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Cover: The cover is a composite illustration reflecting the multiple disciplines that are brought to bear in the Bren School's interdisciplinary approach to understanding and solving environmental problems.
Cover art by Monica Pessino, Ocean o' Graphics.

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Dean's Message

INTERDISCIPLINARY EXCELLENCE



Think of global warming. Think of eco-entrepreneurship. Think of the nexus between nanotechnology and microbiology. Which disciplines come to mind?

I imagine that many do, including atmospheric physics, molecular biology, ecology, geology, hydrology, geography (physical and human), electrical engineering, materials science, resource economics, international law, political science, business administration, psychology, and more.

That's the Bren School reality. We work on and teach our students about environmental problems that by their very nature transcend disciplines. We seek understanding of how best to manage these problems. And we do so while adhering to the highest standards of academic excellence.

That's easier said than done. The most highly respected journals tend to be disciplinary. (*Nature* and *Science* try to cover all scientific disciplines but achieve that mostly by juxtaposing disciplinary articles). And even at the Bren School, publications in respected journals remain the yardstick by which research excellence and academic careers are measured.

Are there also yardsticks for interdisciplinary excellence? I suggest there are. One yardstick is practicality, or usefulness. "The proof of the pudding is in the eating," the proverb goes. If our Eco-Entrepreneurship focus produces successful entrepreneurs, we need not worry about what disciplinary academics think about it.

Another yardstick is the extent to which others on campus turn to us for cooperation. The Environmental Media Initiative seeks our partnership, and so does the new Institute for Energy Efficiency. These are good signs. The most important yardstick, however, remains peer review. This may not be all that different from what we know from our respective disciplinary backgrounds. But in some of our fields there are just not too many peers yet. This fact, however, I see as a sign of our excellence as innovators!

In this issue of *Bren News*, you will find an exploration of the School's interdisciplinary perspective, and an interview with Professor **Patricia Holden**, a microbiologist whose work spans disciplines. You'll meet Eco-Entrepreneurship students who wrote a business plan for establishing a sustainable modular housing company – and won a national competition. And you will find exciting news about our partners who do so much to make the pursuit of interdisciplinary excellence possible.

– Ernst von Weizsäcker

ENGAGING CHINA

The Bren School wishes to extend its deepest gratitude to the individuals and organizations that have made possible a two-and-a-half-year, \$400,000 track-2 diplomacy initiative enabling Bren School faculty to partner with counterparts at Tsinghua University in Beijing to develop post-Kyoto climate policy. Understanding the importance of participation by the United States and China in crafting meaningful climate policy after the Kyoto Protocol expires in 2012, Bren Corporate Partners

AECOM (\$250,000) and **Vulcan Inc.** (\$45,000), as well as **Yardi Systems** (\$43,000) and **Herbert Kendall** (\$62,500) have provided the means to launch this important bilateral initiative. The working group will include 20 to 25 individuals representing China and the U.S., equally divided between scientists and policy experts. The first meetings will be held in Beijing this spring, with future gatherings scheduled to alternate between the U.S. and China.

GIFT ESTABLISHES FLEISHER FELLOWSHIPS

The Bren School wishes to acknowledge the vision and generosity of **Donald J. Fleisher**, whose gift of \$100,000 will establish the Donald J. Fleisher Fellowships to help recruit outstanding master's and PhD students into the Eco-Entrepreneurship focus at the School and support them in their academic pursuits. The gift will be distributed over a five-year period, and the first Fleisher Fellows will be named



Donald J. Fleisher

prior to the fall 2008 quarter.

"For quite some time, I have been looking for an opportunity to assist graduate students in various educational programs pertaining to environmental education," said Mr. Fleisher, a Colorado-based real estate broker who has been a part of the state's business community since 1960. "When I discovered the Bren School, I found the perfect venue to achieve that goal, and I am proud to be able to participate in supporting students who attend such a fine institution."



Zurich Financial Services Gives \$1 Million

Zurich Financial Services Group, a Bren School Corporate Partner, has made a \$1 million contribution to establish and endow a Distinguished Visitors Program at the School in perpetuity. Zurich will also provide additional funds to start the program immediately.



Partners (from left): Bren School Dean **Ernst von Weizsäcker**, Assistant Dean of Development **Jennifer Deacon**, Zurich Global Chief Underwriting Officer **Mike Kerner**, and Bren Corporate Liaison **Marsha Marcoe** celebrate the new endowment from Zurich Financial Services.

The Zurich Financial Services Distinguished Visitors program will allow the Bren School to attract international leaders in environmental policy, law, business, and science to share insights on issues critical to climate change. During stays ranging from one week to one quarter, Visitors may teach short courses, offer public lectures, conduct seminars, and/or lead colloquia and symposia planned around their research, professional endeavors, or areas of expertise.

"Many of these events and activities will directly address a range of important climate-related issues," said Bren Professor **Charles Kolstad**, a lead author on the most recent assessment by the Intergovernmental Panel on Climate Change, which shared the 2007 Nobel Peace Prize. "The program affords our students and faculty the opportunity to work on climate-change solutions, an interest we share with Zurich Financial Services."

UCSB Chancellor **Henry T. Yang** praised Zurich, which employs approximately 58,000 people in 170 countries, and emphasized the endowment as an opportunity to extend the Bren School's interdisciplinary perspective.

"UC Santa Barbara is tremendously grateful to Zurich Financial Services for their generous and visionary gift," he said. "Our Bren School has led the way to an innovative and interdisciplinary approach that integrates environmental science, management, economics, and policy in our teaching and research. The

Distinguished Visitors Program will strengthen the leadership position of our faculty and students in helping to solve the pressing environmental problems of our world."

The endowment is part of an institutional outreach effort associated with a company-wide Climate Initiative launched by Zurich to develop new insurance products that address risks associated with climate change, and to reduce the company's carbon footprint.

As part of the initiative, explained CEO **James J. Schiro** at a January 21 press conference held to announce the program, Zurich is forming a Climate Change Advisory Council to provide the company with climate, economic, and policy expertise as it implements the Climate Initiative. Bren School Dean **Ernst von Weizsäcker** and former U.S. Congressman Sherwood Boehlert were named the Council's first two members.

"Bringing the expertise of Sherwood Boehlert and Dean von Weizsäcker to bear on our climate efforts will ensure that we remain focused and effective," said Schiro. "They are both leaders in their fields."

"There is rapidly growing demand for teaching in the areas of climate and policy, and so we are grateful to receive this generous funding from Zurich Financial Services for our Distinguished Visitors Program, which dramatically expands the available resources for bringing leading climate experts to the School and to our students," said von Weizsäcker. "I very much look forward to working with Zurich, a market leader that has previously demonstrated environmental vision by offering such things as preferential insurance policies to owners of hybrid cars and is now taking important steps to do a great deal more as an environmentally responsible company pursuing carbon-reducing practices that others will want to emulate."

At the press conference, Zurich Global Chief Underwriting Officer **Mike Kerner** described the Bren School Distinguished Visitors Program as "ensuring the Bren School's access to some of the brightest scholars." Kerner and Chief Climate Product Officer for Zurich Environmental at Zurich North America **Lindene Patton** had visited the Bren School the week before to finalize details of the endowment.

"Our ongoing partnership with the Bren School is a fine example of industry and education joining forces to benefit the environment," said Patton, who has represented Zurich in its relationship with the Bren School for the past five years. "We are pleased to provide support for bringing great thinkers and leaders to a school that does such an excellent job of educating students to assume professional roles critical to solving our most pressing environmental problems."



Lindene Patton

Donors & Partners

Corporate Summit Coming Up



The annual Bren School Corporate Partners Summit will be held May 8-9 at Bren Hall. The topic for this year's gathering will be "Energy and Water: Partners in a Critical Dynamic."

"I'm delighted to be hosting our Corporate Partners once again; they bring so much important knowledge to the School and provide our students with great opportunities," said Bren Corporate Liaison **Marsha Marcoe**. "Plus, this year's topic should generate a remarkable round-table discussion."

As he has previously, **Tim Cohen**, Chair of the Corporate Partners Program and Vice President, URS Corporation, will serve as facilitator for the event. Featured speakers will be Bren Professor **Arturo Keller**; **Michael Murray**, Director, Corporate Environmental Policy, Sempra Energy; and **Steven Ow**, President and CEO, Mica-Tech. For more information, please visit www.bren.ucsb.edu/events/08corp_summit_home.htm.

Recent Donors – December 1, 2007 to January 29, 2008

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For a complete list of Bren School Corporate Partners and/or more information about the Corporate Partners Program, please visit us on the Web at www.bren.ucsb.edu/supporting/corporate_giving.html

New Corporate Partnerships

Limoneira Company.

The 115-year-old Ventura County-based business is the largest lemon and avocado producer in the United States. A pioneer in pesticide reduction through integrated pest management, Limoneira is currently developing a 5-acre, 1,000-kW solar array to power its main packing facility. It also works with Ventura-based Agromin to turn its green waste into mulch that is reapplied to Limoneira's orchards and sold to local gardeners.



Ryerson, Master and Associates, Inc. (RMA).

For more than a decade, RMA has been providing environmental management services to industry and government clients. By applying a systems approach to solving environmental problems, they help their clients achieve regulatory compliance in a cost-effective and timely manner. RMA's areas of emphasis are climate action and greenhouse gases, equipment retrofits, air-quality services, clean vehicles and alternative fuels, and safety and risk management.



Tupperware Brands Corporation.

One of the most recognized names in housewares and kitchen storage products, Tupperware Brands offers products across multiple brands and categories worldwide through an independent sales force of 2 million. Having focused on new technologies to develop the best products available in this category, Tupperware is equally committed to becoming a leader of environmentally friendly solutions in materials, processes, and everyday practice.



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Powerful Collaboration

Tri-level support from Corporate Partner Southern California Edison optimizes benefits of business-education partnership

In 2007, Southern California Edison (SCE) became the first Corporate Partner to support the School in three different ways. The company had earned Platinum Partner status by providing gifts in kind during the design of Bren Hall, helping it to achieve LEED Platinum certification from the U.S. Green Building Council. It then became a "research partner" by providing seed money for a Bren School energy-water sustainability study led by Bren Professor **Arturo Keller** and involving five Bren master's students as part of a Group Project, the capstone of the master's program. As an extension of that work, the School also hosted the highly successful First Western Forum on Energy & Water, and last October, SCE renewed its research commitment by providing an additional \$35,000 for another year-long project focusing on the environmental issues associated with the energy-water nexus in California. In 2007, SCE completed the trifecta when it joined the Corporate Partners Program.

"The mission of the Bren School is very much aligned with our desire to improve our environmental performance through better management," says SCE's **Jack Sahl**, director of Operations Support. "Our relationship with Bren in these three categories reflects how we view the world, in the sense that we need to do research to understand the basics of environmental issues.

"We also appreciate the Bren School's role in encouraging students to pursue environmental management as a profession," he adds. "We want society to have the best possible people in those jobs, people who are tal-



Partners in power (from left): Southern California Edison (SCE) Director of Operations Support Jack Sahl, Bren Corporate Liaison Marsha Marcoe, SCE Regional Manager of Public Affairs Jane Brown, and Bren Professor Arturo Keller gather after SCE presented the Bren School with a \$35,000 check to fund energy-water sustainability research.

ented, committed, excited, and have the best training. Whether Bren students work for Edison, Cal EPA, or someone else, it's good for us."

SCE is the largest subsidiary of Edison International and one of the biggest electric utilities in the U.S., delivering power to some 4.8 million customers in Central and Southern California. It also provides more of its electricity - 16 percent of the total energy portfolio - from renewable sources than nearly any other utility in the world and buys more renewable energy than any state in the nation, except California. It has also partnered with auto makers to assemble the largest private fleet of electric vehicles in the country.



Largely because of SCE's efforts, California's electricity demands have remained stable from 1976-2000, at roughly 7,000 kilowatt hours per capita despite a near doubling of population since 1965 (centered mainly in warmer, inland and desert areas that require more air conditioning), while per capita consumption for the rest of the nation grew by 50 percent during the same period, from 8,000 to 12,000 kilowatt hours per capita. California has the lowest per capita electricity usage of any state.

SCE's current \$4 billion project to replace aging power lines throughout the state has led the company to initiate another environmental project. "We're installing more new wire and re-

placing more old wire than ever in our history," Sahl says, "so we're examining the life cycle of copper and steel to find better ways of managing the environmental impacts."

Sahl finds the partnership with the Bren School and the annual Corporate Summit to be useful in such processes. "I view Bren as a resource that adds important input about things that are important to us," he says. "And the annual Corporate Summit provides us with an opportunity to meet other companies and leaders who share our values, and to freely discuss the issues we all struggle with in an informal setting. It's a sort of incubator, a safe haven for people who are dealing with environmental performance and management issues. One advantage of a university is that it allows people to think about problems in a less structured way. The Corporate Partners program allows me to interact with other folks in a similar way."

Sahl is currently the client contact for a Bren Group Project on the energy-water nexus, slated to begin this spring. He says that his interactions with the students in the group add another important dimension to the Corporate Partner experience. "Working with the students, I look for their fresh, raw perspective on these problems," he says. "It assures me that I'm not doing the 'same old.'"



Electrically charged (from left): Southern California Edison (SCE) worked with Eaton Corp., the Electric Power Research Institute, and the Ford Motor Company to produce this plug-in hybrid utility service vehicle; a technician monitors an electric car at SCE's Electric Vehicle Technical Center in Pomona, Calif.



Perspectives on Interdisciplinary Study

Walls fall where disciplines meet in solving environmental problems

The Bren School has been built upon an interdisciplinary approach to environmental problem solving. But what does that mean exactly? Recently, *Bren News* caught up with a number of faculty members from various disciplines to get their take on the concept – its importance, how it is taught, and how it links to research – that lies at the core of the School's mission. Here are excerpts from what they had to say.

Frank Davis
Landscape Ecology, Conservation Planning

Solving environmental problems requires bridging and integrating the perspectives of multiple disciplines. Take the problem of siting protected areas to conserve or restore wild species and ecosystems. Planning to identify candidate areas has physical, biological, economic, and socio-political dimensions. Finding good solutions requires that we recognize and understand trade-offs in and across these multiple dimensions. That's why we created the core curriculum as a distinctive feature of the Bren MESM program. We ask students to invest significant time taking classes in disciplines outside their main area of interest and, often, outside of their intellectual comfort zone. In return, they are becoming sophisticated and effective environmental problem solvers.

Tom Dunne
Geomorphology, Hydrology

At Bren we recognize explicitly that environmental problems arise because humans are involved in the action. We establish that coupled-systems perspective right from the beginning, and we establish Earth System Science as the largest-scale matrix in which these human-environmental interactions occur. For example, in researching the demise of salmon in the Pacific Northwest, it's common to say, "Let's look at the nature of river flows and channels and, at the same time, study fish." There's value in doing that, but it's not the same as looking at the Pacific Northwest as a functioning *region* of Earth, impacted by humans who are doing things to the river and are fishing offshore, which affects the fish, which boomerangs back to us because we value the fish.

If we measure a physical process or develop a mathematical model of it, the model can't typically yield very detailed

information about the kinds of issues policy makers and managers must make judgments about. So I'm always asking students, "How can you use the information about processes that I've just taught you to articulate a solution or examine a range of options that policy makers might have?" Our task in Bren is to teach natural science in a policy-relevant way.

James Frew
Environmental Informatics

If you have bugs in creeks, you need to know about bugs and you need to know about creeks. If you're looking at snow from satellites, you need to know about snow and satellites. The interdisciplinary perspective arises by bringing multiple disciplines to bear – you end up with a synthesis of disciplines and, eventually, something new that spans disciplines. Geo-informatics emerged from that, and now you have geographers getting degrees in computer science. Bren could have been disconnected from the rest of the University, but because it was seeded with people from different departments, it became more like a strawberry plant than a tree, with tentacles reaching out in all directions. Research wins. The school wins. Students win because they are not constrained by their curriculum. I treat the other departments as an extension of the Bren School. All the cool stuff is happening at the margins of the disciplines, and the cool thing about Bren is that the students expect this interdisciplinary approach. They expect to be challenged from unexpected directions.

Bruce Kendall
Applied Ecology

Modeling for resource management, a fishery for instance, involves linking the physical, biological, and social as represented by oceanographers, ecologists, and economists, respectively. And it has

resulted in the development of new insights novel to all three fields. Communicating among the three disciplines and the very different perspectives they have on how the world works has changed the way each of us thinks about near-shore fisheries. One thing this involves is learning to speak the language of the other disciplines. It's a process that also uncovers the assumptions of each discipline, and that's good.

Charles Kolstad
Environmental Economics

People who earn a PhD at the Bren School are expert in their discipline, but they may also have a non-trivial amount of knowledge in other areas related to it. One of our students is an ecologist who has a good background in economics by way of a UCSB master's degree. Because she can interact with an economics team – she knows the jargon – her value as a researcher is greatly enhanced. She can ask better research questions and has a broader view of the ultimate use of her research. Interdisciplinary work is more often *multidisciplinary*. The ecologist remains an ecologist, and the economist remains an economist. But to work on environmental problems, you do need teams of people who have different perspectives and are able to communicate across disciplines – the ideal Bren PhD graduate.

Matthew Kotchen
Economics

Pollutants don't know political boundaries, so to understand a pollution problem, you have to know about political boundaries and the chemistry of pollution. With tradable permits for air pollution, for example, the assumption is that you care about the total amount of pollution, but if you don't account for the science of pollution – how it spreads and creates hot spots and can cause environmental issues that raise



Cover story

questions of justice – then you can't design the policy as well. At Bren, the MESM core curriculum is where the interdisciplinary perspective becomes part of students' everyday life. And the students are the great amalgamators. They get the pieces separately, though often in the context of interdisciplinary problems, and they put them together in the Group Project.

Hunter Lenihan Applied Marine Ecology, Coastal Marine Resource Management

Applied work is often interdisciplinary because it involves integrating different sciences, with their separate models, theories, and perspectives. At Bren, by collaborating with scientists from other fields, we can approach large-scale interdisciplinary problems, like our work on the Merced River project, in which we try to understand how the physical restoration of a stretch of river ultimately influences Chinook salmon production. You can't address that type of question without creating a team. If you're researching fishery-related issues, you have to partner with stakeholders – the fishing community, environmental groups, managers – so by necessity, your research will involve natural science, socio-economics, political science, and, often, law. It's the modern way to do science. Today, science has to be applied to solve problems, and Bren students come here to learn that type of science.

Gary Libecap Corporate Environmental Management

Everyone says it but it's true: The environmental problems of today cannot be addressed without combining disciplines. The research funding agencies are reinforcing that with environmental solicitation proposals that spur interdisciplinary collaboration. We're all in one place at the Bren School, so we are forced in a good way to cross disciplines daily and respect differences and diversity in terms of types of questions, research methods, and ways in which students are trained. Our interdisciplinary mission means that economics students in our PhD program get more training in science – hydrology, marine science, etc. – than their competitors. That's important, and that kind of crossover is inherent in the MESM program. Many other schools claim this, but Bren practices it.

Katherine Ramus Organizational and Environmental Management

To be attracted to being a faculty member here, you must have some desire to solve problems, have a meaningful impact, and respect what your colleagues can bring to bear on problems you can't figure out on your own. I once participated in a Bren Group Project that began as a conservation planning project for the Los Padres National Park Service. I wasn't involved initially, but after a quarter of studying those who want-

ed to use the park, the group came to me and said, "This has deep organizational and stakeholder issues and consumer-survey aspects to it, and we don't know how to do that." So I became a second advisor. That happens a lot here. We're a collection of individuals with expertise in a variety of disciplines, and we're willing to acknowledge when we're hitting up against something that's bigger than we are or that extends beyond our disciplinary expertise and requires different tools.

Christina Tague Hydrology

If you do a master's degree here, you have to take courses associated with a variety of disciplines. The bigger challenge is to bring these different perspectives together. One of the things I emphasize in my courses is how much scientific uncertainty you can deal with and still make political and economic decisions. For example, if my stream flow model is accurate to plus or minus 10 percent, the question is: Is that good enough? The answer depends on what you're using the information for. Bren graduates need to know how to evaluate science-based information.

One of my former students now works for a law firm that does groundwater contamination cases. She reads the scientific literature, talks to the scientists who are doing the modeling, and looks at how certain they are and whether the science will allow the firm to make a case. She is working at that interdisciplinary juncture because she's able to understand the science-based information and make assessments about how best to use it.

Oran Young Governance, Environmental Institutions

We're all about looking at complex systems that involve, in a central way, physical and human processes. The only way to understand, much less manage, such systems is to see them as socio-ecological systems whose behavior, trajectory, and patterns of change are determined by a variety of biological and physical forces and by human actions. We have to understand the bio-physical and human inputs and the interactions between them. One obvious consideration of climate change is what's going to happen to the Greenland ice cap. Its physical properties make it a somewhat dynamic system in its own right, but anthropogenic forces are also influencing in a fairly dramatic way how the ice cap behaves. My concern is that we find effective ways to understand and communicate our understanding of the drivers and how they interact with each other. At the Bren School, we are trying to communicate to students the intellectual capital of the traditional disciplines while also trying to create linkages between them within the curriculum.



Faculty Q & A

Beneath the Surface:

Professor Patricia Holden Uses Microbiology to Track Pollutants



Bren Professor **Patricia Holden** earned a bachelor's and a master's degree in engineering, and spent eight years as a consultant – in part, designing wastewater treatment plants and doing engineering for a small city – before enrolling at UC Berkeley as a PhD student in Soil Microbiology. "I wanted to know what was going on inside some of these engineering solutions I'd been working on as a professional," she says. "I wanted to improve the science behind the solutions." Holden came to the Bren School as an assistant professor in 1997. Her lab is engaged in a variety of projects. *Bren News* caught up with her in February.

Bren News: Is there a single thread that runs through your research?

Patricia Holden: Mainly what I do is oriented toward providing better scientific input for modeling the fate of pollutants in the environment. Even my work with natural materials under unpolluted conditions is oriented toward that.

BN: A lot of your microbial studies have been in the vadose zone – subsurface soils above the water table.

PH: It's a long-term interest for me. For one thing, everything passes through there on the way to groundwater. But vadose zone microbes can intercept nutrients, like nitrate, and other pollutants that are detrimental to groundwater quality. The vadose zone is almost like a living filter.

BN: Are there aspects of that work that go beyond groundwater and soil pollution?

PH: It's also relevant to climate change. For example, it has been shown through carbon dating that there's a lot of old carbon locked up in the soil even a meter below the earth's surface. One idea is that with a change in climate we will see changes in how water moves in the environment. This could mean changes in the depth of wetting through the soil profile; we may also see changes in temperature in deeper soils. These things could alter how much carbon dioxide and nitrogen trace gases are released from deeper soils via microbial processes.

BN: Can you talk about your local water-quality work?

PH: Before I came to UCSB, I got a call from the Santa Barbara County Solid Waste Division. They wanted to talk with a microbiologist about their water-quality problems nearby the Tajiguas landfill. Initially, I helped them think about their sampling and analysis issues. Then, as I became more familiar with the general problem of coastal water quality, we started thinking, *Are microbes effective tracers for pollution in the environment?* That got

us beyond water quality to thinking about how we could use the compositions of microbial communities as tracers for a variety of pollutants.

BN: How has that idea played out?

PH: I had the idea in 1998, and after a decade of thinking about it and then finally having a significant investment from the City of Santa Barbara, which gave us the opportunity to analyze a lot of samples, we now see that it's a valid and interesting approach. That's very gratifying.

BN: Engineered nanoparticles are a newer area for your lab. What are you working on there?

PH: Mostly, we want to know how engineered nanomaterials affect bacteria and bacterial processes. But we are also learning about how the bacteria change nanomaterials. These sorts of issues are important for predicting what types of environmental effects could arise from these new kinds of materials as they become more widely used and distributed.

BN: What are you learning so far?

PH: We're finding that nanomaterials can be quite toxic to bacteria. Some of that toxicity is due to the breakdown of the nanomaterials that occurs when they are in water. But we've also learned that the nanomaterials can enter cells, either intact or as the breakdown products. In cases where nanomaterials aggregate readily in water, we also see that bacteria have a strong attraction and may form thick films on the aggregates. These types of interactions can affect how nanomaterials move in soil and water. As we learn more and are able to further quantify the interactions, we want to be able to predict the fates of a variety of nanomaterials in soil and water conditions. It's an exciting area of research that will give students and postdocs entering the field a lot of opportunities and challenges to tackle during their careers.

BN: Has anything further happened with last year's Group Project study of workplace environmental health and safety practices in the nanotech industry?

PH: Yes! We learned recently that the manuscript based on this project was accepted for publication in *Environmental Science & Technology*. This was great news for all, including lead author **Joe Conti**, the Sociology PhD student who mentored the MESM Group Project, the MESM students [**Gina Gerritzen**, **Keith Killpack**, **Maria Mircheva**, and **Leia Huang**], and co-investigators Professors **Magali Delmas**, **Barbara Herr-Hathorn**, and **Rich Appelbaum**. We all learned a great deal and are excited that the work has useful policy implications for safeguarding workers and the environment.

Chasing Carbon Credits

For Robert Priola, uncertainty is often the only certainty in the emerging carbon market

Robert Priola (MESM 2003) doesn't carry a theodolite or a transit, and he lives in New York, where fault lines are few. But he may know better than most how it feels to be a surveyor in an earthquake because he works in the constantly shifting landscape of the carbon credit market. In that unsteady realm, rules change quickly, certifying bodies have different criteria, the market itself is nascent, and criteria for success in different parts of the world vary widely.

Priola is Senior U.S. Client Manager for EcoSecurities, which sources, develops and trades emission reduction credits through offices in more than 20 countries. The company has been involved in many of the global carbon market's important milestones, including the world's first Clean Development Mechanism (CDM) project to be registered and receive UN-issued credits under the Kyoto Protocol.

Priola came to EcoSecurities in 2006 after earning his bachelor's in Earth Science at UC San Diego, graduating from the Bren School in the Corporate Environmental Management specialization in 2003, and spending two years volunteering for the Peace Corps in Eastern Europe. His first position at EcoSecurities involved traveling the world looking for CDM projects that had credits to sell or needed help getting started or going through the procedures to receive credits. "I loved working at a cattle farm in Indonesia one week and being asked to attend a UN conference in Moscow the next," he says of his varied responsibilities.

He traveled primarily in developing nations that are signatories to the Kyoto Protocol, which supports projects it classifies as "additional," meaning they would not exist without the credits they earn by reducing emissions. "Additionality can be proven in a variety of ways," Priola says. "Maybe the project didn't make enough money without carbon credit, or the technology wasn't available in Guatemala, or they didn't have the technical expertise in Honduras."

In Priola's new position, however, his focus is the U.S. and Canada. Because the U.S. is not a signatory to Kyoto, no project here can earn Kyoto Protocol—designated credits. Further, he says, "Much of the additionality criteria used internationally doesn't hold up well in the U.S., where we produce and employ the technology, we can get investment capital, and we have trained staff."

For instance, he explains, a new project that uses existing technology to reduce emissions in the U.S. may not qualify under Kyoto's CDM because the technology is not "new" here, even though the same technology introduced in a developing nation would be considered new and would earn credits.

Another hitch is that a U.S. project that would qualify under Kyoto today might not qualify as new rules emerge later, and improvements to existing projects may not qualify at all. "A freshly closed landfill with a new methane capture system may qualify for credits," he says, "while an older landfill that expanded its system in 2007 may not."

Because of such discrepancies, when Priola finds a quality project in the U.S., he supports it but also "wonders whether it will go through."

So why is Kyoto defining standards in the U.S., a non-signatory to the accords?

"Because Kyoto was the first real 'Flexible Mechanism' for GHG reduction to be put in place," says Priola. "Until U.S. standards are in place from organizations like the Voluntary Carbon Standard [VCS] or the California Climate Action Registry

[CCAR], we use Kyoto methodologies to measure how emission reductions are calculated."

Currently, neither VCS nor CCAR issues credits. However, says Priola, "We use their methodologies, as well as Kyoto's CDM, to figure out which projects may be available for U.S. credits in the future."

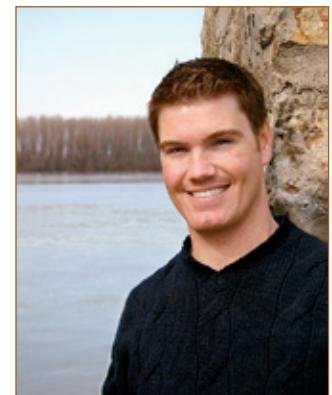
Priola finds that his Bren School and Peace Corps experiences have been particularly valuable in navigating this shifting landscape.

"Bren helped a lot because we were always forced to look at all sides of a problem, to see the environmental, economic, and social aspects," he says. "We used to joke that it taught us to be a jack of all trades." He says he's also benefited particularly from classes that covered finance, negotiation, policy, organizational behavior, and management.

"We had to learn about work breakdown structures and Gantt charts," he says. "At our company recently, we had to do a U.S. strategy, and no one else in my immediate group knew how to do it, so I made the Gantt chart. There was no way I was going to know that without Bren."

But he says nothing beats the Peace Corps for on-the-job training. "You're never able to put all the pieces together," he says. "Nothing fits together well, and you have to make decisions that may or may not be valid in a couple of months. There are no standards, and nothing's set in stone."

No wonder he considers it the perfect resumé for the carbon market.



Faculty Notes

Sarah Anderson is the newest member of the full-time Bren faculty. She arrived at the Bren School in fall 2007, bringing valuable

expertise in political structures and dynamics, which profoundly influence environmental policy. Her research interests include legislatures, political parties, public policy, statistical methods, and environmental politics. She studies how politics informs policy and how members of Congress make decisions.

After receiving a BS in Political Science from the Massachusetts Institute of Technology, she spent two years in Washington, D.C., where she worked as a U.S. congressman's legislative assistant on environmental issues and briefed members of the House National Parks and Public Lands Subcommittee. She then completed her doctoral studies in Political Science at Stanford and earned an MS in Economics.

Anderson suspects that her interest in political science stems partly from having grown up "skiing, hiking, and being outdoors all the time" in and around her birthplace of Bozeman, Mont., and partly through exposure to the area's many land-use issues involving public and private lands and wildlife.

She is interested in how science informs policy, how it is communicated to policy makers, and where the tipping point is for it to impact policy.

She is teaching Environmental Politics and Policy, Environmental Policy Analysis, and a seminar on Environmental Public Opinion and Survey Design.



Habitat needs of the Pacific fisher, a rare California mammal that occupies dense old-growth forests in the southern Sierra Nevada and the Klamath River/Mount Shasta area in the southern Cascades, were the subject of a recently completed study led by Bren



Professor Frank Davis. The fisher, a member of the weasel family that is a candidate for reintroduction in the central

Sierra Nevada, currently occupies less than half of its historical California range, which has been affected by logging, fire, increased human access, and urban and recreational development. The legal conservation status of fishers is politically charged because of the consequences for forest management and timber harvest in the range of the species. In January 2008, the Center for Biological Diversity petitioned the U.S. Fish and Wildlife to list the California populations as endangered.

The project paper, titled "Regional Variation in Home-Range-Scale Habitat Models for Fisher (*Martes Pennanti*) in



California," was published in the December 2008 issue of *Ecological Applications*. In it, the authors support previous studies linking the fisher to mature forest in inaccessible areas. They also caution against reintroduction, concluding that suitable habitat in the central and northern Sierra regions is "limited to a few areas associated with the densely forested river canyons of the northern Sierra." They

recommend additional study to determine whether the northern Sierra could sustain a population. To view the complete paper, go to www.esajournals.org/pserv/?request=get-document&doi=10.1890%2F06-1484.1

Bren Professor **Arturo Keller** traveled to Bangladesh in January, where he is a collaborating scientist on part of a USDA-funded project assessing the degradation of the upper watershed in Bangladesh, and its environmental impacts. The area has seen exploding population growth over the past decades and now has around 45 million people living in it. The traditional, sustainable



practice of shifting cultivation over a seven- to ten-year rotation is being compressed to an unsustainable two- to three-year rotation, and as people from the plains migrate increasingly to the hills of the upper watershed, the forest coverage is rapidly decreasing. The studies are looking at the impact on water quality in terms of increased sediments, nitrogen, and phosphorus, and

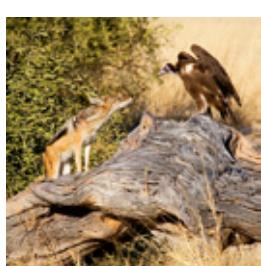
decreasing oxygen content. They are also determining the loss of top soil and its implications for forestry and agriculture. Keller served as moderator of a three-day workshop at Chittagong University, which included participants from all over Bangladesh, plus 25 student trainees. The group then reviewed the progress to date on the three-year assessment and spent several days traveling to various field sites to understand the situation better.

In the current climate-change scenario, are economists deserving of blame, praise, both, or neither?

Charles Kolstad, Bren School Professor of Environmental and Natural Resource Economics, addressed the issue in "Climate Change: Is Economics the Source of the Problem or the Key to the Solution?," a talk he delivered Dec. 3 at Harvard University's John F. Kennedy School of Government. Kolstad's presentation included the following, reported in the *Harvard Crimson* newspaper:

1. On economists: "The economy as it currently functions does need changing, but that's not the same as saying economists need to change their tune."

2. On consumption: "The climate debate tends to focus on putting in energy-efficient light bulbs or



After attending the Society for Conservation Biology 21st Annual Meeting in Port Elizabeth, South Africa, Bren Assistant Professor **Bruce Kendall** spent a month vacationing through the game parks and nature preserves in South Africa, Botswana, and Namibia. Here are a pair of images from his trip (from left): moonrise over Namibia and a jackal facing off with a vulture.

Faculty Notes

driving Priuses. The fact is that most of our greenhouse gas emissions come from all the things we consume."

3. On growth: "Growth in and of itself is fine – in fact, it's good for the people who are not well off. It's the nature of growth, the composition of consumption, that we want to be concerned about."

While at Harvard, Kolstad, who was selected as a Research Associate at the prestigious Bureau of Economic Research in October, also presented a scholarly paper and joined Harvard Law School Professor Jody Freeman to lead an informal discussion with postdoctoral fellows at the Harvard University Center for the Environment.

Kolstad attended a National Academy of Sciences meeting on the Federal Climate Change Research Program in January, and co-organized the first session of a two-part workshop on implementing AB32, the California climate change law. "Implementing Cap and Trade: Designing a Potential Market for Greenhouse Gases in California" was held January 15 at Stanford University. Bren PhD students **Nick Burger** and **Corbett Grainger** attended the workshop and collaborated with Kolstad to prepare a follow-up report.

Bren School Associate Dean **John Melack** has received a prestigious



2008 American Association for the Advancement of Science Fellow Award. A professor of biology

and ecology who has earned an international reputation for his work in biogeochemistry, aquatic ecology, and remote sensing, Melack has written more than 200

publications describing research emphasizing ecological processes in lakes, rivers, wetlands, and catchments in Brazil, Africa, Australia, Japan, Central Asia, and the United States.

AAAS, publisher of *Science* magazine, is the world's largest scientific society. Melack and 470 other 2008 Fellows were recognized for their contributions to science and technology at the Fellows Forum, held February 16 during the AAAS Annual Meeting in Boston.

Bren Assistant Professor **Christina Tague** has been named a principal investigator in a comprehensive long-term study of climate-related interactions among water, ecosystems, and soils, often referred to as the "critical zone," of the Sierra Nevada. Funded by a \$4.6 million National Science Foundation grant, the project links researchers from UC campuses in Merced, Berkeley, Irvine, Davis, and Santa Barbara.



As part of the project, a Critical Zone Observatory Network (www.czen.org) was recently established, initially funding three U.S. observatories intended to serve as centers for long-term monitoring and focused research to advance understanding of watershed-scale earth-surface processes and their interaction with hydrology and ecology. Dr. Tague is a PI for the new Southern Sierra CZO (SCZO). A main research focus there will be examining how changes in snowmelt resulting from climate warming will alter biogeochemical cycling, vegetation processes, and water quality and quantity.

Tague will use her spatial modeling framework RHESSys

to link and integrate research findings from disciplinary scientists (hydrologists examining snowmelt processes, ecologists measuring carbon flux and fire recovery, and biogeochemists examining linkages between climate and soil and stream chemistry) and to develop projections of Sierra ecosystem responses to climate warming scenarios. For more about the project, go to http://www.ucmerced.edu/news_articles/10022007_4_6_million_project.asp

Bren School Dean **Ernst von Weizsäcker** has been appointed co-chair of a new Resource Panel for the United Nations Environment Programme (UNEP), joining former World Bank Vice President Ismael Serageldin of Egypt to head the group. The 15 international experts will focus on environmentally sustainable resource management, a topic that has gained increasing prominence as world resource prices have skyrocketed over the past six or seven years.



Von Weizsäcker, an expert on resource productivity, or efficiency, sees opportunity, not a need for concern, in the rising prices.

"We can increase resource efficiency fourfold at least," says the co-author of *Factor Four: Doubling Wealth, Halving Resource Use*, an updated edition of which is in the works. "We can replace our increasing need for basic resources with ingenuity in using them wisely to get more from them. We can make money with clever technologies that are both good for the environment and create greater resource independence."

The group met for the first time in Budapest, Hungary, in November and will reconvene in Egypt in May.

An essay by Bren Professor **Oran Young** and six other scholars presenting a novel approach to stabilizing greenhouse gas concentrations in the Earth's atmosphere was published in the Feb. 8 issue of *Science*. The authors suggest that stabilizing concentrations of greenhouse gases (GHGs) in the Earth's atmosphere at an acceptable level will "require drastic departures from business as usual"; toward that end, they recommend creating a global trust called the "Earth Atmospheric Trust."

The plan would generate revenue through a global cap-and-trade system (rather than a tax) for all GHG because, write the authors, "Caps set quantity and allow price to vary; taxes set price and allow quantity to vary." Emission permits would be auctioned and could be traded, sending "the right price signals to emitters." The cap would be reduced over time to stabilize concentrations of GHG in the atmosphere at 450 parts per million of carbon dioxide (or lower).

A fraction of the revenues derived from auctioning permits would be distributed to people around the world in the form of an annual per capita payment. The group calculated that the effort could generate \$0.9 to \$3.6 trillion and that if half of the funds were returned equally to all 6.3 billion people, payment would amount to \$71 to \$285 per capita per year. Remaining revenues would be used to enhance and restore the atmosphere, encourage both social and technological innovations, and administer the trust. Read the essay at www.earthinc.org/earth_atmospheric_trust.php.

Student Center

Top Prize for Would-Be Green Builders



Team Modular (clockwise from top left): Kelly Schmandt, Assistant Professor Matthew Kotchen, Jamie Britto, Nicole DeJonghe, and Max DuBuisson

Members of the Bren School's "Green Pieces" Group Project won the 5th Annual William James Foundation Socially Responsible Business Plans Competition March 7 at the World Resources Institute in Washington, D.C., taking top honors for their plan to build affordable sustainable modular homes.

Group members **Jamie Britto, Max DuBuisson, Nicole DeJonghe, Kelly Schmandt**, and their advisor, Bren Assistant Professor **Matthew Kotchen**, also took second place in the separate Sustainability Prize competition. The team will receive \$5,000 in prize money, plus 25 hours of legal advice and 10 hours of complimentary marketing consultation.

This is the first Group Project to be developed as part of the Eco-Entrepreneurship (EE) focus within the Bren School's Corporate Environmental Management specialization, a year-old collaboration between the Bren School and the College of Engineering's Technology Management Program.

The 60-team field in the competition was reduced to 25 in February, and the three finalists were announced Feb. 22. In Washington, each finalist delivered a five-minute presentation and took questions.

The project began in fall 2007 when New York-based architectural firm workshop/apd proposed the project. Following the principle of the "triple bottom line" – social responsibility, environmental responsibility, and financial profitability – the group hopes to create modular housing that reduces costs by 15 percent and construction waste by 40 percent and can be built in half the normal time.



Jonah Busch (PhD) spent the summer of 2007 in New Zealand on an NSF East Asia Pacific Summer Institute grant, researching the relative cost-effectiveness of three conservation measures for the endangered yellow-eyed penguin. Last September, he presented "Gains from configuration: The transboundary protected area as a conservation tool" at the Biodiversity and Economics for Conservation conference at Cambridge University in England. He and his co-authors, including Bren Adjunct Faculty member and Conservation International Senior Fellow **Lee Hannah**, suggested that any carbon market that trades credits for reduced emissions from deforestation should award credits not only to countries that reduce deforestation rates, but also to those that have high forest cover and low deforestation rates. The article was published in the journal *Public Library of Science Biology* and has been accepted for publication in the journal *Ecological Economics*. Note: Just before press time, Busch accepted a post-doctoral position with CI's Center for Applied Biodiversity Science.

Julie Ekstrom

(PhD) was recently awarded a grant from the David and Lucile Packard Foundation's Ecosystem-Based Management Tools Initiative Fund. Ekstrom is considering using the grant to automate one



of the two gap analyses she has developed for her dissertation, transforming it into software that others can use. She is planning to graduate from the Bren School this spring and continue work on the project as a post-doctoral researcher in the Engineering Informatics Group at Stanford University.



Lauren Hess (MESM) attended the 28th annual International Sea Turtle Symposium in Loreto, Mexico, where she presented research she conducted while working in the marine turtle research program at the Southwest Fisheries Science Center in La Jolla, Calif. Her poster, titled "Stable Isotopes 101: what are they and what can they tell us about sea turtle ecology?" highlighted research on olive ridley (*Lepidochelys olivacea*) turtles in the eastern Pacific. Hess had compared stable nitrogen and stable carbon values of olive ridley skin samples with corresponding values found in potential prey to determine the turtles' trophic status in the region. This was the first such investigation of olive ridley turtles.

Sara Hughes

(PhD) was awarded a three-year fellowship with the CALFED Bay-Delta Program. As a CALFED Science Fellow, Hughes will be studying the political and institutional aspects of



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CALFED and its water management objectives, and how they are influenced by urban water planning in Sacramento and San Francisco. Hughes was one of six students to receive CALFED research fellowships in 2007. Support for the projects comes from CALFED Bay-Delta Program, a collaboration of 25 state and federal agencies that have management or regulatory responsibilities in the San Francisco Bay-Delta and the Central Valley.

Last October, second-year MESM



student **Ming Ng** organized a workshop at the Community Environmental Center to discuss Ng's research findings on

the economic and environmental benefits of increasing MTD booster bus service for students. Ng found that increased bus service would reduce pollution, increase air quality, and increase children's safety. The findings were well received, and she is now working on a pilot project called "Bus to School Day," which seeks to increase student ridership on MTD buses, much as similar existing events already promote biking and walking to school.

Second-year Bren MESM student

Erin Myers

published a paper for Resources for the Future, a nonprofit organization in Washington,



D.C., for whom Myers serves as a consultant. Titled "Policies to Reduce Emissions from Deforestation and Degradation (REDD) in Tropical Forests," the 80-page paper examines issues that arise when efforts are made

to create an economically and environmentally robust market-based REDD policy. It is set to be presented at several climate change forums at RFF and the World Bank this November. Myers notes in the abstract that deforestation and forest degradation account for 20 percent of annual greenhouse gas emissions. She also covers the topic of awarding carbon credits to countries for "avoided deforestation," or avoiding greenhouse gas emissions by not clear-cutting their forests.

Bren PhD student **Damon Turney's** article "Transport Phenomena at Interfaces Between Turbulent Fluids" made the cover of the February 2008 issue of *AIChE Journal*, published by the American Institute of Chemical Engineers.

Turney's research focuses on understanding the movement of biogeochemical and pollutant gases between water bodies and the atmosphere, and predicting the rates at which the gases will move. Such knowledge has applications in a variety of environmental contexts. The transfer of such greenhouse gases as methane and CO₂ in surface waters, for instance, is important because of its impact on global warming, writes Turney in the paper, which was co-authored by UCSB Professor of Mechanical and Chemical engineering **Sanjoy Banerjee**. Other relevant scenarios include the atmospheric exchange of oxygen with hypoxic water bodies, and the desorption of dissolved toxics, such as PCBs, from inland and coastal water bodies.

Annie Yau (PhD) was recently awarded the Luce Environmental Science to Solutions Fellowship

for 2008-2010. As a Luce fellow, Yau will have access to special training sessions and courses, and be part of a two-year working group at the National Center for Ecological Analysis and Synthesis (NCEAS). Also, she will receive two scholarship awards totaling \$6,000 applicable toward her studies,



travel to professional conferences, or other activities that augment her education. Yau's research focuses on marine resource and fisheries management, specifically on the nutritional ecology of a culturally and commercially significant giant clam. After Bren, she plans to work abroad to achieve sustainable resource use through community-based programs.

Members of the Bren Tijuana River Group Project received a \$14,000 grant from the Border Environmental Program to aid in their research of nonpoint source pollution (including pathogens, sediment and refuse) in the Tijuana River in the U.S.-Mexico border region. The group aimed to quantify pollutants from Los Laureles Canyon, a representative basin near Tijuana, and their flow across the border into the U.S. It then developed a mitigation plan to guide the watershed management actions of local authorities and transborder government. The group's clients are the California State Water Resources Control Board and the National Oceanic and Atmospheric Administration; group members are

Kavita Heyn, Reni Keane-Dengel, Will Lewis, Jenny Phillips, and Nicole Virgilio.

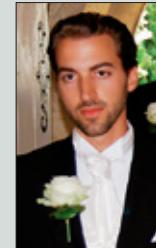
OXFORD LEADER

An essay by

Bren PhD student

Alexios Nicolaos Monopolis

earned second prize and an evaluation from the judges as



Monopolis at the awards ceremony

"highly commended" in Oxford University's third annual Oxford Leadership Prize.

Monopolis's work, titled "Leadership, Sustainability and the 3rd Generation of Environmental Photography," addressed the question "How will the successful leaders of tomorrow address the challenge of sustainability?" A photographer himself, Monopolis incorporates archival political and environmental photography into the essay. He also integrates ideas from his doctoral studies, in which he is examining relationships between unconstrained economic growth and corresponding increases in stress, anxiety, and depression while attempting to demonstrate that reducing and localizing the consumption of resources will benefit the environment and improve individual mental health and social cohesion.

Monopolis earned a master's degree in Biodiversity Conservation and Management at Oxford in 2005, making him eligible for the competition, which was open to Oxford staff, faculty, and students who were under 30 years old. To see Monopolis's entry, go to <http://www.oxfordleadershipprize.org/default.html> and click on "Finalists."

Alumni News

1998

In March 2007, **Jana Carey Lombardi (MESM)** started



a business called 360 Yardware (www.360yardware.com), an online source for outdoor décor. She is currently developing the "green products" section of her business and website, which will include hardware made from recycled materials. She and her husband, Paul, a furniture maker, are developing a line of mailboxes made with Forest Stewardship Council (FSC) certified hardwoods.

2000

Jill Richardson (MESM)

is now the Campus Sustainability Coordinator and TGIF (The Green Initiative Fund) Grants Manager for UCSB. TGIF is funded by a quarterly lock-in fee that UCSB students overwhelmingly passed back in 2006, thanks in part to several Bren students who were integral in its development and promotion during the 2005-06 academic year. TGIF grants are awarded to a variety of projects across campus that enhance and further UCSB's sustainability plan.

2001

Doug Ganey (MESM) was recently promoted to Principal Environmental Scientist at the Louis Berger Group, Inc. He continues to teach part-time and was recently asked to develop and teach the Earth and Space Science training course in a program for grade school and junior high school teachers under the Massachusetts Math and Science Partnership. He taught the initial earth science course at Bridgewater State College last semester.

Christopher J. Gibson (MESM) was promoted from Environmental Specialist to Environmental Specialist II at Norcal Waste Systems, Inc. in San Francisco. In that capacity, he serves as the

main technical resource and provides corporate oversight for the company's hazardous materials and waste programs, environmental training programs, household hazardous waste collection, and internal multimedia environmental audits. On a personal note, Gibson is busy planning his wedding, scheduled for this summer in Chicago.

Gregory Simon (MESM)

received his PhD in Geography with a certificate in Urban Ecology from the University of Washington in June 2007. He was recently awarded a post-doctoral fellowship at Stanford University's Bill Lane Center for the Study of the North American West. Simon's research explores



urbanization and natural resource management in the American West, and the environmental history and political economy of the Bay Area. He and his wife, **Vicky Krikelas Simon (MESM)** (see 2002), live in Palo Alto, Calif., with their son Dimitri, and are expecting a second son this spring.

2002

Mark Kram (PhD), president of Santa Barbara-based Groundswell Technologies, Inc., recently licensed two key inventions to industry partners for site characterization related to hazardous waste remediation design and monitoring strategies. The High-Resolution Piezocene will enable practitioners to develop the most detailed groundwater and contaminant transport models to date. The Direct-Push Monitoring Well Specification System will allow for rapid monitoring well design and installation. Both products are licensed to AMS, an Idaho-based company that manufactures groundwater and soil sampling equipment.

Joe Shohtoku (MESM) and his wife, **Claudia Anticona (MESM 2002)**, are preparing to relocate to Singapore in April

in conjunction with Joe's new role managing the environmental insurance operations for the Far East, South East Asia, and China for Bren Corporate Partner American International Group's international arm, AIU (*Bren News*, Spring 2007). Shohtoku's new title is Vice President – Environmental Impairment Liability.

Vicky Krikelas Simon (MESM)

(MESM) is communications director for the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service's Northwest Fisheries Science Center (NWFSC), where she has worked since 2003. She coordinates the NWFSC's outreach and education program in support of NOAA's mission to conserve living marine resources, improve environmental literacy, and enhance public stewardship. She lives with her husband, **Gregory Simon** (see 2001), and their 2-year-old son, Dimitri, in Palo Alto, Calif. They are expecting another baby boy this spring.

2004

Following three years in the UK as a postdoctoral researcher, **Rajendra (Raj) Bose (PhD)** has recently accepted the position of Digital Initiatives Manager in the new Center for Digital Research and Scholarship at Columbia University in New York. He will serve as a liaison between university researchers – including environmental science and geoscience groups at the Lamont-Doherty Earth Observatory and within the Earth Institute at Columbia – and the Digital Programs and Technology Services division of the Columbia University Libraries.

Adina Abeles (MESM) and **Carissa Klein (MESM 2006)** presented at the European Symposium on Marine Protected Areas, held in Murcia, Spain in October 2007. Abeles presented a talk titled "The Politicization of Scientific Information in MPA Processes: Lessons learned from a controversial public policy process in California."

2005

Joe Kastner (MESM 05) and **David Felix (MESM 06)** put the energy-related studies they pursued at the Bren School to

work in developing the Nellis Solar Photovoltaic facility at Nellis Air Force Base in Las Vegas, Nev. With a rated capacity of more than 14 megawatts, the facility is the largest photovoltaic plant in the Western Hemisphere. Kastner is Vice President and Felix is Senior Channel Manager at MMA Renewable Ventures, a Bren School Corporate Partner

Jeff Phillips (MESM)

recently completed his two-year



post-graduation Presidential Management Fellowship and received his graduation certificate from Secretary of the Interior Dirk Kempthorne in Washington, D.C., at the end of January. In March 2007, Phillips was offered a position as the Environmental Contaminants and Spill Response Coordinator in the Honolulu office of Fish and Wildlife. He left his previous position at the U.S. Fish and Wildlife Service Ventura Field Office and moved to Oahu with his best friend and fiancée, Mandy McCoy, "to continue the adventure."

Jeff Dunbar (MESM)

has returned from extended travels in New Zealand and accepted a

Attention, Bren School Alumni

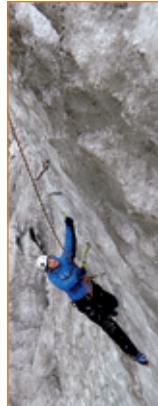
We want to hear from you. If you have a new job, a new address, a new achievement, etc., please send details to Career and Alumni Relations Coordinator Tammy Taub; 805-893-2743 or tammy@bren.ucsb.edu. Keep up with classmates via the alumni network in the Career Services section of the Bren website.

If you would like to receive an electronic copy of *Bren News*, please send email to Tammy Taub.

Group Project Has Legs

A Class of 2006 Master's Group Project on the design, implementation, and enforcement of Marine Protected Areas in the context of the California Marine Life Protection Act has yielded papers and collaborations that continue to link group members **Allison Chan, Amanda Cundiff, Nadia Gardner, Yvana Hrovat, Lindsay Kircher, and Carissa Klein**. They joined their faculty advisor, Bren Assistant Professor **Bruce Kendall**, and representatives of the client, Ecotrust, to co-author a paper titled "Striking a balance between biodiversity conservation and socioeconomic viability in marine protected area design." It has been accepted for publication in the journal *Conservation Biology*.

Under contract to Ecotrust, Klein, who currently resides in Australia, joined colleagues at the University of Queensland to co-author a related paper titled "Effectiveness of marine reserve networks in representing biodiversity and minimizing impact to fishermen: a comparison of two approaches used in California" (Klein C., Steinback C., Scholz A., Possingham, H.). It is currently in review at the journal *Conservation Letters*.



new job as a Green Building Consultant with CTG Energetics in Irvine, Calif. CTG provides green building advice and energy efficiency analysis to developers and contractors, while bridging the gap between cutting-edge concepts and real-world problems.

2006

Daniel Hall (MESM) is working as a Research Assistant at Resources for the Future (RFF). He spent most of 2007 participating in RFF's U.S. Climate Policy Forum, which brought together RFF researchers and business leaders from companies representing a broad spectrum of the U.S. economy, with the objective of providing legislators with detailed options for federal policy. Hall authored several of the issue briefs contained in the final report, "Assessing U.S. Climate Policy Options" (available online at www.rff.org/cpfreport). In his spare time, he blogs on environmental economics at montragedies.wordpress.com.



Nadia Gardner (MESM) recently left her job at the Lower Nehalem Community Trust to work at the Columbia Land Trust (CLT) in Oregon and Washington. As the Land Trust's Coast & Estuary Conservation Lead, Gardner is developing a conservation strategy for the region, acquiring new conservation properties, and completing stewardship plans for the Trust's coastal lands.

Carissa Klein (MESM), who is employed by The University of Queensland, recently attended the Asia Pacific Conservation Learning Exchange conference, hosted by The Nature Conservancy (TNC) in Indonesia. She led a one-day workshop on systematic

conservation planning software in conjunction with Dr. Kerrie Wilson, TNC Director of Conservation for Australia, and presented her research, "Incorporating ecological and evolutionary processes into conservation planning in Australia." Klein and **Adina Abeles (MESM 2004)** attended the European Symposium on Marine Protected Areas in Murcia, Spain, in October 2007.

Stacey Kilariski (MESM) recently attended the Asia Pacific



Conservation Learning Exchange conference, hosted by The Nature Conservancy (TNC) in Indonesia. Kilariski is currently working as an Applied Marine Scientist for the Global Marine Initiative of TNC. Her responsibilities include coordinating field projects, maintaining learning partnership networks and links, and providing technical support and input to the design of Marine Protected Areas workshops and education initiatives. She lives in Honolulu.

In the previous issue of *Bren News*, we reported that **Kim Matsoukas (MESM)** was leading the effort at carpeting manufacturer Bentley Prince Street to earn LEED-EB Silver Certification for the company's California mill. The effort was successful, making the carpet manufacturing facility the first in the nation to receive a Silver rating from the U.S. Green Building Council. The company received LEED "innovation credits" for its exceptionally detailed emission reporting methods.

Betty Seto (MESM) presented a paper at the Association of



Energy Services Professionals (AESP) conference, held in Clearwater, Fla., in January. Her talk, "Addressing climate change concerns at

the municipal level: a case study on the city of Sunnyvale, Calif.,"

addressed how techniques for evaluating mitigation projects can leverage common energy efficiency and conservation strategies already familiar to energy professionals.

Niki Wilson (MESM) is completing her second year as a county planner working on habitat mitigation



programs at the Prima Deshecha Landfill in San Juan Capistrano, Calif. She gave a talk titled "Planting the Seeds of Ecological Sensitivity in the Solid Waste Industry" at the Western Regional Symposium of the Solid Waste Association of North America (SWANA) and wrote a case study on a compost-based soil quality remediation project that she implemented at the landfill. The article was published in the September 2007 issue of *Biocycle* magazine.

2007

Erin Claybaugh (MESM) joined the Green the Capitol team in January. The group was created as part of an initiative launched by House Speaker Nancy Pelosi in 2007 to make the facilities and operations of the House of Representatives more environmentally friendly. The first "green actions" included stocking 100-percent post-consumer recycled paper in the office supply store and converting the cafeterias to sustainable, organic, and/or local foods and compostable food containers.

2008

On Jan. 15, **Peng Wang (PhD)** successfully defended his PhD dissertation, titled "Surfactant-aided remediation of pesticide-contaminated soils and transport of colloids within porous media." The work advances the current state of the art in the use of surfactants to deal with pesticides and other hydrophobic organic contaminants in soils. Together with Bren Professor **Arturo Keller** and co-workers at the UCSB Materials Research Lab, Wang has a patent application in process for some of his findings.



The new Toyota gift will enable Bren faculty to serve as facilitators in the Toyota International Teachers Program, working with high school teachers like the ones shown here with students in Costa Rica.

Toyota: \$400K to Bren School

Student fellowships and internships, a professor-in-residence program, and a professional exchange program will all result from a \$400,000 gift to the Bren School from Corporate Partner **Toyota Motor Sales**.

The gift establishes new structures that build upon the synergy between the Bren School and one of the world's leading auto makers, whose actions as part of its "Cleaner and Greener" campaign have established it as the industry leader in sustainability.

"I am thrilled to acknowledge Toyota's generous and visionary gift to the Bren School," said UC Santa Barbara **Chancellor Henry T.**

Yang. "It not only provides crucial funding to support the School in attracting the best and brightest students, but also funds important efforts toward expanding environmental education and awareness worldwide. By integrating research, mentoring, and professional training, this partnership represents the best kind of collaboration between business and higher education."

The three components of the gift make it possible to do the following:

- Establish highly competitive Toyota Environmental Science & Management Fellowships (**Toyota Fellows**), enabling the Bren School to attract more top master's and PhD students.
- Establish an annual **Toyota Summer Internship** to support a qualified master's student in working to advance the goals of Toyota's environmental initiatives and pursue environmental educational outreach within the **Toyota International Teachers Program**, a major initiative for the advancement of environmental education.
- Provide programmatic support for a **Professor-In-Residence** program. Selected Bren faculty will accompany secondary-school teachers from around the nation on study trips to such destinations as Australia, Costa Rica, the Galápagos islands, and South Africa. The professors will help to develop curriculum and connect the intellectual dots linking scientific research, the region of study, and relevant environmental issues.

"This wonderful gift from Toyota underscores the value of our Corporate Partners Program, which brings great benefits to the Bren School, its students, and to environmentally astute organizations like Toyota, which are committed to making a real difference in terms of environmental sustainability," said Bren School Dean **Ernst von Weizsäcker**.

Weizsäcker. "Toyota is a visionary company – the leader in its field – and we are pleased to collaborate with them."

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