the American Museum of Natural History in New York. King had also visited Lombok—and found a new owl there. When Sangster and King compared their recordings of the owl vocalizations, they realized they had found the same undescribed species. In another amazing coincidence, King had made his recordings mere days after Luksenburg and Sangster had made theirs.

In the intervening years, Philippe Verbelen, a field biologist from Belgium, and Colin Trainor, an ecologist and conservationist from Australia, joined Sangster and King and contributed additional data, sound recordings, photographs, and research insight. The team's years of work culminated in a 2013 research paper describing the owl as a new species, and Sangster and his coauthors named it *Otus jolandae* after Luksenburg.

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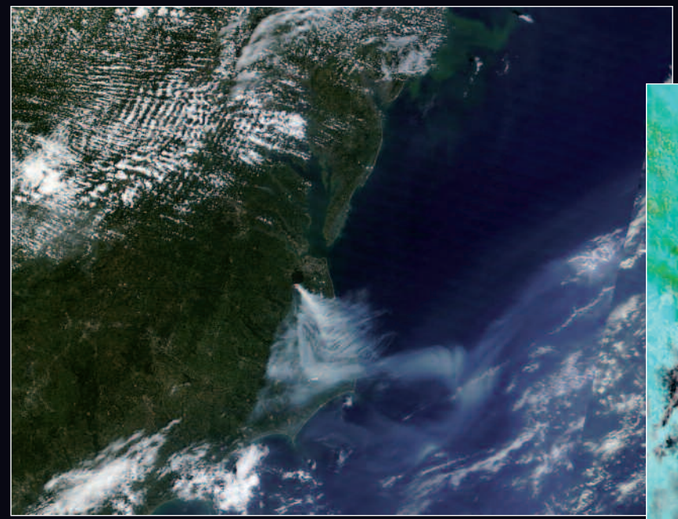


Photo: Courtesy of NASA

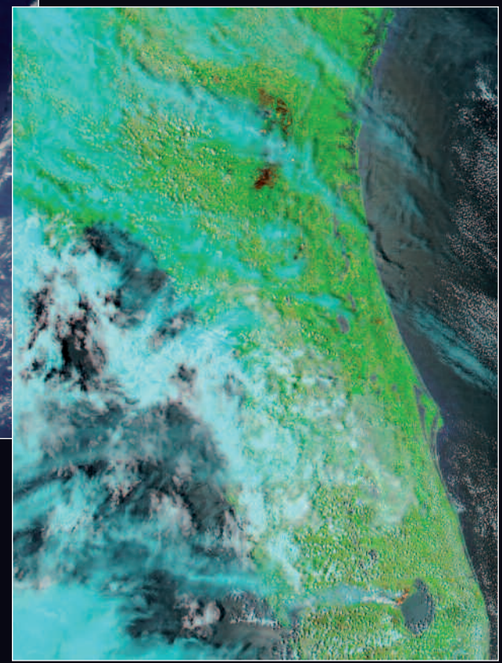


Photo: Courtesy of NASA

Fire in Great Dismal Swamp of Virginia, August 2011 (above)
Fires in Florida and Georgia, May 2007 (at right)

EastFIRE Lab Brings New Data to Fire Science

Television images of smoldering forests and grasslands with aerial shots of communities in a panic because of evacuations are all too common as the heat of summer bears down on the United States. In 2012, more than four million acres burned according to the National Interagency Fire Center. Fire's power to destroy woodlands and urban communities, as well as the health hazards associated with smoke, are well known to William Sommers, codirector of the EastFIRE Laboratory, a research lab that is part of the Environmental Science and Technology Center in the College of Science (COS). "Wildfires are more closely associated with Western states," explains Sommers, "but with the majority of the U.S. population living east of the Mississippi River, Eastern region fires can be more deadly and costly." The EastFIRE lab collects and analyses Eastern regional fire data to provide a unique East Coast focus to global climate and demographic drivers of fire trends.

One mission of the EastFIRE lab is to use remote sensing and model applications, a field in which COS scientists have great depth and experience. Researchers monitor fuel properties, the level of fuel moisture and temperature, any active fires, and smoke danger as it relates to air quality. The real-time data can then be used by local, state, and federal agencies as they prepare for fire season or battle actual blazes.

Sommers is a fire expert. He began his career in the 1970s as a research meteorologist for the U.S. Forest Service and eventually served as a director for its Forest Fire and Atmospheric Sciences Research in Washington, D.C. In 2012, he was honored by the International Association of Wildland Fire with the Distinguished Service Award for his work in establishing the International Journal of Wildland Fire. Sommers explains that the global fire research community had no peer-reviewed journal to share research. The International Journal of Wildland Fire is now the lead international scientific journal filling that role.

Research is essential these days. Since beginning his career, Sommers has seen how climate change has affected fires here in the United States and around the globe. He explains that until recently the science of fire was based on empirical models dating from the 1960s. "Fire is closely dependent on weather, and climate shifts have now changed the game plan so we can no longer use the old models.

"We now have a much better understanding of fire as an ecosystem disturbance and of the hazards it poses for wildlife urban interface areas," says Sommers. The wildlife urban interface refers to where development meets natural spaces. With more people living in fire-prone natural areas, such as Colorado, it becomes important for city planners and municipalities to manage resources to protect life and property. As climate change causes more droughts in the East in natural areas, it is reasonable to expect more fires, and more fires in dense urban areas.

In 2011, Sommers, along with EastFIRE lab fire experts Stanley G. Coloff and Susan G. Conrad, published *Synthesis of Knowledge: Fire History and Climate Change*. The report, funded by the interagency Joint Fire Science Program, provides a detailed Earth history of fires and climate change. Sommers points to how fire and current climate alter the ecosystem in ways that are becoming better understood. For example, old growth trees that burn today come from forests that were established hundreds of years ago with different weather and wildlife patterns. The new seedlings that sprout after a fire are now growing in a new climate. They may have different rates of growth and survival dependent on the climate, and those changes will then ripple through the entire ecosystem affecting vegetation, insects, birds, and mammals.

The EastFIRE lab does not establish timetables for fire seasons, but it does use satellite observations to track the annual march of fire around the globe. Climate change is producing longer local fire seasons and Sommers points out that government fire centers are better qualified for predictive services. But the lab is adept at predicting heat waves and drought that affect fire season as well as analyzing pollutants from smoke that affect human health. Lab data is helping establish new fire science models and inform people that fire is an integral part of our wildland ecosystems that directly affects them. The more we understand it, the safer we are.

Photo: Courtesy of William Sommers

Fires increasingly threaten and destroy suburban environments. While more prevalent in the West, East Coast fires can potentially be more devastating due to population density and community preparedness.

NatureServe
A Network Connecting Science With Conservation

Internships Introduce Students to Global Biodiversity Preservation

Preserving the Earth's biodiversity is both a scientific and political challenge. While countries around the globe recognize the importance of protecting natural resources, the reality of implementing programs to monitor environmentally sensitive locations and threatened species presents even greater challenges.

NatureServe, a nonprofit conservation organization based in Arlington, Virginia, with offices across the country, works to "provide the scientific basis for effective conservation action." The organization is the hub of a network that provides information about rare and endangered species and threatened ecosystems. The College of Science (COS) has formed a relationship with NatureServe that provides internship opportunities for science students and allows a NatureServe researcher to have an affiliate teaching position in the college.

David Luther, an assistant professor in the undergraduate biology program, connected Mason to NatureServe and serves as the program facilitator. He says, "This is the university's second year with the program, and we are the only university in the area working with them." Internship opportunities are available to undergraduates across all science disciplines. "This is the type of research and work that helps students become excited about science and find great jobs after they graduate," says Luther.

Xuemei Han, a researcher at NatureServe, has been working with COS intern Adama Ba, a senior geography student. Ba is working to find and document biodiversity research and data on the East African Great Lakes region for one of NatureServe's research programs, which will create a global biodiversity dashboard assessment tool. Han says that Ba's research has been incredibly helpful, so important that they asked him to continue his internship for a second semester. Ba began the project conducting a literature review of material published in each of the African Great Lakes countries. The second half of the project is to now translate those findings into quantitative data and create maps of the region.

Ba is a native of Senegal, "a reason he was chosen for the project," says Han. She explains that he has a cultural understanding of the region, which is an invaluable asset. For his part, Ba agrees. He began studying geography in Senegal before coming to the United States and ultimately to Mason.

"The project has really helped me develop my research skills," says Ba. He would like to continue studying in a master's program and hopes to find some scholarship opportunities. He is hopeful that this work experience will help him reach his goal.

Luther sees great potential for a continued relationship with NatureServe and COS. Because the organization's research crosses a variety of science disciplines from biology, geology, climate studies, and botany, students will continue to have opportunities for meaningful work. Additionally, faculty members will be able to explore grant opportunities and have access to NatureServe data for projects and coursework.

Photos: © iStockphoto.com

Photo: Courtesy of Tamanna Nabi

Tamanna Nabi stands outside the University of Maryland School of Dentistry.

Finding Her Own Value

When College of Science senior and microbiology student Tamanna Nabi entered sixth grade in a Kansas City, Kansas, middle school, she had never set foot in a classroom. Born in Mazar-e-Sharif in 1991, Nabi grew up as the Taliban were gaining power in a post–Cold War Afghanistan. A tenet of their draconian belief system: girls were forbidden from attending school and becoming educated.

"It wasn't normal for women to have rights, to have a voice," recalls Nabi, a stylish 22-year-old whose onyx-colored hair reflects the light of a Fenwick Library study room.

What brought Nabi's family to the United States twelve years later revealed another horror of the new regime. The Taliban were executing members of the Hazara ethnic group, to which Nabi's father—and by default, she and her five siblings—belonged. After her father fled to Turkmenistan for his safety, Nabi and her family joined him after a bit of necessary subterfuge. Because the Taliban forbid Nabi's mother to leave without her husband's permission, Nabi's maternal uncle posed as his sister's husband to facilitate the family's departure.

However long her education was delayed, Nabi wasted no time in catching up. She essentially taught herself to read and write English—ESL classes weren't much help, she says. She graduated from Westfield High School in Chantilly, where she now lives with her parents and siblings. She completed a pharmacy technician course in high school before switching focus to dentistry in college.

Nabi is now an ambitious predental student with enough accolades and work experience to put her far ahead of her American-born peers. She received the prestigious John C. and Louise P. Wood Scholarship last year from the university's Alumni Association, and she is president of Mason's predental society and vice president of the school's chapter of the American Society for Microbiology. She's made the Dean's List nearly every semester with a challenging course load and works thirty hours a week as a dental assistant.

"I'm kind of a nerd. I study 24-7," says Nabi, who became interested in medicine after seeing firsthand the lack of access to health care in Afghanistan. Even as a girl, Nabi knew this deficiency was utterly wrong. In Nabi's view, she's had no choice but to seize every opportunity that came her way. Thoughts of how Afghan women struggle are never far from her mind.

"It's not 100 percent the Taliban, but the society itself" in Afghanistan that devalues women, depriving them of schooling so they can't exercise their rights, she says. Her dream is that every Afghan woman learns to be self-sufficient and that the society "will see daughters and sons as equals."

The only way for this dream to become a reality, she says, is to support Afghan women's right to an education, which she intends to do in a formal capacity in the future. Being a role model herself seems a great place to start.

NanoNotes

Elements of Distinction about the College of Science, its Faculty, Staff, and Students

Linda Abbott, MS Biology '81, has been named director of the Office of Risk Assessment and Cost-Benefit Analysis in the Office of the Chief Economist, U.S. Department of Agriculture. She also earned her juris doctor degree from Mason's School of Law.

Toni Martin, an undergraduate student in the Department of Chemistry and Biochemistry, received an honorable mention award at the 2013 American Association for the Advancement of Science Student Poster Competition. Her presentation, "Conversion of Bicarbonate to Carbonate as a Function of Time and Temperature," was recognized in the physical sciences category.

Katheryn Patterson, a doctoral student in the Environmental Science and Public Policy program, received a 2013 Young Scholars Award from the Cosmos Club Foundation for her work on the microbiology and molecular ecology of tissue-loss diseases affecting Acropora cervicornis in the Florida Keys National Marine Sanctuary. She is one of twenty-six scholars selected this year from 231 applicants attending universities in the Washington, D.C., metropolitan area.

Thomas Lovejoy, Department of Environmental Science and Policy, was the featured speaker at the National Sporting Library and Museum's celebration of the exhibit "Intersection: Field Sports and the Evolution of Conservation." His lecture, "Teaming with Life," was presented to members of the museum's Ivy Circle and the Chairman's Council in Middleburg, Virginia.

Lee Talbot, Department of Environmental Science and Policy, was recognized by the U.S. Department of State and the U.S. Department of the Interior for his vision and leadership in the creation of the World Heritage Convention, an international agreement that comprises the largest participation in the world in natural and cultural preservation. The recognition is part of the fortieth anniversary of the convention.

James Essig, BS Physics '01, published his second book on relativistic rockets in interstellar space travel, *The Galactic Explorer: Advanced Concepts in Relativistic Rocket Flight*.

Brian Engler, School of Physics, Astronomy, and Computational Sciences, was elected a fellow of the Operations Research Society, an international organization that provides training, conferences, publications, and information to operational research professionals and interested members of the general public.

Faculty, staff, students, and alumni are encouraged to send their NanoNotes *to cosnews@gmu.edu.*

Join us for the College of Science Convocation

Wednesday, May 15, 2013, 2 p.m., at the Patriot Center

Deborah Adler Myers, general manager and executive vice president of Science Channel, a Discovery Communications network, will deliver the keynote address. Myers joined Discovery in 2005 and assumed her current position in 2009. Under her leadership, the Science Channel has achieved top ratings success and solid business growth. The Science Channel, the only network devoted entirely to the wonders of science, reaches 1.8 billion subscribers in 218 countries and territories.

Photo: Courtesy of Deborah Adler Myers

Deborah Adler Myers, Discovery Communications

Where Science and Policy Intersect

Paul Lewis' positions as a branch chief with the U.S. Environmental Protection Agency (EPA) and an administrator for high-level scientific peer review boards illustrate the fact that not all rewarding careers in science are pursued behind the bench.

Lewis, PhD Environmental Science and Public Policy '04, considered academia while studying plant science as an undergraduate and master's candidate. But it was an internship at a Washington, D.C., government relations firm whose client was Oklahoma State University, where Lewis was earning his master's degree, that proved to be a turning point.

> "Lewis explored his interest in the health impacts of chemicals while at Mason, where his doctoral work delved into the neurotoxic effects of pesticides. Not only was his experience at Mason intellectually rewarding, but it also allowed him to maintain his full-time job at the EPA."

"Coming to D.C. was a real eye-opening experience," recalls Lewis, who lives with his wife and two teenage sons in Potomac, Maryland. "I could use my scientific background in terms of informing public policy." He went on to earn a master's degree in public administration at The George Washington University before pursuing his doctorate at Mason.

This initial experience at the intersection of science and policy led Lewis to the EPA, where he has worked most of his federal career. He currently serves as chief of the Chemical Information and Testing Branch in EPA's Office of Pollution Prevention and Toxics.

As a scientist and public administrator, Lewis has devoted his career to working with agency officials to ensure that they have the best available scientific information in support of regulatory decision making. "I very much like working in teams and interacting with stakeholders," he says. "One advantage of my career is the broad range of scientific and policy interactions I've had."

Lewis' current role puts him front and center in seeking data and negotiating agreements between the EPA and the chemical industry over how data on their products will be collected. The purpose of this data collection, he says, is to understand the risks posed by commercial and industrial chemicals to human health and the environment.

Lewis explored his interest in the health impacts of chemicals while at Mason, where his doctoral work delved into the neurotoxic effects of pesticides. Not only was his experience at Mason intellectually rewarding, but it also allowed him to maintain his full-time job at the EPA. It was an EPA colleague, in fact, who provided him with the epidemiological data that was the starting point of his dissertation.

"Mason catered to people like me, working professionals," Lewis says. "It was a real balancing act because I had a young family at the time. I felt very fortunate because Mason was able to provide me with flexibility."

***Whoo are You?**, from page 3*

"Finding this owl inspired me in my own field work," notes Luksenburg. During her doctoral studies at Mason, Luksenburg worked with Chris Parsons, associate professor in the Department of Environmental Science and Policy, to develop a comprehensive research project for her dissertation. Luksenburg examined marine mammals of Aruba from several angles: their occurrence and distribution, their morphology and identification, their external injuries, and human attitudes toward them. During her two years in Aruba, she documented fourteen species of whales and dolphins, which brought the total number of cetaceans (genetic order that includes whales, dolphins, and porpoises) documented in Aruban waters to sixteen species. Her research ranged from genetic studies to document Bryde's whale (*Balaenoptera brydei*) to observations to quantify human-related injuries in the Atlantic spotted dolphin (*Stenella frontalis*), the bottlenose dolphin (*Tursiops truncatus*), and the false killer whale (*Pseudorca crassidens*).

The work on *Otus jolandae* helped Luksenburg realize that a single sighting can lead to promising projects. She twice sighted killer whales (*Orcinus orca*), which led to a collaboration with people all over the Caribbean on deeper research into killer whales in that region. Because killer whales are rarely studied in the tropics, almost no research on them in the Caribbean exists.

"Finding a new owl species in the field so easily shows how little is known" about many species, she points out. "There's always the possibility of discovering something new."

Illustration: © iStockphoto.com

Helping Minority Students Achieve Success in a Chemistry Career

The American Chemical Society (ACS) Scholars Program is a renewable scholarship program that awards up to $5,000 to African American, Hispanic, or American Indian students who want to pursue a career in chemistry or chemistry-related fields. In the College of Science (COS), the program aims to promote the value and rewards that come with a career in chemistry and to assist minority students in acquiring the skills and credentials needed for success in the chemical sciences. John Schreifels, chair of the Department of Chemistry and Biochemistry believes the ACS-certified chemistry degree acts as a guarantee to future employers that COS graduates have received the proper chemistry training and education.

Students who receive the ACS scholarship gain access to undergraduate research and internship opportunities, as well as the chance to develop relationships with mentors from minority advocacy organizations and to attend national ACS meetings to meet with various potential employers.

> "This scholarship offers me continual, renewable support in developing the skills I need to become a full-fledged chemist," says Alderate. Since his award, Alderate has been able to take advantage of the resources and benefits of being an ACS scholar, such as making contacts in the field, which he says "will make starting my career easier."

Photo: Courtesy of Austin Alderate

Austin Alderate, ACS scholarship recipient

The program's most recent awardee, Austin Alderate, plans to pursue a career in research or industrial application of chemistry, and he views the award as a major milestone in his efforts to fulfill his career goals.

"This scholarship offers me continual, renewable support in developing the skills I need to become a full-fledged chemist," says Alderate. Since his award, Alderate has been able to take advantage of the resources and benefits of being an ACS scholar, such as making contacts in the field, which he says "will make starting my career easier."

Alderate feels that the award is one of the most crucial steps on his career path. "As an ACS scholar, I represent the future of the chemical sciences. I have with me a visible indication of my desire and the hopeful backing of a society that is far larger than myself."

Graduate Student Housing Opens at Prince William

Beacon Hall, Mason's first university housing facility built exclusively for graduate students, is now open at the Prince William Campus. Students in the GeorgeSquared program, a partnership between Mason and Georgetown University Medical School that provides medical training for students interested in health-related careers or research, are the primary residents.

Also the first student housing facility at the campus, Beacon Hall provides 112 units that accommodate 152 students in fully furnished studio, one-bedroom, or two-bedroom apartments, complete with dishwashers, washers, and dryers in each unit. The building provides ample lounge and study space throughout, and residents can enjoy covered, outdoor balconies on each residence floor. Retail space on the first floor of the building will be leased to restaurants and other businesses that support residence life.

The Freedom Aquatic & Fitness Center and the Hylton Performing Arts Center, both conveniently located on campus, offer students a variety of health and cultural activities to help them balance the many hours they spend attending classes or studying with recreation and relaxation time. The Mason Shuttle provides transportation to the Fairfax Campus and the nearby Manassas Mall, and other transportation options are accessible from each of these stops.

"I appreciate the activities and events that have been open for us to feel at home and welcome," says a GeorgeSquared student who attended a recent campuswide dinner. "Many of us are hours away from home, and being here has eased some of the homesickness."

Photos: Patty Snellings

Photos: P. Snellings

Beacon Hall (above)
A cozy corner where students can study or relax (inset).

Working to Solve Global Food and Water Security and Other Natural Resources Issues

Collaboration is one of the most powerful natural resources in the College of Science (COS). Taking full advantage of this resource, John J. Qu, director of the Environmental Science and Technology Center (ESTC) in the Department of Geography and Geoinformation Science, and Raymond Motha, a research professor in ESTC, organized an international conference at Mason in 2011 to discuss a proposed African agriculture (droughts, floods, degraded land) project.

The meeting was well attended and followed the next year by "The International Symposium on Synergistic Approaches to Food and Water Security." This second meeting, also held at Mason, was cohosted by the World Meteorological Organization (WMO). It brought together 110 participants, including international experts from seven countries, WMO, and scientists and decision makers from universities, companies, and government agencies to share information and perspectives on food and water security issues.

From these two successful meetings, Qu and Motha developed the Global Environment and Natural Resources Institute (GENRI) to focus on interdisciplinary research, education, and training on global agriculture, water, and other natural resources.

"GENRI will be an integral partner of an international consortium that will offer academic studies and research opportunities in the interlinked, thematic scientific areas of an ecosystems approach to agriculture production and marketing, and sustainable use of water resources," says Qu. "We are looking forward to collaborating with other Mason programs to develop place-specific sustainable solutions to globally interdependent problems."

Motha and Qu will serve as GENRI's codirectors to manage the program and coordinate activities with national and international partners. Motha says, "We are very excited about this new institute, not only because it will strive to enhance Mason's reputation in academics and research, but also because it provides an opportunity to collaborate with experts from around the world who support a common mission."

GENRI will work closely with WMO and the Global Centers of Excellence in Education and Research (G-CEER), a group of like-minded academic institutions whose experts have participated in the Mason and WMO meetings and project activities. This group also comprises government agencies, including the Italian Institute of Biometeorology (IBIMET), which is a research agency, and the South African Agricultural Research Council (ARC).

Motha explains that the first phase of work will target COS academic course training (a specialized certificate program) and bring WMO- or G-CEER –sponsored short-course training programs to COS. This phase will be followed by the development of a graduate-level program.

In addition to academics, Motha further explains that COS and GENRI have an initial funded pilot project to develop an early warning system for agricultural management in South Africa, with a second phase in the planning stage for Mozambique. This project is sponsored by WMO, and GENRI will partner with Brazil's center of excellence institution on the Mozambique project.

GENRI is also getting a boost from University Professor Thomas Lovejoy, who holds a joint appointment in COS and the College of Humanities and Social Sciences and is an internationally acclaimed leader in the science and conservation of biological diversity. In addition to participating in Motha's and Qu's previous international meetings and symposiums, Lovejoy will serve as chair of the GENRI Executive Advisory Board and provide valuable guidance on the future mission of GENRI.

Motha says, "His participation is key because any sustainable strategies for food and water security needs are closely interlinked with the ecosystem and biodiversity."

With climate changes adding to the challenges of feeding a hungry world population, GENRI will work to solve problems on a global level using methods that are both culturally relevant and technologically sound.

***Funding Q&A**, from page 2*

do outstanding research, stimulate the minds of our students, and are committed to making a difference in the world of science.

Volunteering is another way alumni can support COS students and programs. Many opportunities across the university welcome alumni involvement, such as the Mason Alumni Ambassador program through the Office of Admissions, the Mason Career Link, and Mason Speakers.

PE: What plans do you have to engage alumni in COS activities?
Drumm: We hope to engage our alumni through a variety of activities and events throughout the year. Tentative plans include establishing a COS Alumni Chapter in 2013, which would hold several activities each year, offer a mentoring program, and host networking events. If anyone is interested in helping to start the chapter or has ideas for events, please contact me.

PE: Although COS was established in 2007, some of the earliest degrees Mason awarded were in science disciplines. Does this historical perspective affect your alumni base in terms of number, age, location, and participation?
Drumm: I think this unique historical perspective serves to enrich and strengthen our alumni base. Many of our earliest alumni still live in the region, making it more convenient for them to participate in activities and engage with students. Our history also presents an opportunity to plan different events for our older alumni. For example, we're holding a dinner in June exclusively for the Founding Patriots, those who graduated in or before 1972.

Dean's Message

Photo: Creative Services

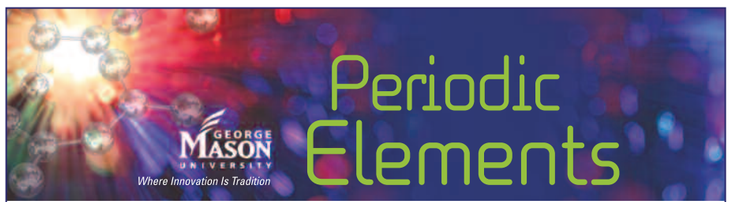
Vikas Chandhoke
Dean, College of Science

Exploration, discovery, and understanding—these are the expected by-products of scientific research. And the labs and classrooms at our Prince William and Fairfax campuses, our living classrooms at the Smithsonian-Mason Conservation Biology Institute in Front Royal, Virginia, and our collaborative programs across the area offer this and more. However, as dean, I feel it's vital to recognize all the resources and infrastructure required to make science at Mason possible.

This issue of *Periodic Elements* offers a behind the scenes look at some of the people and activities so essential to our business of education. We welcome both Aurilla "Dee Dee" Fusco, assistant dean for development and alumni affairs, and Michele Drumm, associate director of development. These two professionals are actively promoting our achievements to alumni and donors to encourage their involvement with the college and to seek philanthropic support and new opportunities for our students.

Our work with NatureServe highlights how our faculty are mining their own networks to connect their work and passions to the university. At the campus level, new graduate housing is making it easier for us to attract the best students from around the country and the world.

The basics of buildings and budgets may lack the excitement of lab or classroom work, but they are as much a part of the process as anything that happens here. These stories reveal another side of science, perhaps the part that connects people the most. With properly funded programs, new internship and study opportunities, and state-of-the-art facilities, the exploration, discovery, and understanding can begin.



Read past issues of Periodic Elements at cos.gmu.edu

Excuse Me, is this Seat Taken?

Samantha Oester graciously shares her vantage point with a curious penguin.

Photo: Chris Parsons

Oester, a doctoral candidate in the Department of Environmental Science and Policy (ESP), along with ESP students Whitney Denham, Christine Prahl, and Yumi Daimaru, headed south during Winter Break 2012 to survey penguin populations in Antarctica. The three-week field course was led by ESP associate professor Chris Parsons.

"We had many opportunities to get to see animals up close, sometimes closer than you'd want to be," says Oester. "They would hop in our boats, swim close, and we just had to let them be, to figure out how and when to leave."

Parsons explains that students were able to witness firsthand some of the changes in the environment and animal populations due to climate change. "There are major changes in the distribution and numbers of various penguin species. It is no longer cold enough for the cooler-climate penguins, and researchers are seeing fewer of them."