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Fall 2012

From Bren to D.C. — and Cameroon
Alumnae take a leap of faith to the capital and beyond

Visitors Who Make a Difference
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Dean’s Message

In our wired era, marketing can get a little out of control. Superlatives and buzz words fight for our attention. Catch phrases substitute for information. Exaggeration and spin can rule the day. Not even higher education is immune to marketing overreach, which is why it’s so satisfying for me to see this issue, and the proof that so much of what we say and believe is happening at the Bren School is in fact happening.

We say, for instance, that our faculty and staff honestly care about students, and that our outstanding career-development team supports them from their first day at Bren Hall until their last, and often beyond. We say that our students are confident and ready when they graduate. Reading “Anne and Lena Go to D.C.” (P. 15) makes those claims ring with a truth that no marketing campaign could match.

We routinely claim that we offer a highly integrated master’s core curriculum. Professors and co-lecturers John Melack, Arturo Keller, and Patricia Holden make the point on page 6, where they explain how the core course with the complex name — Environmental Biogeochemistry — fits into the master’s curricular mix. They also highlight the deep-rooted commitment to interdisciplinary education, which is a foundational element of the Bren School.

We are proud of the Bren School as a place of innovation. The article about visiting faculty and the varied courses they teach (P.10) demonstrates how an evolving corps of engaged professionals extends the curriculum by bringing knowledge and experience “from the trenches” to keep our students current in a range of important and emerging subjects areas.

We say that we are committed not only to conducting science and creating solutions, but also to communicating about them in order to increase their impact. The article about the Bren School Communication Center (P.7) demonstrates the degree to which that commitment is evolving and deepening to make Bren students more effective professionals.

Finally, a pair of articles — one on the UC Center for Environmental Implications of Nanotechnology (P. 11) and the other on new projects of the Sustainable Fisheries Group (P. 12) doubly underscores these and other elements, including sustainability, that infuse the school.

The Bren School is very much about putting theory into practice to create novel solutions and make a difference. It is also about doing what we say we do — no spin required.

Zurich Distinguished Visitors for 2012–13

Two of the three Zurich Financial Services Distinguished Visitors on Climate Change for the 2012–13 academic year have been named.

The fall visitor will be Margaret Davidson, Director of the Coastal Services Center within the National Oceanic and Atmospheric Administration (NOAA). The center provides technology, information, and management strategies used by local, state, and national organizations to address complex coastal issues. She will be in residence at the Bren School from November 13–20, teaching a short course and presenting a public colloquium on November 14.

The spring 2013 visitor will be Don Wuebbles, the Harry E. Preble Professor of Atmospheric Science at the University of Illinois and the first director of the university’s School of Earth, Society, and Environment, a position he held from 1994–2006. Wuebbles has produced groundbreaking climate research throughout his career and is a coordinating lead author for the Intergovernmental Panel on Climate Change. He will be in residence at the Bren School from May 13–24 and will present a public colloquium on May 15.

Find out more at: www.bren.ucsb.edu/supporting/zurich.htm.
Support for Water Research in Cities and the West

Urban water quality and infrastructure are the focus of a gift from Henry H. Wheeler

The Bren School has received a gift of $1.25 million from Henry H. Wheeler, Jr. to support research led by Bren School professor Patricia Holden on the urban water environment.

“We are at a time when protecting water resources is more critical than ever,” says Bren School dean, Steve Gaines. “It is therefore exciting to receive this generous gift to support Trish Holden’s groundbreaking work, which is important to the health of humans and the environment.”

Mr. Wheeler, whose family founded the Park Water Company in Downey, California, has spent decades in the water industry. In recent years, he has taken a keen interest in decaying underground urban water infrastructure and possible links to disease.

“Coming from the water business, I know how we worry about underground infrastructure,” he says. “People tend to take it for granted. They think it’s down there and it’s OK, but it’s not. Leaking sewer pipes are a huge problem, and it’s not just a local problem; it’s ubiquitous.

“We need to know if water is a factor in disease or not, and if it is, we need to remediate it,” he adds. “That requires good science, and Dr. Holden and the Bren School are up to the task. I wanted to support her and her team, because they’re the boots on the ground in those efforts.”

Mr. Wheeler discovered Dr. Holden in a report covering research that she and her group had done in the City of Santa Barbara, using various approaches, including DNA tracing, to identify leaking sewer pipes as a source of human pathogens that can contaminate storm drains, coastal ocean waters, and, potentially, groundwater.

“Aside from Dr. Holden’s being extremely astute and a very nice person, I was struck by the fact that she is not only a world-class microbiologist, but also a licensed professional civil engineer,” said Mr. Wheeler. “That’s perfect. You often get one specialist or the other but you don’t get a ‘two-for-one sale.’

“I’m immensely grateful for Mr. Wheeler’s extraordinary gift,” said Dr. Holden. “I see a role for our science in bringing more attention to the issue of degraded ‘sanitary’ infrastructure, with a main goal of informing solutions to the problem.”

Intending to use the funding initially to learn more about contaminants, Professor Holden describes the importance of the work: “Worldwide, there is mounting evidence that decaying infrastructures are releasing wastewater, which then migrates into groundwater or surface water,” she says. “If, as expected, freshwater resources become increasingly scarce as climate varies and urban demands for water increase, then managing wastewater to protect ground- and surface-water resources will become even more critical. Our research is about understanding the problems in more detail, and discovering realistic solutions.”

Walton Family Foundation fellowship program focuses on water issues in the American west

The Walton Family Foundation has provided a generous gift of $800,000 to establish the Walton Family Foundation Water Markets Fellowship program (Water Markets) for the study of market-based solutions to freshwater challenges in the American west. In its first year, the Water Markets program will provide career-oriented training for four Bren master’s students and two Bren PhD students.

“The Bren School is immensely grateful to the Walton Family Foundation for its continuing vision and commitment to environmental sustainability,” says Dean Steve Gaines. “Its partnership programs serve to develop not only knowledge, but perhaps more importantly, environmental professionals who will drive innovation for many years to come.”

The Walton Family Foundation’s environmental program creates partnerships among conservation, business, and community interests for the purpose of developing durable solutions to big problems. The foundation’s Freshwater Initiative focuses on sustaining healthy and resilient communities of both wildlife and people in the Colorado and Mississippi river systems.

“We’re pleased to support the Bren School in training leaders who will make substantial contributions to employing market-driven strategies for solving water challenges in the western United States,” said Sam Walton. “From its location to its curriculum to the expertise of its faculty, the Bren School is the right place for this kind of program, and we’re excited to have a role in making it happen.”

Water Markets will address the critical importance of water in the western United States in general and the Colorado River Basin in particular. Existing water-apportionment law no longer reflects the realities of the area: water rights are incompletely defined, water markets are localized and limited, and water remains misallocated.

Aimed at qualified master’s and PhD students, the Water Markets focus is intended to “advance water conservation and sustainable water management practices by preparing future environmental leaders with a unique grounding in the science, economics, policy, and law of market-based sustainable water management.”

A stated goal of the program is “to have these students lead water management reform in the United States by contributing new knowledge, shaping policy, and creating market-based solutions.”
LAFF Moves Ahead

A gift from the Walton Family Foundation established the Latin American Fishery Fellowship (LAFF) program, which, in 2011–2012, began training leaders who are committed to pursuing careers in the field of fisheries management. Below are the new LAFF fellows. The foundation has also generously committed an additional $1.42 million to support fellows in the classes of 2015 and 2016.

Mary Luna has worked with Reef Check California to produce training materials for divers conducting scientific surveys, and with a fishing cooperative on Isla Natividad, off Baja California, to develop an assessment program for marine reserves. She helped replicate the Natividad model in Baja’s Magdalena Bay, and worked with the Natividad community to develop responsible tourism in support of jobs and sustainability. She received her BS in biology from UCLA in 2007.

Pablo Obregon graduated with a BS in biochemistry from Bowdoin College (Maine) in 2009 and spent two years as a lab manager and research assistant at a stem cell laboratory at Massachusetts General Hospital. Returning to Colombia, he has worked on coral restoration, aquaculture technology and infrastructure, and strategies to replenish ocean fish stocks. Pablo is interested in developing innovative, science-based management strategies to preserve the oceans and ensure the sustainability of marine resources.

Aristoteles ("Aristo") Stavrinaky earned a BS in biology from the Universidad Central de Venezuela in 2006. He has assessed and proposed management strategies for small-scale fisheries for the Venezuelan National Institute of Fisheries and Aquaculture, and has served as a fisheries observer aboard commercial vessels for the Falkland Islands Fisheries Department. Aristo is interested in developing sustainable management of small-scale fisheries while preserving the cultural identities of fishing communities in developing countries.

Daniel Viana collected data for oceanography research, developed research projects, and presented results at conferences while in college. He has also worked with Brazil’s national Ministry of Fishing’s satellite-based vessel monitoring system, performed community-based fisheries monitoring, and participated in an alligator-management project. His career objective is to improve fisheries management and to design and monitor marine protected areas. He graduated with a BS in fishery engineering from Federal Rural University of Pernambuco in Brazil in 2011.

José Zenteno received his BS in marine biology from the Universidad de Valparaiso in Chile in 2011. While at school, he worked as a lab assistant and science technician for projects focusing on fish larval ecology and aquaculture. Recently, he has been studying the performance of an innovative spatial measuring system for artisanal fisheries in Chile. José would like to continue working to improve coastal fisheries management, enhance the sustainability of fishing communities, and conserve coastal ecosystems.

Industrial Ecology in the Alps

Sangwon Suh chairs, and Bren students attend, a prestigious Gordon Research Conference

In June, Bren associate professor Sangwon Suh and a group of Bren master’s and PhD students traveled to the mountain village of Les Diablerets, near Geneva, Switzerland, to attend the 2012 Gordon Research Conference (GRC) on Industrial Ecology.

GRCs, which are held in a variety of subject areas, are unique among scientific meetings. The small, prestigious, invitation-only gatherings attract top scholars to present unpublished research at the frontiers of science in a format that invites rigorous questioning and extended discussion.

Topics for conferences have to be proposed and then approved by the GRC board. And each biennial conference has to provide high value or it is put on probation and has to improve the next time or be cut from the GRC schedule.

“I learn more at GRCs than I do at any other conferences,” Suh says. “The audience is diverse, the speakers are thought-provoking, and the discussions are very rich.”

Each presentation lasts an hour, with about 20 minutes of discussion. There are no concurrent sessions, so everyone attends every talk, and the towns selected for the GRCs are small and have few distractions. (Arriving at Les Diablerets, which is at an elevation of 3,800 feet, involved taking a train from Geneva and then a cable car to get up the mountain.) No materials are published from the conference, Suh explains, so that speakers are encouraged “to talk about their ongoing, cutting-edge, just-completed research.”

Suh spoke at the GRC for Industrial Ecology in 2008, vice-chaired the 2010 conference, and chaired this year’s event, so he handpicked the attendees and was able to invite a group of Bren students and graduates.

New graduates Kurt Heinze, Sheena Katai, and Gomati Madaiah (MESM 2012) were on hand, along with Kate Ziemba (MESM 2013), PhD students Darcy Bradley and Trevor Zink, and postdoctoral associate Brandon Kuczenski. Bren alumna Vared Doctori Blass (PhD, 2007) also flew in from Israel.

“It’s always illuminating to see prominent people get together to discuss their thoughts on where the field is going,” says Kuczenski, whose research involves the material flow of used lubricating oils. “It’s especially important for industrial ecology, because there are scattered pockets of students and researchers, so it takes a conference to get a lot of people together.”

“I liked the fact that the work was not published yet; there were times when someone would ask a question, and it was clear that it was food for thought for the speaker,” says Madaiah, who helped organize the event. “It gave me a sense of the intellectual dynamics of the process. And because there were only 150 participants and a lot of time for interaction, I felt that I was part of the industrial ecology community.”
Pollinating a PhD

In Chile, Lorena Vieli tracks bumblebees to unlock the secrets of an agricultural system

Deep within southern Chile’s 10,000-acre blueberry zone, fourth-year Bren School PhD student Lorena Vieli is tracking queen bumblebees, the main wild pollinators of the crop. Some farmers purchase bumblebee colonies, though most cannot afford them, and most keep honey bees as well. But bumblebees start to work in early spring, when it is usually still too cold for honey bees. That makes them indispensable to the crop, and yet, their habitat is disappearing as more lands are turned to agriculture.

Vieli wants to support farmers in managing their non-agricultural resources to ensure a healthy bumblebee population and good crop yields.

“The results of this study will be integrated to explore possible landscape-related principles associated with insects that are beneficial for crop production,” she says. From there, Vieli hopes to develop modeling techniques that can be used to increase the insects’ numbers.

One aspect of her research involves studying the role of forests, which may provide important hibernation habitat for the bees. Her focus is on forests of varying proximity to the crops — “far” forests, which are defined as lying at least three kilometers (1.8 miles) from the blueberry rows, and “near” forests, which are close to, or even on, a farmer’s land.

“I want to analyze how important it is for a farmer to manage a near forest,” Vieli says. “I’m trying to identify the relevant scale of analysis for predicting the abundance of bumblebees and the pollination service they provide to the blueberries.”

That, she hopes, will enable her to relate landscape to the abundance of queen bumblebees.

Numbers matter, she says, because pollination intensity is important: “More intense pollination generates more seeds per fruit and larger fruit and, thus, increasing yields. And more bees equal more intense pollination.”

Vieli is testing another hypothesis, too. It suggests that if adequate far forest is available, then the fate of near forests won’t matter so much in terms of bumblebees. But in areas lacking far forest, near forests might have an important role in bumblebee abundance. Given that, it may seem obvious for farmers to protect near forests that provide habitat for bumblebees.

“But many farmers lack understanding of farm ecology,” Vieli explains. “If they have forest, they don’t know whether it is valuable to them or not. Many of them think that forests are a source of problems, so they cut them down — often, illegally. And there are some pests affecting blueberries that are produced in the forest habitat. I’m interested in showing farmers how the overall ecology of the landscape around them is important to the farm.”

Doing so, Vieli believes, will enlist farmers in finding alternatives to the dilemma of depleting populations of essential bumblebees by cutting down forests to get rid of a blueberry pest.

As spring begins in the southern hemisphere, Vieli is starting her second season of collecting data. So far, she has not reached any conclusions: “I can say only that this guy has a lot of bumblebees compared to the others,” she observes. “It needs more research.”

The 35,000-Mile Man

Hiking that far gave master’s student Justin Lichter the expertise to write a book on backpacking

In authoring and self-publishing Trail Tested: a Thru-Hiker’s Insights into Hiking and Backpacking, second-year MESM Justin Lichter (2013) heeded the old adage to write about what you know. Having backpacked some 35,000 miles to date, Lichter, a 32-year-old professional gear tester and ski patroller, knows his subject through and through.

Some people spend a lifetime completing one of the big-three national scenic trails in the U.S. — the Pacific Crest Trail, the Continental Divide Trail, and the Appalachian Trail. Lichter, whose trail name is “Trauma” (friends gave it to him after he was set upon by angry ravens while he was hiking in Utah’s Canyon Country), has done them all twice, including all three in a single year.

He has hiked from the eastern-most 8,000-meter peak in the Himalayas to the western-most one and has trekked across New Zealand, Iceland, and Africa. A couple of summers ago, he swam around Lake Tahoe, unaided and without a wetsuit, dragging his minimalist gear behind him and refueling with food stashed along the route.

In the book, Lichter provides an expert’s insight into equipment and trail techniques amid a collection of high-quality high-country photography of himself and his dog and frequent backpacking companion.

Why write the book? In an interview for trailspace.com, he said, “I want to help people get outdoors and feel comfortable there, and then help them take their hiking trips to the next level.

We have to keep human-powered travel fun, so that not everybody turns to ATV riding and dirt biking.”
The core science course Environmental Biogeochemistry (ESM 202) is team-taught every winter quarter by two members of a three-professor team. It includes John Melack, an ecologist who is expert in chemical cycling in lakes, wetlands, and streams; Arturo Keller, an environmental engineer whose research scope includes the fate and transport of environmental pollutants and innovative treatment systems; and Patricia Holden, a microbiologist and engineer with expertise in tracking pollutants in streams and subsurface soil.

The course is designed to impart to first-year Bren master’s students “an understanding of environmental chemistry to a level appropriate to the kind of jobs they are likely to have,” Keller observes. “I was a little afraid of the class because I hadn’t taken chemistry since high school, but it was taught in a way that’s useful from a managerial perspective,” says Kimberlyn Way (MESM 2012). “You learn what causes a problem and how you can alleviate it.”

Holden defines biogeochemistry as “the study of the distribution and flow of elements — carbon, nitrogen, phosphorous, sulfur, mercury, and trace elements — through life forms and the lithosphere, including soil, water, and air systems; how pollutants affect the cycles; and the important role bacteria play in the relevant processes. “All life forms are made of the elements, which have to be recycled through the biosphere in order for life to regenerate itself,” she says, “but humankind has substantially accelerated the cycling of the elements, with disturbing results.”

“Environmental managers need to understand the causes of such problems in order to get to the root of them and develop solutions,” Holden says. Students are also grounded in pollution issues, because, says Melack, “They are fundamentally chemical and biological: How does an element like mercury magnify through the food chain? What’s the underlying mechanism for what we describe generically as water pollution or air pollution?”

Unfortunately,” Keller adds, “human beings generate a lot of examples that make the course relevant, and throughout, we try to connect with what’s new so that students learn chemistry in a way that’s interesting and has application.” Biogeochemistry and the two other core science courses — Earth System Science and The Ecology of Managed Ecosystems — were designed to overlap and complement each other.

For example, Melack explains, “The ecological aspects of the biogeochemistry course include things like how plants and microbes modify cycling, which then includes subjects that might be considered population and community ecology and ecosystem ecology. In the earth systems science course, the carbon cycle is covered in terms of energy budgets and hydrological aspects, while we look at it from the perspective of methane and carbon, and CO2 as an element in the growth of plants and subsequent microbial processing.”

He explains that the course also has links to economics, saying, “They share a systems world view, the notion that you have multiple scales affecting the cycles and flows, whether its dollars or carbon or nitrogen. And, of course, the economic drivers of changes in these cycles are strong — the consumption of fossil fuels, the generation of fertilizers, and so on.”

Last year, Associate Professor Sangwon Suh also contributed to the course by lecturing on the strong relationship between life-cycle assessment (LCA) and biogeochemistry. That made sense, Melack says, because “Much of LCA has to do with examining how industrial practices affect biogeochemical cycles.”
Communication Matters
At the Bren School Communication Center, students build critical professional skills

In response to employer surveys that repeatedly emphasized the importance of job applicants’ writing skills, the Bren School Communication Center began life with a single class to support incoming master’s students in improving their writing. Some years later, the center includes multiple services for building written and oral communication skills.

“Professional communication skills are not necessarily something that students, particularly those in a natural-science program, would learn as undergraduates,” says Satie Airamé, Bren School assistant dean for academic programs. “Our goal is to ensure that every MESM and PhD student at Bren learns to communicate effectively through oral presentations and writing.”

For Dean Steve Gaines, the center’s value is abundantly clear. “You may have a wonderful environmental solution, but if you can’t effectively communicate it to people, it probably will not be used,” he says. “The Communication Center supports our students to be as effective as possible in turning their talents loose to drive change.”

And it continues to expand and refine its offerings.

Peer-to-peer tutoring, for instance, has long been offered at the center but is now linked to core courses taken by all MESM students. Those taking “Business and the Environment” (ESM 210) from Professor Matt Potoski in fall quarter are encouraged to meet with a writing tutor when they have a draft of an early class paper. They receive individual writing advice and then revise their draft before turning it in. The process helps students improve their critical thinking, logic, and writing. The same approach is applied to Environmental Policy and Politics (ESM 241), taught by Assistant Professor Sarah Anderson in winter, and Environmental Law (ESM 207), taught by visiting professor Jim Salzman in spring. Early exposure leads many students to make greater use of the Communication Center and have more success in class.

Another facet is added by Janet Kayfetz, who teaches the Bren School’s introductory writing course, plus a workshop on oral presentations. She also teaches writing courses for UCSB’s Computer Science, Mechanical Engineering, and Materials programs. UCSB librarian Janet Martorana brings another important dimension to the center. She teaches students research techniques that include how to locate technical reports and data that may be critical to their research but hard to find because they might appear only in government publications as opposed to academic journals.

A new course, co-taught by University of Manchester (England) professor of psychology and Bren School visiting professor Geoff Beattie and UCSB’s Carsey-Wolf Center director, Richard Hutton, combines human behavior and communication techniques and technologies as a means of teaching students to connect their environmental work to their intended audiences.

“Understanding audience behavior is usually tied into a psychology program, and gaining experience in how to motivate people to think or behave differently is typically learned on the job,” Airamé explains. “These kinds of things aren’t generally taught in environmental science programs. We want to bring them into the classroom to give our students a head start in the job market.”

Another addition will be an advanced ten-week course, a kind of extension of the Group Project, in which students will be able to use their communication skills to create an informational campaign tailored to a specific audience.

“The idea is that the students would work with a client and prepare an information campaign using a combination of media — multimedia marketing, web design and creation, filmmaking, and photography, to name a few,” says Airamé. “They will pick a topic and then translate their scientific findings and further integrate them into the real world.

“Many Group Projects generate fantastic results and interesting findings that are relevant to specific groups — maybe the public, an NGO, or a government agency,” she adds. “This would give students the opportunity to present their work in a format that will connect with the audience that most needs the information.”

The long-range goal for the communication focus at Bren, says Airamé, is to develop a series of electives that would engage the school with other UCSB departments. Possibilities include working with Film & Media Studies on a class for making environmental documentaries and collaborating with the Carsey-Wolf Center to develop a course on grassroots organization and campaigning.

“I’m excited about this program,” says Airamé. “It’s an opportunity for us to further enhance our graduates’ desirability on the job market while distinguishing the Bren School from similar programs across the U.S.”
Faculty

Mapping the Future

A collaborative process is under way to update the Bren School Strategic Plan

Sixteen years after the Bren School opened its doors, Dean Steve Gaines has initiated a faculty-led effort to update and revitalize the Bren School vision and implement strategic goals as part of a new Strategic Plan.

To begin the process, representatives from AMC Strategies, well known for its strategic-planning work with universities and university-affiliated medical centers, conducted interviews with faculty, staff, students, alumni, and advisors to identify areas of perceived strength as well as those that are ready for growth or enhancement. Using information gleaned from these interviews, the faculty identified several broad goals in the areas of research, education, and resources as a first step toward defining, planning, and executing steps to achieve them.

In the area of research, the school seeks broadly to expand interdisciplinary research that results in integrated solutions to complex environmental problems. The dean and faculty will identify and plan ways to engage in collaborative research with other experts worldwide to address a wide variety of environmental issues from the local to the global scale.

To further the educational mission, the plan endorses the school’s efforts to attract, retain, and support world-class faculty, and to develop innovative programs to educate and train future environmental leaders in academia, business, government, and the community. Visiting professors, distinguished visitors, and experienced professionals will continue to enrich training for master’s and PhD students.

Another central strategy will involve increasing the resources available to support the Bren School’s mission and vision, while continuing to generate local, national, and international awareness of the school’s distinctive programs and achievements, and its role as a center of environmental innovation and dialog.

During the course of the 2012–13 academic year, Bren faculty committees and work groups will convene regularly to develop specific strategic goals, as well as an implementation plan and focused strategies for meeting them.

Snow Intensive

Jeff Dozier’s annual field course immerses students in the science of snow

Every year between winter and spring quarters, Bren professor Jeff Dozier travels to Mammoth Lakes with about twenty students who are enrolled in his intensive weeklong course ESM 236, “The Mountain Snowpack.”

The group stays at the Sierra Nevada Aquatic Research Laboratory (SNARL), a UCSB Nature Reserve facility. Students attend lectures by Dozier and other experts in the mornings, and afternoons conduct field work on Mammoth Mountain, with a bit of time for skiing or snowboarding in between. At night, they cook communal dinners, have discussions, and pore over some of the extensive assigned readings.

“Every day was jam-packed,” says Dane Johnson (MESM 2013). “We’d get going at eight in the morning and return at five or so, totally exhausted. We’d learn about snow metamorphosis and snow-water equivalence in the lecture, and then do field work to reinforce what we had learned in the classroom.”

Dozier says it’s his favorite course to teach. “We’re together, so I get to know the students better than I ever do in normal classes, and it’s small enough so that I’m able to give them a lot more feedback on their exams, and they appreciate that.”

He began the course, he explains, “because a lot of us in environmental science base our science partly on measurements we have made, so teaching students about that is important. And snow is important because it provides half of the fresh water in the West.”

The fieldwork includes digging snow pits to gather cross-sections of snowpack for observation of crystal characteristics, studying snow-energy balance at an on-mountain facility, and accompanying the Mammoth Mountain avalanche-control team as they set off Plastique (C4) explosives to

see Snowpack on page 9
One of the ironies of the law requiring California utilities to secure one-third of the state’s electricity from renewable sources by 2020 is that popular actions to address one element of sustainability — reducing greenhouse gas emissions (GHGs) — may negatively impact another: desert conservation. Bren School professor Frank Davis partnered with Bren School professional researcher David Stoms (now at the California Energy Commission) and Bren alumnus and Defenders of Wildlife staffer Stephanie Dashiel (MESM 2011) to identify sites where solar-energy development is most compatible with conservation interests in California. Read more at: http://www.bren.ucsb.edu/news/desert_solar.htm

James Frew, Bren School professor of environmental informatics, hosted the 4th International Provenance and Annotation Workshop at Bren Hall in June. The workshop drew fifty experts in the recording and understanding of information provenance — the history of how digital information is created and modified. The workshop also hosted a meeting of the World Wide Web Consortium’s Provenance Working Group, which is developing a standard language for exchanging provenance information on the Web. More about the workshop: http://ipaw2012.bren.ucsb.edu
More about the Provenance Working Group: http://www.w3.org/2011/prov

As Director of Development for Ecological and Environmental Sciences, Gay Larsen works on projects that link the Bren School to the larger UCSB community. Based at the Marine Science Institute (MSI), she raises funds to build the Outreach Center for Teaching Ocean Science (OCTOS), currently under construction next to MSI, and more recently added to her portfolio the Natural Reserve System, directed by Bren professor Patricia Holden, and the National Center for Ecological Analysis and Synthesis (NCEAS), directed by Bren professor Frank Davis. “I’m happy to be collaborating with the Bren development team on areas of common interest and am looking for opportunities to connect MSI colleagues and friends here at Bren,” she said.

UCSB Earth Sciences professor David Lea is the newest Bren School affiliated faculty member; he will teach a course tentatively titled “Advanced Climate Change for Policy Makers” during spring quarter 2013. Professor Lea’s interests include climate change, global warming, climate evolution, marine geochemistry, and the carbon cycle. In 2010 he spent a year in Washington, D.C., as a science advisor to Todd Stern, President Obama’s Special Envoy on Climate Change. “After returning, I wanted to share what I had learned while working on the policy side,” he says, adding that, as a natural scientist, he could appreciate that “understanding climate change is not a question of understanding only the science; it also requires knowledge of the policy arena.”
Visiting lecturers add a valuable dimension to the Bren School curriculum. Whether their courses last a day, a week or a full quarter, part-time lecturers enable Bren master’s students, in particular, to broaden their knowledge in specific areas and become more familiar with the world of environmental professionals.

“The Bren School has a different challenge than some programs in its peer group, which have business and law schools,” says Michael O’Connell, executive director of the Irvine Ranch Conservancy and one of more than a dozen visiting faculty. “Without having those other schools on campus, Bren has done a really good job of using visitors to bring those disciplines into a strong core curriculum.”

In his one-week course, Conservation Management in Practice, O’Connell teaches the ins and outs of running a successful nonprofit as one possible career path in the conservation field.

“We talk about how running a for-profit business and a nonprofit organization are the same in that both are businesses, with payroll, HR, facilities, and audit,” he explains. “I want students to have a perspective on what they can expect and what defines the most impactful career, with a particular emphasis on working for nonprofits as way to attain that.”

Professionals who are working in a specialized area are well positioned to bring a current view of the field, says Tom Jacobson. A planner, attorney and lecturer at Sonoma State University, he remains in active practice and teaches Environmental Planning at the Bren School.

“Our field changes so quickly and sometimes so dramatically,” he says. “If I weren’t working in the field, I don’t know how I’d keep up.”

The interplay of diverse stakeholders in shaping environmental policies and agreements is behind Environmental Negotiation, a course taught by professional negotiator John Jostes.

“Resolving conflict is a required skill if you are going to engage in environmental management and policy making,” he says. “I help the students understand how to get results in the real world, while providing a get-your-hands-dirty perspective.”

He says the visiting-faculty program enables the school to stay current by “doing adaptive management of the course structure, so if something is an emerging issue, you can find someone who has inside information and skills to tease that out for students.”

“Visiting lecturers contribute to the diversity of the faculty and enhance students’ exposure to a larger professional and academic knowledge,” says Celine Gainet. A Fulbright Scholar at UCLA’s Anderson School of Management and its School of Law, she earned her PhD in business economics from the Sorbonne, Paris.

In Organizations and Environmental Leadership, Gainet incorporates simulations, role playing, and team teaching “to introduce students to organizational dynamics and the analytical and communication skills environmental leaders need to motivate change. From my industry and academic experience, I combine theory with real-world situations to prepare students for successful roles in their careers and communities.”

One of the more tightly focused courses covers the National Environmental Policy Act (NEPA) and its state offspring, the California Environmental Quality Act (CEQA).

The one-day course is taught by Mel Willis, an independent environmental consultant who earned a second master’s degree and a PhD at the Bren School as a mid-career professional. He sees one value of visiting lecturers as “showing students what it’s like to operate in the political world among a lot of competing objectives.”

His students gain a broad understanding of the two laws, the former of which, he says, “is probably responsible for the existence of the Bren School, because it created the demand for environmental professionals.”

The workshop serves another professional need by preparing students for the kinds of questions they may be asked in job interviews.

Eco-Entrepreneurship (Eco-E) and other students benefit from a course on survey design taught by Michael Henderson, senior director of West Coast Research Operations for Maritz Research. He introduces a range of marketing concepts and techniques of particular value to Eco-E students as they identify potential customers and their motivation, attitudes, and behavior; possible price points; and other information critical to launching a successful product or service.

“I try to present the principles of marketing research in a relevant way,” he says. “For the students, it’s about how do I apply this set of skills to make this happen? When you’re working in the business world, that’s what you’re doing every day.”
News from the Nano Front

Key findings from four years of UC CEIN research

The University of California Center for Environmental Implications of Nanotechnology (UC CEIN) was established in 2008 with a five-year, $24 million grant awarded jointly by the National Science Foundation (NSF) and the US Environmental Protection Agency (EPA). Since then, scientists at collaborating institutions, including UCSB and the Bren School, have been studying the potential effects of engineered nanoparticles (ENPs) on organisms and the environment. Bren professors Patricia Holden, Arturo Keller, and Hunter Lenihan each lead one of seven CEIN themes. With the center’s application for renewal now being reviewed, we summarize some of the main findings to date, elements of which have been published in more than 150 scholarly papers.

Likely candidates: Among the first tasks was determining which particles to study. Initially, CEIN scientists identified three ENPs as likely candidates — titanium dioxide (TiO₂), zinc oxide, and cerium oxide — as they are three of the most widely used particles. Further tests pointed to 24 potentially toxic ENPs, of which six were singled out as being of significant concern, because each contains a metal that dissolves easily from the particles, and most metals, including copper, chromium, and nickel, are toxic to living organisms.

UV Toxicity: Many ENPs interact readily with sunlight, making them useful in antibacterial coatings and wastewater disinfection. A significant finding, however, is that the particles’ photoactivity can also generate “reactive oxygen species,” commonly referred to as ‘free radicals,’ destructive oxygen molecules that break down living tissue.

“Even at very low concentrations in seawater, titanium dioxide attaches to algae and can generate free radicals at the surface of the algal cell wall, causing toxicity to them,” says Keller, who co-authored a paper on the phenomenon with Lenihan and UCSB research biologist Robert Miller. They found that TiO₂ particles, which were not toxic to algae on their own, could become toxic to marine organisms when exposed to ultraviolet rays, raising concerns that “rising concentrations of nano TiO₂ may lead to increased overall oxidative stress in seawater contaminated by TiO₂ and cause decreased resiliency of marine ecosystems.”

Biomagnification: It was this process, in which organisms higher up in the food chain exhibit higher concentrations of a toxin — that made the pesticide DDT such an environmental nightmare. In 2010, Holden’s group, including researcher John Priester and PhD candidate Randy Mielke, demonstrated biomagnification of cadmium selenide (CdSe) nanoparticles. They found that cadmium concentrations in soil-dwelling protozoa that consumed bacteria infused with CdSe ENPs were approximately five times higher than in their bacterial prey.

Shifting Soil: Four years ago it wasn’t clear whether, in a complex matrix such as soil, bacteria would actually be exposed to ENPs or would be protected by organic matter and clays. Since then, CEIN researchers have determined that common metal oxide nanoparticles do reduce diversity in soil bacterial communities, which can impact how well bacteria perform such functions as carbon and nitrogen cycling. Ensuing concerns about ENPs’ possible effects on the food supply led to a collaboration among UCSB researchers Holden and professors Josh Schimel (UCSB Environmental Studies and Ecology, Evolution and Marine Biology [EEMB]), Roger Nisbet (EEMB), Sharon Walker (UC Riverside), Jorge Gardea-Torresdey (University of Texas El Paso), and soybean experts at the US Department of Agriculture and Iowa State University. Building upon previous findings, they conducted an agriculturally relevant study by growing soybeans in farm soil amended with two high-production metal oxide nanoparticles.

“Those results were surprising,” says Holden. The metal from zinc oxide ENPs ended up being distributed throughout the plant and the beans, while cerium oxide nanoparticles lodged in the roots and root nodules, where nitrogen fixation should have taken place but was prevented by nanoparticle toxicity.

“Such results have potentially serious implications for agricultural practices and the food supply, as manufactured nanoparticles build up in agricultural soils,” Holden adds.

Water-borne ENPs: Until CEIN, little was known about how ENPs behave in aqueous environments. Researchers have found that in fresh water, they tend to remain in the water column, creating exposure for organisms that are swimming or feeding there. In seawater, ENPs tend to deposit fairly rapidly to the sediments, making organisms in the benthic/sediment regions more likely to be exposed. But seawater has substantial turbidity, which can cause ENPs or their dissolved metals to become re-suspended in the water column.

Lenihan’s group found that filter-feeding mussels accumulate ENPs through feeding on contaminated phytoplankton and, depending on the nature of a given particle, excreted some of it, making it available for deposit-feeding organisms in marine sediments, including amphipods and polychaete worms. In turn, those animals are eaten by fish, which can then biocentrify ENPs, impacting food webs. Zinc oxide particles dissolved completely and rapidly within the mussel, causing the organism’s excretions to be high in zinc, a nutrient that is necessary, but also toxic at higher concentrations.

The Way Ahead: CEIN researchers have begun to study other nanoparticles, including the whole category of carbon-based particles, and state and federal governments are referring to CEIN science as they develop guidelines and regulations for nanoparticles. CEIN scientists have testified before government bodies, surveyed industries for their perceptions of risk and their safety practices (under the leadership of Barbara Herr-Harthorn, director of the UCSB Center for Nanotechnology & Society), and developed a close link within the CalEPA Department of Toxic Substances Control (DTSC).

DTSC chief scientist, Jeff Wong, speaks to the importance of the center’s work, saying, “CEIN is key to a new understanding of nanoparticles, and the data generated by its researchers will inform future public policy decisions and our regulatory approach to nanomaterials and nano-enabled products. CEIN efforts will tell us where the promise of nano-materials is and where peril may lie.”
Global Efforts for Fisheries

Three pilot projects test new tools and strategies for sustainability

Funded largely by the Waich Foundation, the Bren School–based Sustainable Fisheries Group (SFG) is beginning three pilot projects to promote marine conservation and economic prosperity for coastal communities in the Galápagos Islands, Bermuda, and the Indonesian island of Sumbawa.

SFG researchers will seek to develop scalable, interdisciplinary, science-based solutions that address place-specific sustainability challenges and can be replicated elsewhere. The projects will test new techniques and technologies developed by SFG to assess stocks in fisheries for which little or no statistical population data are available (“data-poor” fisheries); perform advanced spatial planning in marine environments; and implement rights-based management of fisheries. Here, we describe highlights of the Galápagos project. To read more about it and the other projects, go to: http://www.bren.ucsb.edu/news/SFG_pilots.htm

**Galápagos: Pristine Nature or Productive Fishery?**

In the past twenty years, conflicts between fishermen and the tourism industry in Ecuador’s Galápagos islands have escalated, occasionally to the point of violence. Now the National Park Service wants to develop a new conservation plan for the islands to protect the natural resources that attract tourists from around the world while maintaining the livelihoods of local fishermen. It has asked SFG for help.

“From the touristic standpoint, conservation groups want to create multiple no-fishing zones to prevent further overfishing and damage to marine ecosystems, and the fisheries see the push for no-fishing zones as a threat to their livelihoods,” says Bren School dean and SFG researcher **Steve Gaines**.

“Our approach is to look at how to make the fisheries more sustainable and profitable by setting aside key pristine areas that also enhance livelihoods and food production in a setting that has little agriculture.”

The eventual plan will incorporate spatial planning — zoning, in essence — of the ocean, a long-established practice on land that is relatively new in marine environments.

“In the ocean, most uses are not confined to a particular area,” says Gaines. “That’s been changing. There’s a big push globally for marine spatial planning.

To develop a plan that addresses fishing, however, researchers need to assess stocks of harvested species. But conducting a full stock assessment is expensive, time-consuming, and impractical in the vast majority of the world’s fisheries. SFG, in collaboration with Australian scientist **Jeremy Prince**, is developing new reliable methods for estimating stocks in data-poor fisheries. Key researchers from Bren include SFG post-doc **Jono Wilson** and Bren PhD student **Sarah Valencia**, both of whom studied under Bren professor **Hunter Lenihan**.

One new technique relies on counting the small, medium, and large fish in a catch and using ratios of those numbers to represent the fishery as a whole. Small fish indicate that the population is replacing itself, medium-size fish represent value in the marketplace, and large, mature fish are important because they are the biggest reproducers.

Wilson expanded on this approach by comparing the number of small, medium, and large fish in a catch with stock data for a nearby marine protected area, which serve as a benchmark of what an “unfished” population would be.

“The technology gives us about 90 percent of the effectiveness of an expensive stock assessment for about 1 percent of the cost,” says Gaines.

The two main commercial fisheries in the Galápagos are lobster and sea cucumbers. Both are overfished, Gaines says, “But sea cucumbers [exported to the Asian market] are less important ecologically, whereas lobster are Keystone predators. They control the sea urchin population, and if you overfish them, you’re going to see all kinds of other changes take place in the reef system as a result.”

As with all SFG projects, economics is a key component in the Galápagos effort. “Economics helps inform the allocation of scarce resources and helps frame thinking about tradeoffs among competing uses,” says Bren professor of economics and SFG researcher **Christopher Costello**. “In the Galápagos, resources are scarce in the sense that if you catch all the lobster today, there won’t be any tomorrow.”

Economics is also the study of how institutions affect human behavior, Costello adds. “We’re looking at institutional reforms that could be put in place to produce more sustainable outcomes.”

Infrastructure shortages constitute another element that plays into the sustainability challenge in the Galápagos. The lack of facilities results in nearly all of the lobster catch being exported, along with much of its final market value.

“The current export price is fifteen dollars a pound for tails. If fishermen could sell locally, they could get more than twenty-five dollars per pound.” Costello says. “But the marketing channels aren’t there. There are no storage facilities. You can’t sell your lobster to someone who then keeps them in a tank for two weeks until they’re sold to an end consumer.
"At the same time you have hundreds of thousands of tourists coming every year who would pay a premium to eat a fresh, locally caught lobster. So we're trying to couple those things. Suppose that as a fisherman, you could focus away from exports and on local consumption. You could develop exclusive purchase contracts with the big eco-friendly tourism operators to deliver a guaranteed amount of lobster per month. It would be live, and it would come from a fishery that is managed sustainably."

SFG will develop models to answer such questions as: What are the expected consequences of various levels of fishing and of spatially segregating uses? Would they be better off having some no-fishing areas and other areas where they fish and derive the benefits of marine protected areas? Or is it better to reduce the overall amount of fishing everywhere so that every place retains a relatively high abundance of sea life and no place is totally overfished? And where are the real tourism assets, and how do you structure the fishery to maximize its productivity without compromising those things?

As in many SFG projects, the researchers are working with a non-government organization (NGO), in this case Conservation International (CI), to build relationships with local communities and decision makers and develop trust in the process. CI led the National Park Service to SFG.

"Scott Henderson, who oversees CI's Latin American operation, called and asked if we were interested in working on a new zoning plan for Galápagos National Park," says Costello. "It was a great fit between their need and our expertise."

"The NGOs are on the ground and engaged with the community," says Gaines. "They can get buy-in from the community," says Costello. "It was a great fit for Galápagos National Park," says Costello. "It was a great fit for the community."

Employing that approach, Mattel is able to continually find ways to minimize its environmental impact and implement policies and procedures that support these efforts — in other words, "to re-imagine the way we play."

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**Climate Earth offers a range of web-based sustainability solutions and consulting services, which include supply-chain assessments, supplier surveys, external reporting, and environmental product labeling. The company specializes in large-scale supply-chain assessments and smart metrics to support sustainable management.**

**Mattel Inc. is the world’s leading designer, manufacturer, and marketer of toys and family products. Its sustainability strategy is focused on helping the company to minimize its footprint throughout the value chain, through programs and initiatives based on a three-part strategic platform: "Design it with the end in mind, Make it with eco-efficiencies, and Live it with personal commitment."**

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1998
Wilson Environmental Contracting, Inc., owned and operated by Daniel Wilson (MESM), has received the following awards: 2012 Santa Barbara Contractors Association Construction Awards in Landscape & Hardscape, Commercial, for the “Fallen Firefighter Memorial” at the Santa Barbara County Fire Department Headquarters; the 2012 Goleta Valley Beautiful Single Family Residential Award; and the Sustainability Award, the State Trophy Judges Choice Award, the State Trophy Achievement Award for Xeriscape, and the Bob Baeir Memorial-Sustainable Award from the California Landscape Contractors Association.

2001
Chris Gibson (MESM) has entered the MBA in Sustainable Management Program at San Francisco’s Presidio Graduate School. He is studying part-time while continuing to work full-time as Regional Environmental Compliance Programs Manager for Recology, a solid-waste-recovery company based in San Francisco.

2004
Kris (Herrington) Wall (MESM) and her husband, Nate, welcomed their first child, a daughter named Linnea Dylan Wall, on June 23, 2012.

2005
Christina Cairns (MESM) has been hired as a USAID Environment Foreign Service Officer under the agency’s Development Leadership Initiative program. She will contribute to the development and management of environment-related foreign-assistance programs and ensure that environmental considerations are integrated into various programs. She and Jessica Spence (MESM; see 2008) met at the training. Christina will head to Pretoria, South Africa, in 2013.

Brian Crumline (MESM) is living in Portland, Oregon, with his wife, Robin; 13-year-old step-son, Finn; and nearly year-old daughter, Elise. As a program delivery manager for Cascade Energy, Inc., Brian works in the area of industrial energy efficiency program management for regional utilities.

Karen (Wolowicz) Weiss and her husband, Jeremy Weiss, welcomed a baby girl, Hazel Mae, on December 15, 2011. In April, Karen accepted a position as senior environmental scientist at the California Department of Fish and Game. She is working in the Habitat Conservation Division at the Region 3 offices in Napa.

2006
After six years at carpet manufacturer Bentley Prince Street, starting as sustainability coordinator and rising to sustainability director, Kim Matsoukas (MESM) accepted the newly created position of sustainability manager at Vans Shoes.

After eight years in the U.S. and six at Zurich North America, Joaquin Neira (MESM), his wife, Magdalena, and their daughter, Mia, returned to their home country of Argentina in September. Joaquin accepted a new job as “Environmental Insurance Liability Regional Manager” for the Latin American Region of AIG, which is also currently known as Chartis Insurance. The family will be based in Buenos Aires.

Robert Newton (MESM) is engaged to be married to Stacey Eder on November 3 on Exuma Cay, Bahamas. The couple currently live in Charleston, South Carolina, where Robert works for The Nature Conservancy.

Betty Seto (MESM) and Scott Murtishaw welcomed their first child, Baxter Si-Yun Murtiseto, on September 16, 2011. Betty is still working as a senior consultant specializing in energy efficiency and climate-action plans in the Oakland, California, office of DNV KEMA Energy & Sustainability.

2007
In spring, Gina Gerritzen (MESM) left her position as an environmental compliance specialist and project engineer with ARCADIS/Malcolm Pirnie to take a new job as an environmental health and safety and sustainability consultant for ERM Information Solutions in Houston, Texas.

Karen Setty (MESM) and her husband, Fabio Bolognesi, are the proud parents of a son, Niccolò Remo Bolognesi, born April 20 at Saddleback Memorial Hospital in Laguna Hills, California. The family lives in Lake Forest, California, and Karen continues to work as a science writer for the Southern California Coastal Water Research Project in Costa Mesa.

2008
In September, Jamie Britto (MESM) assumed a new position as client care manager for Lloyd’s Register Quality Assurance (LRQA). In March, Jamie became engaged to Nick Facciola, an engineer with TerraPass and a graduate of UCSB. They currently live in Oakland, California, with their new dog, Lucy.

Peter Canepa (MESM) and his wife, Laura, welcomed their first child, Lily Marie Canepa, on April 14, 2012. Peter says that his daughter, “regularly astounds us as she develops and interacts with the world” and has also given him “new respect for any and all parents.”

Jessica Spence (MESM) has been hired as a USAID Environment Foreign Service Officer under the agency’s Development Leadership Initiative program. She will contribute to the development and management of environment-related foreign-assistance programs and ensure that environmental considerations are integrated into various programs. She and Christina Cairns (MESM; see 2005) met at the training. Jessica will head to Jakarta, Indonesia, in 2013.

2009
Leslie Abramson (MESM) and her husband, Nathan Eldridge, have a new home in San Francisco’s Sunset district. Leslie works on resource protection issues at the Gulf of the Farallones National Marine Sanctuary and serves as the Sanctuary Advisory Council Coordinator. The sanctuary is currently a client for a Bren Group Project. Leslie and Nathan are expecting their first child in late November.
In March, after three years of environmental planning work at Cardno ENTRIX in Santa Barbara, Sarah (Bumby) Anderson (MESM) accepted a position as an environmental planner at the Philadelphia offices of CH2M HILL. She and her husband, Doug Anderson, have relocated to the City of Brotherly Love.

Last we heard, Milli Chennell (MESM) was Fiji bound with the U.S. Peace Corps. She made it, and is currently living by the beach as an Integrated Environmental Resource Volunteer. She is working to implement marine protected areas, constructing high-efficiency wood burning stoves, and weaving the occasional mat. She will be in Fiji through June 2013.

In May, Lara Polansky accepted the EPA Federal Green Challenge 2012 “Leadership and Innovation Award” on behalf of the Pacific Southwest Region of the US Forest Service. The award honored regional employees for their work hosting the 2012 National Sustainable Operations Summit, which Lara co-chaired.

2011

Sarah Green (MESM) was married to Jonathan Poon on July 21, at the Santa Barbara Courthouse Sunken Gardens. Sarah is currently working on sustainable fisheries management solutions at the Environmental Defense Fund in San Francisco.

Aliana Lungo (MESM) and her long-time boyfriend, Stephan Shapiro, were married in August. The couple then honeymooned in Moorea and Bora Bora. They live in Irvine, California.

Anne and Lena Go to D.C.

MESM alumnae head to the capital in search of careers

On June 13, 2008, close friends Anne Middleton and Lena Moffitt graduated from the Bren School with new master’s degrees, no jobs, and abundant ambition.

“We were fired up to change things,” says Middleton. “We wanted to go to D.C. and work on environmental policy.”

With the support of Bren professors Sarah Anderson and Oran Young (now emeritus), plus Career Development and Alumni Relations Director David Parker, they did. They visited D.C. briefly before graduation to find a place to live, and a couple of weeks later, loaded their belongings into Pods, packed up Middleton’s Subaru, and drove to Washington. Four years later, Middleton is in the west-central African nation of Cameroon overseeing a sustainable hardwood timber operation for Taylor guitars, and Moffitt works for the Sierra Club in her “dream job,” lobbying Capitol Hill lawmakers to support a low-carbon energy future.

“I give a lot of credit to Sarah and Oran,” Moffitt says. “Neither Anne nor I would have been here without them. The last quarter at Bren, we were in Sarah’s policy class. We couldn’t get enough of it, or of talking to her and Oran about D.C. Sarah had worked in a Capitol Hill office before and gave us great advice. She and Oran said to us, ‘Go out there and find yourselves an apartment, and then apply for every job you can.’”

“I also told them that if they ran out of money, I’d send food,” Anderson laughs. Middleton says that attending every one of Parker’s career-development workshops was a key for her. “I remember him saying, ‘You’ve got to go for it, open your own doors,’” she recalls. “So I did. Dave is really good at filling us with confidence. He told me that as a Bren School graduate, I was qualified and deserved the job I wanted.”

Not that it was easy. They arrived in Washington at 11 p.m. after three days of nonstop cross-country driving. “We were terrified,” says Moffitt. “The next morning, Anne got up and got us a bagel, the Pods arrived, and we slowly started establishing ourselves.”

They looked for jobs, contacting alumni and people they knew from the Bren School, sending e-mails, and knocking on doors. With the recommendation of Bren alumna Danielle Grabiel (MESM 2003), Middleton landed a job with the Environmental Investigation Agency, a non-profit that investigates environmental crimes. The first case she worked on was against Gibson guitars for violations of the Lacey Act, which regulates, among other things, illegal sourcing of tropical hardwoods. Middleton, who studied music as an undergrad at Oberlin College and had always been interested in the connection between the music industry and environmental causes, could relate to the case.

Moffitt had submitted her resume through idealist.org and was hired by the Union of Concerned Scientists, which works to infuse science into policy making. Her job included leading NASA scientists around D.C. to familiarize them with the policy world.

Even having work, though, the women faced a difficult year of adjusting.

“We were lost during the first year,” says Moffitt. “We hated everything about D.C. If we hadn’t had each other I don’t think we would have made it through.”

“The first year was pretty rough,” Middleton adds. “Organizations were downsizing because of the economic collapse. We had no friends and not much money. The campaigns we were working on weren’t going like we thought they

see Anne and Lena on page 16
would. There were many evenings when we sat on our porch and said, 'What are we doing with our lives?' But little by little we got our footing. Lena was laid off and then found the Sierra Club job. I decided that if I wanted this to work for me I would have to create my own path and goals and show initiative."

Her work on the Gibson guitar case led her to Taylor Guitars owner Bob Taylor, whom she convinced to hire her. "I thought I’d be moving to San Diego," she says via Skype. "I didn’t know I’d be coming to Cameroon."

She’s there now because Taylor bought a sawmill to ensure a steady supply of legal ebony wood for the 600-plus guitars they make each day.

Middleton describes her multifaceted job, which comes with the title Environmental and Community Relations Manager, as being "kind of in charge of everything that is not related to financials and production."

That encompasses anything to do with the traceability of timber that comes to the mill, working with NGOs and government representatives in Cameroon and Europe to develop sustainability plans, securing permits, and "anything HR-related," which includes making sure that there is water and food at the mill.

Taylor is also expanding into kiln drying milled wood so that workers can earn more and more of the final price of the wood will remain in Cameroon. "We want the government to see that the trees they thought were worth X may be worth five or ten times that," Middleton says, and therefore worth protecting.

"I don’t think I want to live in Cameroon forever," she adds. "It’s hard, but for now I feel lucky to be operationalizing all these projects I worked on for a couple of years, and I’m not leaving until things are straightened out here."

For Moffitt, D.C. now feels like home, and environmental lobbying feels like her true calling.

“This might be it for me,” she says. “I’m thinking of buying a house and making it permanent. I love policy and policy wonks, and they’re everywhere here. You go to a bar and people have drinks and talk about politics, and I’ve always wanted to do that.”

She played a big role in building the Sierra Club’s “Dirty Fuels Initiative” and bringing tar sands and the proposed Keystone pipeline to people’s attention. She spends her days walking the halls of the Capitol, talking mainly with congressional staffers, “educating them and their bosses on the perils of shifting to higher-carbon sources of oil.”

She adds, “Every time I walk by the Capitol I get a little flutter in my heart. I get to go up there every day and say, ‘I’m with the Sierra Club,’ and sometimes they listen to us — not as many as I think should — but they give the Sierra Club the respect it deserves for being such a big grassroots organization. I feel lucky every day that I get to do it.”

Middleton’s boyfriend lives in D.C., so she goes back when she can and sees Moffitt, too.

“Whenever we get together for a beer,” Middleton says, “we always say, ‘Wow, we’re actually doing all those things we learned at Bren.’ Its why we went to grad school.”

“It worked because we were so set on the idea of a policy job and assured by people at Bren before we came out here that we had the talent and the qualifications to do it,” Moffitt concludes. “It’s so cliché, but if you actually believe you can do it and you keep pushing, eventually it will happen. It’s going be terrifying and hard at first, but the benefits will come back to you.”