Green Innovation
Putting the Environment in Innovation

The new Eco-Entrepreneurship Program (EEP) within the Bren School’s Corporate Environmental Management specialization is the first of its kind in the nation. Participating students will take courses both at the Bren School and in the College of Engineering’s nationally recognized Technology Management Program (TMP), and develop a complete business plan to launch innovative technologies, products, or practices that address important environmental or natural resource problems and enhance the value of the corporation.

“The business plan provides tangible evidence of students’ skills that are useful for companies, government agencies, and NGOs,” says Bren professor of corporate environmental management Gary Libecap, who worked with Bren professors Magali Delmas and Roland Geyer, as well as Gary Hansen, associate dean of the College of Engineering and director of TMP, to create the program. “Organizations across the country are looking to develop and launch technologies and products that promote sustainability, and these course offerings really align with that.”

The program gained its founding funding from John Wilczak, a Santa Barbara venture capitalist and entrepreneur who is a UCSB Foundation member, a longtime UCSB supporter, and a co-founder of the program that evolved into TMP.

“I’m a conservationist, and I believe that by coupling the entrepreneurial spirit with environmentally sound technology and program development, we will generate significant contributions to our community and the world,” Wilczak says. “I’m delighted to help enable the cross-fertilization of the Bren School and TMP through a program that is meant to drive real-world thinking hand-in-hand with world-class research. We should expect great things from this program!”

Speaking of Sustainability

The Bren School hosted, sponsored, or joined UCSB partners to present the following speakers recently. For more, go to www.bren.ucsb.edu/news/all_events.htm.

Ryoichi Yamamoto – Resource productivity and “green” purchasing were the topics when this internationally recognized expert on environmentally sound materials and designs, and product life-cycle assessment visited the Bren School in November.

Sunita Narain – One of India’s leading voices on environmental issues, Narain visited the Bren School in February to speak about combining rapid economic growth and environmental sustainability.

Mathis Wackernagel – His topic was the “Ecological Footprint,” a tool he co-created that makes it possible to assess the sustainability of lifestyles.

James Hansen – The director of the NASA Goddard Institute for Space Studies addressed manmade climate change as part of the UCSB Arts & Lectures series “Global Warming – Science and Society.”

Steve Koonin – A longtime professor of theoretical physics at the California Institute of Technology and the chief scientist for British Petroleum, Hansen spoke about energy trends, also as part of the “Global Warming – Science and Society” series.

Paul Crutzen – The Nobel laureate discussed his ideas for reducing global warming by introducing heat-reflecting materials into the upper atmosphere.

Dean Named to Editorial Board

Bren School Dean Ernst von Weizsäcker has joined the editorial board of a new peer-reviewed journal titled Reviews of Interdisciplinary Sciences for the Environment and Society (RISES). The journal has been established at the Institut Veolia Environnement in Paris, with sponsorship by the French firm Veolia and a mandate to work independently and solely within the scientific community.

BREN Alert

Sign up for the new “Bren Alerts” subscription mailing list, and you’ll receive regular announcements about Bren-related news and events.

Register at www.bren.ucsb.edu/services/computing/bren-alerts.html. And for a regularly updated list of Bren School events, visit the new Bren events page at www.bren.ucsb.edu/news/all_events.htm. To have an event considered for distribution via bren-alerts, send e-mail to media@bren.ucsb.edu.
More than 90 economists – professors, professionals, and PhD students – from around the nation convened at the Bren School Nov. 3-4 for the 9th Occasional California Workshop on Environmental and Natural Resource Economics.

“This is the largest and oldest regional workshop of its kind in the nation,” said Bren professor Charles Kolstad, who worked with Bren faculty colleagues Christopher Costello and Matthew Kotchen, and PhD student Laura Grant to organize the event, which was made possible by a grant from the U.S. Environmental Protection Agency and with support from the Environmental Economics Group at the Bren School.

“It started with 20 participants in 1993 and now has more than one hundred and has spawned similar conferences around the country,” said Kolstad. It is intellectually stimulating and also gives our students a chance to showcase their abilities before an important group of scholars.” Among the 25 presenters were UCSB PhD students Nick Burger, Dan Kaffine, John Lynham, Allison Huang, and Nick Parker.

For a program of the conference, including a list of speakers and topics and links to their papers, go to http://www.bren.ucsb.edu/~lgrant/occasional_2006.
A Dive into the Deep End

**MESM students take the plunge as facilitators at a contentious wetlands workshop**

In addition to working for clients on their Group Projects, Bren MESM students sometimes get the chance for a real-world test of skills and knowledge they have acquired during their course work. Such an opportunity arose recently for second-year MESM students Amy Jewel, Hannah Muller, and Marie-Claire Munnelly when they participated in a public meeting about the Ballona Wetlands restoration project, held Nov. 18 at Loyola-Marymount University in Los Angeles.

Bren visiting lecturer John Jostes, a professional mediator who taught Environmental Negotiation during the Fall 2006 quarter, invited the students to participate. Each served as a facilitator for one of eight groups comprising citizens and experts assembled to express their views on various approaches to the future of the wetland, which in recent years has been the source of furious debate between developers and environmentalists.

“I put the students into a dynamic environment where impassioned community activists were coming together with scientists to brainstorm on what an important wetland would look like in 30 to 50 years,” said Jostes. “Without contradiction, everyone from regulators and scientists to watershed specialists and participants told me I had a great group who really helped them work together. We had professional moderators there, and the three Bren students held their own with those types of people. That to me is huge.”

“The negotiation and facilitation strategies seemed easy and straightforward in class, but all of a sudden we were in a room with real people making real decisions and we had to think on our feet and hold it together,” said Muller. “It gave me a lot of insight into how much time and effort go into bringing the public into the policy-making process.”

Such experience, Jostes added, “builds the skills, the confidence, and the leadership in Bren students. If Bren is all about science, policy, and management, there’s nothing like managing a wetland planning process to provide an incubator for bringing those things to bear on each other.”

“I learn a lot by doing, and participating in a public-comment workshop is as real as you can get,” said Munnelly. “At first it was intimidating, but as the day progressed I realized that not only did I know more than I thought, but other participants were appreciative of my presence as a mediator. The idea that I helped facilitate the whole process felt quite empowering.”

“I think Bren is unique in that you are taught by both published professors and people in the field who get their hands dirty,” Munnelly added. “It shows the great connections Bren offers when you have a professor who, in addition to being a good teacher, is the chair of the Santa Barbara City Planning Commission and is principal of a consulting firm that facilitates major policy decisions. When you’re surrounded with people like that, you never know what opportunities will come up. It’s a great combination of resources and inspiration.”

Second-year MESM student **Gabe Brown** competed in the world championship of the Xterra off-road triathlon series, held Oct. 29 on Maui. Joining 550 competitors from more than 30 countries, he completed the 1.5-kilometer swim, 30K mountain bike segment, and 10K trail run in 4 hours, 39 minutes.

Bren PhD student **Marc Conte** was in Seattle on Dec. 1 to present at the Alaska Salmon Program Symposium, hosted by the School of Aquatic and Fisheries Sciences at the University of Washington (UW). Conte’s work evolved out of field research he conducted with UW’s Fisheries Research Institute in Chignik Lake, Alaska, and examines whether – and how – a voluntary co-op might improve welfare for members and nonmembers alike and the tools that managers might use to ensure a favorable result.

Marine Science PhD student **Julia Ekstrom** received the California Sea Grant for her dissertation project titled “Quantifying Institutional Interplay.” Her advisor and the principal investigator was Bren professor **Oran Young**, who is also chair of the Scientific Steering Committee of the International Project on the Institutional Dimensions of Global Environmental Change (IDGEC). Ekstrom presented her methods at the IDGEC conference held on Bali last December. (See related story on page 8.)

Second-year MESM student **Gina Gerritzen** presented the Group Project on nanotechnology environmental and health safety practices at the 2006 International Conference on Nanotechnology Occupational and Environmental Health & Safety (NOEHS), held Dec. 4-7 in Cincinnati, Ohio. The group also includes **Maria Mircheva, Leia Huang, Keith Killpack**, and sociology PhD student Joe Conti. (See page 5 for related story.)

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Few master’s students get the chance to write a groundbreaking report on a cutting-edge industry that promises to revolutionize everything from consumer products to treatments for disease. But members of one Bren School Group Project did just that as part of a team that produced the first publicly available worldwide survey of workplace environmental health and safety (EHS) practices in the burgeoning nanotechnology industry.

The MESM students were Gina Gerritzen, Leia Huang, Keith Killpack, and Maria Mircheva. They joined Bren professor of microbiology and principal investigator Patricia Holden on a multidisciplinary team that also included Bren professor of strategic management Magali Delmas; Barbara Herr Harthorn, research anthropologist and co-director of UCSB’s NSF Center for Nanotechnology in Society (CNS-UCSB); UCSB professor of sociology and international studies Richard Applebaum; and UCSB PhD student Joe Conti (Sociology). The group received $55,000 from the International Council on Nanotechnology (ICON) at Rice University to study environmental health and safety practices in the nanotech industry.

Nanomaterials, defined as engineered materials having dimensions of less than 100 nanometers – a nanometer being one-billionth of a meter – are currently used in the manufacture of cosmetics, clothing, sports equipment, coatings, and electronics, and are expected to generate global sales of $1 trillion by 2015.

But nanoparticles could be dangerous. "Particles at the nanoscale take on novel physical properties, making their potential dangers to humans and the environment mostly unknown," says Holden.

The Phase I report, released in October 2006, was essentially a review of previous and ongoing international efforts to catalog EHS practices in the nanotechnology industry. The researchers found that while some cataloguing of practices had occurred or was underway, information was either not freely available to the public, was gathered in a limited geographical area, or would not be available for some time.

In Phase II, the researchers surveyed representatives from 64 companies in North America, the European Union, Asia, and Australia (out of 337 that were contacted and an estimated 1,500 to 2,000 organizations working with nanomaterials worldwide).

The resulting report, "A Survey of Current Practices in the Nanotechnology Workplace," suggests that industry safeguards may be insufficient, largely because of a critical lack of information and understanding about the potential or known risks of the particles. It also says that, while companies and laboratories worldwide recognize that special risks are associated with nanomaterials, actual reported industry EHS practices “do not significantly depart from conventional safety practices for handling chemicals.”

Further, while surveyed organizations generally reported recommending disposal of nano-products as hazardous waste, they did not frequently report conveying that information to their customers.

On Nov. 13, the researchers assembled for a 90-minute webcast/news conference produced in cooperation with ICON.

Bren and UCLA faculty partner in UC-funded nanotoxicology program

Bren professors Patricia Holden, Roland Geyer, and Arturo Keller have joined colleagues at the UCLA School of Public Health to create a graduate program in nanotoxicology that includes both a teaching and a research component. The class, open to PhD and master’s students, will be taught at UCLA beginning fall quarter 2007. The course is funded jointly by UCSB and UCLA with support from the UC Toxic Substances Research Program.

The three Bren instructors will partner with nine from UCLA to deliver the course lectures. Keller will teach the fate and transport issues and work with Bren PhD student Peng Wang on parallel research. Holden will lecture on the cellular aspects of nanoparticles while conducting related research with UCSB chemical-engineering master’s student Allison Horst. Geyer will lecture on the policy, industrial ecology, and product life-cycle aspects of nanoparticles. The UCLA group will examine the medical aspects of nanoparticles.

The project, which has received funding for five years, required collaboration between at least two UC campuses. It was brought to Keller’s attention by his UCLA Medical School colleague professor André Né, who will join professor of engineering Curt Eckart to lead the UCLA team.

continued on page 6
PhD student Darren Hardy presented a paper titled “Metadata in the Wild: An Empirical Survey of OPeNDAP-accessible Metadata and its Implications for Discovery” at the American Geophysical Union Fall Meeting, held Dec. 10-15 in San Francisco. The paper is the result of research conducted by Bren professor James Frew’s NSF-funded project on digital libraries. Hardy discussed the difficulties of building a global search service for scientific data on the Internet.

MESM students Stephanie Hsia and Nathan Snider (left) also gave a poster presentation of their Group Project at the 6th California Oak Symposium, held October 9-12 in Roehnert Park, California. The project investigates the impacts of climate change and development pressures on blue oak woodlands in the foothills of the southern Sierra Nevada.

The other members of the oak group are Zachary Bradford, Ryan Digiondomenico, and Sarah Graber. Snider and fellow MESM student Karen Setty (right) also spent time last summer in Araypallpa, a village of 300 in the Peruvian Andes, as part of an ongoing water project undertaken by the UCSB chapter of Engineers Without Borders and managed by Bren PhD student Vered Doctori.

First-year MESM student Joshua Simmons passed the California Bar Exam. A graduate of Assumption College (BA, Magna Cum Laude, Environmental Science, 2003), Simmons graduated from the University of San Diego Law School in 2006, intending to practice environmental law. He entered the Bren School in September 2006.

PhD student Mike Springborn presented two papers at the 9th Biennial Conference of the International Society for Ecological Economics (ISEE), held Dec. 15-18 in New Delhi, India. “Research versus Development: Optimal Policy for Stochastic Environmental Threats” looked at two options for addressing threats – investing in measures (before a threat becomes real) intended to limit its impact, and producing new knowledge to improve such measures. The second paper, “Unintended Biological Invasions: Does Risk Vary by Trading Partner?,” co-authored with Bren professor Christopher Costello, Carol McAusland, and Andrew Solow, looks at international trade as a conduit for biological invasions.

This is an important study because it reinforces the perspective, generally, that there needs to be more information regarding the toxicology of new nanomaterials and how they should be handled in the contexts of industry, consumers, and the environment,” says Holden. “There is a lot of uncertainty about how these materials will behave in organisms and the environment,” says Killpack. “It’s important that we think about worker safety at the same time the technology is developing in order to prevent unforeseen catastrophes.”

Consistent with the approach of the Bren School and UCSB as a whole, the project included researchers from a range of backgrounds.

“This was a great experience to work with colleagues and students from both the natural and social sciences,” said Delmas. "It's a perfect example of the kind of interdisciplinary work we do here, which allows us to address cutting-edge questions with the right combination of expertise.”

The project resonated both academically and personally for Gina Gerritzen. “I used to be on the EHS team at my company,” she says, “and we didn't know what to do to protect the workers – and all of us have used consumer products with nano-size components at one time or another. So I understood the significance of what we were doing from the start. At times, I forgot the project was for school credit – it became more of a personal goal.”
Dean’s Year

A conversation with Dean Ernst von Weizsäcker as he completed his first year at the Bren School.

Bren News: What have been your most marked impressions of the Bren School in your first year here, and what opportunities do you see ahead?

Ernst von Weizsäcker: My most profound impression is that this is a great place with enthusiastic students and a superb faculty. I am learning a lot about nature conservation, a field neglected in much of Europe, and I see an opportunity to pursue some familiar "European" themes, such as the energy/environment nexus, international environmental treaties, and resource productivity.

BN: As the author of Factor Four: Doubling Wealth and Halving Resource Use, you have a particular interest in resource productivity. When did that interest develop?

EvW: Very soon after Paul Ehrlich released his famous "IPAT" formula [see "A Productive Curve" below] in the 1970s, it became clear to me that "factor-four technology," which allows affluence to grow twofold while cutting negative environmental impacts in half, was the most realistic point of entry for action. But "technology" doesn’t stand alone; it must be directed by investors, consumers, and government policy. I believe that if the significance of Ehrlich’s formula is understood and factor-four technologies are demonstrated to be available or feasible, people will buy in to technology as a solution, a trend already present in much of Europe, Japan, and China.

BN: Can you comment on the recent UCTV segment in which you and Bren assistant Professor Roland Geyer discussed resource efficiency and product life cycles?

EvW: Roland and I have similar approaches. We both believe that the industrial system can be seen as an ecological system, just as a cornfield or a lake is, with inflow, metabolism, and outflow. But while lakes work well enough on their own, we should see industrial ecology as an invitation to direct those flows so that materials go back into manufacturing rather than into the landfill, thus making multiple use of the energy as it cascades through our economy.

BN: You have observed that the U.S. is behind Europe and some Asian nations – Japan in particular – in terms of resource productivity. Why is that, and what can be done about it?

EvW: The historical American experience has been that resources are essentially unlimited. Europe and Japan saw the physical limits of their resources much earlier in their history, and recycling laws and energy efficiency incentives resulted. Apart from the economic benefits that would accrue to the U.S. by emulating some of those incentives, it would also become much less dependent on imports.

BN: What are your impressions of Assembly Bill 32, also known as the Global Warming Solutions Act, passed by the California legislature last August, and the executive order that Governor Schwarzenegger signed last April, directing state agencies to increase their use of biofuels?

EvW: Once again, California has shown leadership by passing AB 32, which I expect will provide an additional boost for new technologies and businesses in California. I remain a bit skeptical about biofuels because they are limited by available land, much of which is presently used for food production. Rightly, bioengineers are now looking at fuel from lignocelluloses (wood, switch grass, etc.), and from bacteria that may even produce hydrogen from sunlight.

BN: Can you comment on the Bren School’s alliance with the Department of Engineering’s Technology Management Program (TMP) to offer a new course of study that focuses on launching new ventures, products, and technologies that address environmental and natural resource problems?

EvW: The UCSB School of Engineering is among the best in the country, and it is especially good at energy-efficiency technologies. I am glad that our students can benefit from this partnership, and that Engineering is interested in further addressing environmental issues. I’m excited about the prospect of seeing ecologically sound, high-tech start-up firms emerging from this partnership.

Note: For more about the Bren-TMP Eco-Entrepreneurship program, go to www.bren.ucsb.edu/academics/eep.htm.

A Productive Curve

The field of resource productivity developed from the so-called “Erlich equation” (I = P x A x T), where I is impact on the environment, P is population, A is per capita consumption (affluence), and T is technology. (T is large in a wasteful society and small in an efficient one.)

According to Bren School Dean Ernst von Weizäcker, plugging some reasonably conservative projection values into the formula – zero population growth in the northern part of the world and 60 percent in the South, and an annual per capita affluence growth rate of 2 percent in the North and 4 percent in the South – yields a value for I that would require a fivefold increase in resource productivity until 2050 just to avoid increasing current environmental impacts.

“Yet,” he explains, “climatologists warn that we need to reduce, not merely stabilize, greenhouse emissions, and biodiversity protection requires a reduction, not only a stabilization, of the annual rate of land conversion.”

The good news, the dean adds, “is that it is feasible to have a technology revolution that would increase resource productivity dramatically, by 3 percent annually, creating a fivefold increase in fifty years.”
Faculty Notes

Professor Oran Young, co-director of the Bren School’s Program on Governance for Sustainable Development (GSD), traveled to a pair of major scientific conferences in November and December.

In Beijing, China, he joined about 1,000 other scientists to discuss “Global Environmental Change: Regional Challenges,” the title of the Global-Change Open Science Conference (GCOSC), presented Nov. 9-12 by the Earth System Science Partnership (ESSP). Created out of the first GCOSC, held in Amsterdam in 2001, ESSP is a collaborative effort of the four major global change research programs, including the International Human Dimensions Programme on Global Environmental Change (IHDP), where Young serves as chair of the Scientific Committee.

“Joining the natural sciences and the social sciences to address global environmental change is hard work, but it is essential if we are to understand large-scale developments like climate change well enough to deal with them effectively,” Young says. “ESSP is the principal vehicle the science community has created to tackle this assignment.”

BREN ASSOCIATE PROFESSOR OF resource economics Christopher Costello hosted an international group of 20 economists for a two-day workshop Jan. 30 and 31 at UCSB’s National Center for Ecological Analysis and Synthesis. Participants examined the role, the implications, and the potential of property rights reform as they relate to fisheries management.

Costello is co-principal investigator on the Sustainable Fisheries Group, a collaborative effort between scientists at UCSB and practitioners at Environmental Defense to reform fisheries management to simultaneously achieve sustainability and profitability. Costello recently served on the Baseline Science Monitoring Panel for the California Marine Life Protection Act, a multidisciplinary group of experts working to design monitoring protocols for California’s new marine reserve network.

In May, as a member of the Diversitas International Panel, he will travel to Paris, France, to attend a three-day workshop on the economics of biodiversity.

Costello’s article “Search, Bioprospecting, and Biodiversity Conservation” (co-authored by Michael Ward), appeared in the October 2006 issue of the Journal of Environmental Economics & Management. In that study, the authors concluded that, in the context of bioprospecting, private-sector incentives cannot be relied on to provide adequate protection of biodiversity, and that, “to the extent that biodiversity is a public good, other incentive mechanisms will be required for its protection.”

“We tend to think of species’ ranges as fixed,” says Bren adjunct associate professor and Conservation International (CI) Senior Research Fellow Lee Hannah. “We assume that they are where they’ve always been. But once you see that they move, you wonder about the effectiveness of fixed protected areas.”

Hannah is wrapping up the third year of a four-year ecosystem modeling project with Bren professor Frank Davis and collaborators in South Africa, at UC Davis and Stanford, and elsewhere to assess the impacts of climate change on the biodiversity of California flora. Funded by the California Energy Commission through CI, with support from The Nature Conservancy, the project was also a test drive for BioMove, a species-move-ment model developed by Guy Midgley at the National Botanical Institute of South Africa.

“Existing ‘climate envelope’ models tell you where a species is now and where it might be in the future given changing climate,” Hannah says, “but they say nothing about how you get from A to B, from present suitable habitat to potential suitable climate space in the future.”

And that raises questions, among them: Are existing protected areas an appropriate conservation tool as climate changes? Are they in the right places? Do they capture enough spatial variation to conserve dynamic species? Do we need more protected areas, or more connections between them?

The Bren team is now creating present and future models for 400 species. “Our goal,” says Hannah, “is to improve how conservation is done in a changing climate.
Faculty Achievements

in California and in other biodiversity hotspots around the world.”

CHARLES KOLSTAD, PROFESSOR of environmental economics, joined other economists, legal scholars, atmospheric scientists, and political scientists from the United States and Europe at “Responses to Global Warming: the Law, Economics, and Science of Climate Change,” a symposium held Nov. 16-17 at the University of Pennsylvania Law School in Philadelphia. Kolstad provided commentary at a session titled “Responding to and Insuring Against Catastrophic Climate Change.”

“This was a remarkable gathering of law scholars addressing the climate change problem from very different perspectives,” said Kolstad. “The possibility of more lawsuits being filed against emitters of carbon dioxide for perceived damage from weather events could shake up the regulatory world.”

Kolstad also has a new book out titled Moving to Markets in Environmental Regulation: Lessons from Twenty Years of Experience (Oxford University Press, 2007). It grew out of conversations about environmental regulation, particularly “command and control versus market-based environmental regulation” that Kolstad had with co-author and then-UCLA law professor Jody Freeman.

To answer the questions that arose, the two scholars invited some of the best minds from the fields of law and economics to write papers and present them at a one-day workshop at the Bren School. Moving to Markets is the result of what the authors describe as a “very long day” that contained “fascinating moments of translation and synergy, agreement and disagreement.”

BRUCE KENDALL, ASSOCIATE professor of applied ecology, co-authored three recently published papers. In “Plant-Soil Feedbacks and Invasive Spread” (Ecology Letters, 2006: 9: 1005-1014), he joined Jonathan M. Levine, Elizaveta Pachepsky, and Stephanie G. Yelenik from the UCSB Department of Ecology, Evolution, and Marine Biology to study invasive plants that may have the ability to change soil microbial communities and biogeochemical cycling to benefit themselves.

In “Consequences of Heterogeneity in Survival Probability in a Population of Florida Scrub-jays” (Journal of Animal Ecology, 2006, 75, 921-927), Kendall and colleagues from the University of South Florida and Cornell University researched the role that in-population heterogeneity may play in population dynamics and extinction risk.

Finally, in “Putting Evolutionary Biology Back in the Ecological Theatre: A Demographic Framework Mapping Genes to Communities” (Evolutionary Ecology Research, 2006, 8, 1155-1171), Kendall joined scholars from England and Sweden to pursue the research question: “How can we link genotypic, phenotypic, individual, population, and community levels of organization so as to illuminate general ecological and evolutionary processes and provide a framework for a quantitative, integrative evolutionary biology?”

HUNTER LENIHAN, BREN SCHOOL associate professor, presented at a conference titled “Tropical Island Ecosystems and Sustainable Development,” which was held on the island of Moreea, Tahiti, December 2-7 and hosted by the Initiative for the Protection and Management of Coral Reefs in the Pacific.

His presentation “dealt with research I’ve been conducting on the current status of lagoon corals; processes, including hydrodynamics, sedimentation, and predation, that appear to regulate the dominant species; and ideas from my research that can be used in programs designed to enhance coral populations.”

Restoration of marine ecosystems is a central focus of Lenihan’s research in general and in Tahiti specifically, where he has ongoing coral-reef restoration projects at the Richard B. Gump South Pacific Research Station on Moorea.

“This was the first time that research scientists and government-agency scientists and managers from Tahiti (and, thus, France) had convened with coral reef ecologists from Japan and U.S. scientists who conduct their research at the Gump Station to develop ideas for sustaining the environmental and ecological health of Moorea and other islands in French Polynesia,” Lenihan says. “The idea was to identify existing and future environmental problems that will affect Moorea and build relationships between scientists and local resource managers so that science can be better used and better designed for reef conservation and management.”

BREN ASSISTANT PROFESSOR OF hydro-ecology Christina Tague recently co-authored two journal papers and contributed a chapter to a new state-of-the art summary of hydrology.

In “Hydrogeologic Controls on Summer Stream Temperatures in the McKenzie River Basin, Oregon,” forthcoming in Hydrological Processes, she and co-authors from Oregon State University found that for the Oregon Cascades, groundwater inputs are often the primary cause of spatial differences in stream temperatures and warming rates, which has implications for where and when aquatic life in these rivers will be most vulnerable to temperature stress.

In “Water and Carbon Fluxes of European Ecosystems: an Evaluation of Water and Carbon Fluxes in the Ecohydrological Model RHESSys” (Hydrological Processes, 2006, DOI:10.1002/hyp.6540), she worked with colleagues at the Swiss Institute of Technology in Zurich to show that RHESSys could provide good estimates of carbon and water fluxes for climate impact studies.

Tague also contributed a chapter titled “Terrestrial Ecosystem Patch Dynamics, Disturbances Regimes” to the new Encyclopedia of Hydrologic Sciences (eds M. Anderson, Wiley, 2007). She also spoke at the MTNCLIM 2006 meeting, an interdisciplinary conference that brings together scientists, managers, and professions to look at how climate change is impacting mountain ecosystems. Her talk can be viewed online at http://mri.scnatweb.ch/content/view/141/73/.
The Science of Sabbatical
Three Bren professors at work while on leave

Thomas Dunne: Diverse Ecology

Professor of geomorphology and hydrology Thomas Dunne is back at the Bren School after spending his 2005-2006 sabbatical working in the Department of Earth Sciences at Oxford University in England and “reacquainting myself with the satisfaction of analyzing my own data and writing my own computer programs and my own papers.”

He wrote a pair of book chapters on the geological history of sediment transport through the Andes and the Amazon River, as well as papers about modeling erosion on African hill slopes. All were the result of previous work examining the relationship between deforestation, cattle grazing, and nutrient supplies in rivers.

“Many studies have shown that deforestation followed by cattle grazing leads to nutrient loss in rivers,” he says. “But in a big place like the Amazon basin, it’s not just the cutting of trees [that causes problems], but also bringing in people who dwell in towns and need to make a living, which means creating sewage, grazing more cattle in a small area and butchering them for food, running dairy operations – the implied agricultural processing industries that turn out to be major sources of pollution.”

Dunne’s work also took him to Greece, where he co-taught an Oxford field camp, training students in the investigation of geomorphological processes on active volcanoes on the Aegean island of Santorini (Thera), and on active fault scarps in central mainland Greece.

“Santorini is a flooded volcano that has been torn apart by intense explosions,” Dunne explains. “The last really big one (3,500 years ago) chased the Mycenaean off the island and produced a 100-mph blast of hot ash that skidded across the surface of the ocean to destroy the Minoan society on the north coast of Crete, 70 miles away! Today, whitewashed towns cling to the rim of the flooded crater, and the island is a pile of volcanic sediment. It was like being back on Mt. St. Helens, but surrounded by sunny landscapes, with good seafood and cheese, and without the same nervousness about the mountain blowing up while you were in there.”

“The fault scarps of central Greece are also spectacular and active,” he adds. “Evidence of land movements within recent decades is clearly visible, and so are the effects of faulting on icons of Greek history and culture, such as the Delphi Oracle. In such an environment, created by awe-inspiring processes, it’s easy for students to enjoy the application of physics, chemistry, and geology, and to realize that one can earn a living from that kind of work, on such topics as estimating environmental risks for insurance companies.”

Dunne also joined Bren alumnus Mike Singer (PhD, fluvial geomorphology, 2003) to conduct NATO-funded research on sedimentation along the floodplain of the River Danube in Romania.

“The river was diked for flood protection during the 1960 and 70s,” Dunne explains, “but now the dikes are being breached in some places to restore connectivity with the river and expand wetland habitats. Since the river drains a large part of industrialized Europe, there is concern about the degree to which this new sediment is contaminated and at what rates contaminants accumulate in the rejuvenated floodplain wetlands.”

Dunne had previously conducted similar studies of mercury-contaminated sediment that accumulated on floodplains in the Bolivian Amazon and along the Sacramento River.

“Mike, colleagues from the University of Washington and Bucharest University, and I traveled along the river from the Iron Gate [a gorge on the Danube that forms the border between Serbia and Romania] to the delta, collecting cores of sediment from the floodplain and mid-river islands for analysis of sediment type, chemistry, and age,” Dunne explains. The research laid the groundwork for a larger three-year, 300,000-Euro grant from the newly formed NATO Science for Peace and Security Program (SPS).

Back at UCSB, Dunne has joined Bren professors Frank Davis, Hunter Lenihan, and Bruce Kendall, and several UCSB graduate students and postdoctoral researchers to start a new project funded by the California Bay-Delta Program. They’re studying how newly established physical and biological processes in a re-engineered stretch of the Merced River create habitat and support populations of fish and plants.

With his plate full again, Dunne says, “I am trying desperately to retain the simple, sensual pleasure that used to be known as scholarship.”

James Frew: Digital Curation

Bren associate professor of environmental informatics James Frew spent his recent sabbatical out of the country – in Scotland – but fully occupied in the familiar terrain of what he describes as “the gap between geography and computer science.” He says he was happy to be in a situation where “There aren’t phones ringing and the whole event horizon goes away. You can think things through, drop in on people and talk.”

Frew looks for better ways to manage, organize, make accessible, trace the provenance of, and preserve for the long term the vast and rapidly growing inventory of GIS-derived information. In Scotland, he worked at the University of Edinburgh’s Institute for Digital Curation (IDC). From there, he traveled to Bucharest University and the Iron Gate to the delta, collecting cores of sediment from the floodplain and mid-river islands for analysis of sediment type, chemistry, and age.”

Dunne explains, “but now the dikes are being breached in some places to restore connectivity with the river and expand wetland habitats. Since the river drains a large part of industrialized Europe, there is concern about the degree to which this new sediment is contaminated and at what rates contaminants accumulate in the rejuvenated floodplain wetlands.”

Dunne had previously conducted similar studies of mercury-contaminated sediment that accumulated on floodplains in the Bolivian Amazon and along the Sacramento River.

“Mike, colleagues from the University of Washington and Bucharest University, and I traveled along the river from the Iron Gate [a gorge on the Danube that forms the border between Serbia and Romania] to the delta, collecting cores of sediment from the floodplain and mid-river islands for analysis of sediment type, chemistry, and age,” Dunne explains. The research laid the groundwork for a larger three-year, 300,000-Euro grant from the newly formed NATO Science for Peace and Security Program (SPS).

Back at UCSB, Dunne has joined Bren professors Frank Davis, Hunter Lenihan, and Bruce Kendall, and several UCSB graduate students and postdoctoral researchers to start a new project funded by the California Bay-Delta Program. They’re studying how newly established physical and biological processes in a re-engineered stretch of the Merced River create habitat and support populations of fish and plants.

With his plate full again, Dunne says, “I am trying desperately to retain the simple, sensual pleasure that used to be known as scholarship.”

James Frew pauses from digital curation to visit a famous site of Scottish distillation.
analyzing the priorities, obstacles, and opportunities that exist for implementing U.S. State Wildlife Action Plans, the federally mandated, locally developed and implemented blueprints for wildlife conservation.

Davis’s ongoing work includes a National Science Foundation-funded project undertaken with UC Berkeley professors John Landis, W. Michael Haneman, and Robert Cervero. The group seeks to “build a comprehensive spatial database for measuring the extent, patterns, and environmental and resource impacts of metropolitan population growth” in the U.S., then use the information to identify key factors driving expansion, build GIS models to simulate alternative growth patterns, and explore impacts of alternative development scenarios.

Finally, Davis will be working with Bren professors Thomas Dunne, Hunter Lenihan, and Bruce Kendall in what is expected to be a three- to five-year project assessing the effectiveness of an ecological project undertaken on a section of the Merced River in Central California. The project is funded by CalFed, a state and federal partnership designed to improve water supplies in California and the ecological health of the San Francisco Bay/Sacramento-San Joaquin River Delta.

Digital Curation Centre (DCC), guest-lecturing for the course “Introduction to Scientific Data” while continuing to examine such issues as “how to hook together data and processing; how do you track data sets back to the core observations.”

By way of providing an environmental example linked to his research direction, Frew explains: “Say you discover a satellite is miscalibrated and all the readings (brightness, color, etc.) of the oceans are off. It takes an elaborate statistical analysis to recalibrate. And if you have six months of incorrect readings, what are the consequences? Who used the data and what were the results? The miscalibration might eventually show up as an error in an estimate of how much CO2 is being consumed by oceanic phytoplankton."

“Computational data is derivative,” he continues. “It has often been processed and warped to fit a specific image. It has been run through algorithms. Snow data goes to a hydrologist; then the hydrologist’s information might go to a reservoir manager. How do we track down the implication of a change we make to the algorithm? It’s about documenting the quality of information.”

He says he returned from Scotland with a broadened perspective of digital curation. “On my own, I saw the problems of data curation as a systems problem, a problem of architecture,” he says. “But the full dimensions of the problem include the extent to which institutions have to change to preserve information.”

As someone who admittedly wears “earth science blinders,” he says it was eye-opening to be at the DCC, where most people were concerned with the provenance and preservation of bio-informatic data.

“The kind of information is different, different tools are brought to bear, and different problems have to be addressed in preserving it,” he says.

During his sabbatical, Frew also presented as part of a seminar series titled “GIS, Remote Sensing, and GeoInformatics” and delivered a talk titled “The Earth Science Information Infrastructure” at the Workshop on Grid Middleware and Geospatial Standards for Earth System Science Data, presented by Scotland’s National e-Science Centre. His activities in Scotland led him to submit a proposal to the National Science Foundation to conduct research into distributed archives.

Frew also participated in the Provenance Challenge Workshop. Coordinated by a group at England’s University of Southampton, it was the follow-up to a pair of “Provenance Challenges” aimed at establishing an understanding of the capabilities of available provenance-related systems. In the Fall 2006 quarter, Bren students were able to take advantage of their professor’s sabbatical research in ESM 595K, a new course titled “Digital Curation: Long-term Stewardship of Environmental Information.”
Alumni News

1998

Mark Vincent (MESM), a Principal Systems Engineer for Raytheon Intelligence and Information Systems who telecommutes from his home in Boulder, Colo., was part of a team responsible for the launch of the CloudSat satellite in April 2006. Vincent’s main responsibility, he says, was ”to write the Playbook, which described how we would insert [the satellite] into an orbit that was 12.5 seconds in front of our co-launched partner, CALIPSO, and would trail the Aqua satellite by about a minute.” Vincent is presently working on similar tasks for the upcoming Orbiting Carbon Observatory (OCO), scheduled to launch in September 2008. For up-to-the-minute CloudSat images, go to: www.cloudsat.cira.colostate.edu/dpcstatusQL.php.

Daniel Wilson (MESM) received the 2006 Achievement Award in the Xeriscape Installation category from the California Landscape Contractors Association (CLCA), in recognition of work provided at a Goleta residence by his company, Wilson Environmental Landscape Design (www.WELDesign.net). The award was announced at the CLCA annual convention on Kauai in November. Wilson is also an adjunct instructor in the Environmental Horticulture Department at Santa Barbara City College.

2000

Marc Campopiano (MESM) graduated from law school at U.C. Berkeley, Boalt Hall, in May 2006 and is currently working as an associate at the Walnut Creek, Calif., office of Morrison & Foerster, a private law firm. His article titled “The Land Trust Alliance’s New Certification Program” was published in the Ecology Law Quarterly Law Review (Vol. 33, No. 3, 2006).

Jill Richardson (MESM), assistant production manager for Allen & Associates, a Santa Barbara–based general contractor specializing in green construction, attended the inaugural basin management. The unusually rapid advancement came in September 2008. For up-to-the-minute CloudSat images, go to: www.cloudsat.cira.colostate.edu/dpcstatusQL.php.

2001

Jeffrey Meiser (MESM) is completing his second year of a PhD program in political science at The Johns Hopkins University under a full fellowship. His focus is international relations and American politics. He was once married to Dinah Choi in Seattle last May.

Vicky Krikelas (MESM) leads the scientific writing and communications team at the NOAA Fisheries Service’s Northwest Fisheries Science Center (NWFSC), where she was named Employee of the Year in 2004 and recently coordinated the NWFSC’s first Science Symposium, featuring the center’s innovative research in fisheries and ecosystem science. She also married fellow Bren MESM graduate Gregory Simon (2001) and had a son, Dimitri Lucien Simon, now one year old. The Simons live in Seattle.

2002

Andrea (Cohen) Murphy (MESM) was recently promoted from her position as a regulator/inspector for the County of Santa Barbara Fire Department to senior hazardous materials specialist. The unusually rapid advancement came after Murphy had been employed with the County for less than a year and a half.

Nico Kranz (MESM) received a grant from the German Academic Exchange Service to spend two months at the American Institute for Contemporary German Studies (AICGS) in Washington, D.C. Her work involved looking at differences between Germany and the United States in their acceptance levels of the UN Global Compact, the voluntary business-focused initiative supporting universal environmental and social principles. Kranz also began PhD studies in political science at the Freie Universitat of Berlin, where she will examine the role of multinational companies in shaping environmental and sustainability policies in developing countries and emerging economies. In March 2006, she attended the World Water Forum in Mexico, presenting on the topic of public participation in river basin management.

2003

Britta Bierwagen (PhD) had her paper titled “Connectivity in Urbanizing Landscapes: The Importance of Habitat Configuration, Urban Area Size, and Dispersal” published at springerlink.com, the website of the journal Urban Ecosystems. Her Bren School dissertation was titled “The Effects of Land Use Change on Butterfly Dispersal and Community Ecology.”

Allison Turner (MESM) received a promotion to Northwest Regional Director at Katz & Associates, a communications firm specializing in public outreach and involvement for public works, environmental, and social-awareness projects. (See “Into the Fray” on page 13.)

2004

April Chan (MESM), who works as an environmental scientist in the Honolulu offices of the environmental consulting firm TEC Inc., describes one recent project for the Navy: “The Joint POW/MIA Accounting Command wanted to recover the remains of a World War II pilot who crashed in the Ko’olau Mountains on Oahu. We did an environmental assessment and a biological survey, and coordinated the post-recovery restoration.” Chan wed fellow Bren alum Adam Teekell (MESM 2004) in October.

Matt Stadler (MESM) is the Regional Fisheries Management Officer for the Gascoyne region of Western Australia, home to the world heritage site at Shark Bay and seasonal populations of whale sharks. Stadler manages three Indian Ocean fisheries and shapes fisheries policy for the region. He gets some pretty good surf, too (below).

Adam Teepe (MESM) joined a colleague at his employer, ICF International – a consulting firm operating in the energy, environment, transportation, social-programs, defense, and homeland security markets – to write a paper titled “Climate Change on Butterfly Dispersal and Community Ecology.”

2005

Sarah Abramson (MESM) co-authored a paper titled “Marine Ecosystem-based Management: From Characterization to Implementation,” which was published in the December 2006 issue of the journal Frontiers in Ecology and the Environment. The work, says Abramson, “stems from a graduate student seminar I participated in at UCSB during my second year at Bren.” The paper is available at: www.bren.ucsb.edu/people/abramson.pdf.

Theresa Lancy (MESM) has taken a new position with the City of Santa Barbara, being promoted from lab analyst to water resources technician in Water Supply Management. Says Lancy, “The position will cover permitting, computer modeling, billing, water conservation, and long-term water supply planning. I’m looking forward to working on more water management issues here in Santa Barbara.”

2006

Mark Frickel (MESM) and his wife, Caroline, are celebrating the Dec. 4, 2006 birth of their daughter, Calia. The Frickels currently live in Fontainebleau, France, near Paris, where Mark works in the renewable energies field, researching the environmental effects of liberalizing trade in biofuels. He recently completed a three-month internship at the Organization for Economic Co-operative Development in Paris, and is now consulting at the International Institute for Sustainable Development. “Fortunately,” he says, “the position allows me to telecommute (carbon offsets galore!) and spend time with my new baby.” Mark invites Bren colleagues to contact him at mark.frickel@gmail.com.

Yi Zheng (PhD) successfully defended his dissertation “Stochastic Modeling and Uncertainty Assessment for Watershed Water Quality Management” on Nov. 22 and was awarded his PhD in Environmental Science and Management. He left Santa Barbara for the San Francisco Bay Area shortly thereafter and he is now working as a water resource engineer/scientist at Systech Engineering Inc., a consulting firm based in San Ramon and specializing in watershed modeling and management.
For alumna Allison Turner, divisive issues are her bread and butter

When it comes to environmental stewardship, the views of the U.S. Navy and those of residents living near its bases and training areas can be separated by not only differing purposes and perspectives, but also by distrust, blame, resentment, hostility, and other impediments to understanding, communication, and solutions. It’s a realm of hard positions and hair triggers, where memories are long and patience often short. And it happens to be where Bren MESM alumna Allison Turner (2003) does her best work.

Turner, who concentrated on environmental economics and policy at the Bren School, is Northwest Regional Director for Katz & Associates, a communications firm “specializing in public outreach and involvement for public works, environmental, and social awareness projects.” She has spent more than three years as part of the company’s six-person Environmental Communication group, with the Navy as her biggest client. Her work involves disseminating information to the Navy’s stakeholders, including elected officials, regulators, nongovernmental organizations (NGOs), tribal groups, and the public. She may find herself informing those groups about the pressures of urban growth, noise pollution from night test flights, training range requirements, biodiversity, or remediation of contaminated sites on bases.

“I mostly work in supporting the preparation of environmental impact statements (EIS) or in compliance with federal and state environmental policy acts,” she says. “For instance, if the Navy decides it needs additional air space, sea space, or a new weapons platform to complete its training mission, it first needs to develop a proposed action and study the environmental effects of that action, as well as those of alternatives.

“We encourage the Navy to talk to stakeholders and explain why it has to do things the way it does. In the past, the Navy tended to avoid full disclosure. We try to help them see that it’s in their interest to engage stakeholders early in the process and seek complementary solutions.”

Her current non-Navy work includes serving on a team that is developing the EIS for a liquefied natural gas facility proposed off the coast of Los Angeles. Katz & Associates supports the regulatory agencies that oversee the environmental analysis. In that role, says Turner, “We encourage the action proponent to explain what the need for the terminal is and what the benefits and impacts are so that the public can fully understand and make a more informed decision about the project.”

The eventual outcome, she says, is not in Katz’s purview.

“We’re not an outcome-oriented firm. We’re process-oriented. If we work on the terminal and it gets vetoed, that’s not a success or failure. Our success or failure is judged by how well we inform the public about the issues involved.”

“We take a neutral position,” says Lewis Michaelson, vice president in charge of Katz’s Environmental Communication group. “Allison is able to understand and empathize with different points of view. I think the fact that she went to the Bren School helped to develop that.”

Some of her biggest challenges, Turner says, arise in “Navy projects that can be controversial and may have a less-than-stellar history, such as cleaning up a toxic site that may have contaminated groundwater or otherwise impacted local residents. We have to comfort people and have empathy for the results of past actions, but we also try to do what’s right at this moment.”

For Turner, the mix of classes she took at Bren – management, organizational behavior, and environmental law and policy on one side and science classes on the other – was extremely beneficial.

“I have to read a lot of technical documents and translate them into a format that is understandable to the lay person,” she says. “In hiring me, they broke the mold a bit, looking for someone with an environmental background rather than a communications background.”

“With Allison, I get the best of both worlds,” says Michaelson, “someone whose speaking, writing, and interpersonal skills are excellent and who understands the issues, the scientific and technical language of the issues, and society’s tensions around environmental policy. That’s valuable.”

“Allison’s intelligent and incredibly organized with strong management skills,” he adds. “I would guess that the disciplined thinking she did at Bren had something to do with that. In fact, based on her success, we hired another

“"In hiring me, they broke the mold a bit, looking for someone with an environmental background. “"

“Our success or failure is judged by how well we inform the public about the issues involved.”

Bren graduate, Betsy Abbott [MESM, 2006], who is now working in our San Diego office.”

Turner finds her work as a conduit for effective communication highly rewarding. “Helping people have a grander view of the situation is probably the most satisfying thing I do,” she says. “Having people use the information we develop to make better-informed decisions is very satisfying.”
Corporate Partner Profile

AIG: Inventing Environmental Insurance

It took innovation for Bren School Corporate Partner American International Group (AIG) to become a world leader in insurance and financial services. But it took outright invention to create AIG Environmental® and develop it into the world leader in environmental insurance.

The origins of AIG Environmental are traceable to the late 1970s and early 1980s. Love Canal and Times Beach were making headlines, and the newly formed U.S. Environmental Protection Agency was laying out the first federal environmental standards. In that changing regulatory setting, chemical and hazardous waste companies facing enormous potential cleanup costs turned to insurance companies for protection. But environmental insurance barely existed then, so AIG had to invent it. Framing the challenge with the question “How can we insure our clients while delving into the waters of a risk category that is completely undefined?” they proceeded carefully, one case-specific general-liability policy amendment at a time.

Now, more than 25 years after it began writing the book on environmental insurance, AIG Environmental has 18 regional offices nationwide, a suite of products designed to address every conceivable environmental risk, and a vast store of knowledge accumulated while operating on the frontier of an ever-evolving industry. The latest wrinkle, says AIG Environmental Chairman and CEO Joseph Boren, who spent many years working in waste management before coming to AIG nearly 11 years ago, is climate change.

“If you believe that a change in the climate will lead to more catastrophic climate-related events, such as hurricanes and tornadoes, and that climate change is manmade,” he says, “that has an impact on where and how you do business.”

Accustomed to occupying a frontline position, AIG was the first insurer to adopt a climate-change policy, a move that earned praise from Ceres, the national network of investors, environmental organizations, and public interest groups working to address sustainability challenges such as global climate change.

“As the largest insurer that exists, we are saying, ‘This is a very real issue. There are no scientific questions left,’” Boren says. “And so we have created a clean-technology fund for people who are experimenting with technologies that don’t produce greenhouse gases and may replace those that do. We take environmental compliance into account when making investment decisions. We are looking at how we can provide insurance when people are trading in carbon credits. And we try to be a spokesperson for the fact that this is a very serious issue.”

Four years ago, AIG Environmental became a Bren Corporate Partner, and since then, it has hired several Bren School alumni.

“I’ve been impressed by every person we’ve ever interviewed or hired from the Bren School,” says Boren. “They have all come to us well educated and knowing the issues. The ones that work with us not only worked well in groups, but have led groups. Two of them actually run our business units.”

He’s referring to John Onderdonk (MESM 2003), Southwest regional manager for AIG Environmental corporate accounts under $500 million, and Jota Shohtoku (MESM 2002), who recently moved to the company’s New York office after being promoted to product-line manager for the U.S. and Canada.

“We joke that the Bren School is ‘underwriter training school,’” says Onderdonk. “The job is to think critically about a client or a transaction from different perspectives. We have to understand our clients’ motives, the environmental character of a site, the manufacturing processes and how they might contribute to contamination later. It’s putting together a big puzzle with lots of variables. Bren trains you to do that. It trains you to think critically and look at all the variables.”

Shohtoku, who earned his undergraduate degree in engineering, recalls the Bren core curriculum as “the toughest part” of the MESM program but describes it as “broad and effective,” and says he especially values several courses, such as Organizational Behavior, that didn’t particularly interest him at the time.

“I often sat in that class thinking, ‘What am I doing here?’” he recalls. “Now I look back on it as one of my most important courses. When you’re in school, you just can’t see how important something might be.”

He also appreciated the numerous opportunities to work as part of a group.

“Interacting with people having different backgrounds and career goals has helped me manage different people and stay focused on the goal while taking into account everyone’s contribution.” Further, he adds, while he had been intimidated by public speaking before entering Bren, by the time he left, “I was comfortable speaking to any group of any size.”

Having access to the Bren School’s pool of talent is one reason AIG Environmental joined the Corporate Partner program, says Boren. “We need good schools to train professionals. We’re looking for people every year, and the Bren School gives us the next generation. And in our small way, being a partner says to the School, ‘You’re doing good things.’”

Bren School students are also providing valuable insight for another AIG division. AIG Global Investment Group (AIGGIG) is the client for a Group Project in which members Gabriel Brown, Caitlin Crafts, Theodore Ehliert, Luna Fakhouri, and Amy Kidd, with guidance from Bren professor Charles Kolstad, are working on a project that has to do with companies’ environmental performance as it relates to global climate change.

“The students are very professional and seem to have their feet on the ground, based in reality rather than theory,” says Jean-Francois Hautemulle, vice president for product development for AIGGIG, who speaks with group members weekly by telephone. “We also had the pleasure of having Theodore [Ehliert] with us as an intern last summer, and now he’s able to give the team a reality check about how things are here at AIGGIG — what’s important to us and what the hot buttons are. It’s going very well.”

Joseph Boren, AIG Environmental
New Corporate Partnerships

The following businesses and organizations have joined us in seeking to integrate sound business practices and environmental sustainability while offering career opportunities for Bren students.

**American Ethanol:** Located in Santa Maria, Calif., American Ethanol is a recently created community-based ethanol production facility established to acquire, design, develop, construct, and operate an ethanol production plant that is expected to produce 50 million gallons of fuel-grade ethanol per year.

**Conservation International:** Based in Washington, D.C., CI applies innovations in science, economics, policy, and community participation to protect the Earth’s richest regions of plant and animal diversity, particularly in biodiversity hotspots, high-biodiversity wilderness areas, and key marine regions around the globe.

**Earth Pledge:** Begun as a United Nations committee to promote interest in the 1992 Rio Earth Summit, Earth Pledge is now a nonprofit organization promoting sustainable development by identifying and implementing innovative technologies that balance human and natural systems. Earth Pledge delivers viable, replicable models to government, industry, and communities nationwide.

**Greenopia:** The first definitive resource for eco-minded city dwellers wanting an effective way to access the many facets of the green market in their area. The first easy-to-understand guide included more than 800 listings of green retailers, service providers, and organizations throughout Los Angeles; a guide for the San Francisco Bay Area will be published this spring.

**Irvine Ranch Land Reserve Trust:** As chairman of the Irvine Company, Donald Bren, this School’s namesake beneficiary, established the Trust in 2005. The non-profit, non-advocacy organization was created to help bring to life a far-reaching vision to better protect, restore, and enhance the natural resources of the 50,000-acre Irvine Ranch Land Reserve, while providing new and diverse opportunities for public enjoyment of the land.

**Malcolm Pirnie:** Operating under the slogan “Your environment is our business,” the century-old company provides environmental engineering, science, and consulting services to more than 5,000 public and private clients. The company employs nearly 1,700 engineers, scientists, consultants, designers, architects, and technical support personnel in more than 50 offices nationwide.

**MMA Renewable Ventures:** Dedicated to providing competitively priced green energy for customers and exceptional investment opportunities for the renewable energy sector, this San Francisco–based company partners with investors, project developers, and customers to build distributed green energy generation plants involving water, wind, solar, and biomass.

**The Nature Conservancy:** The mission of The Nature Conservancy – “to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive” – is reflected in the organization’s slogan: “Saving the last great places on Earth.”

**UBS Financial Services:** A leading provider of global financial services, UBS “regards sustainable development as a fundamental aspect of sound business management.” It is a member of the United Nations Global Compact, and was one of the first parties to sign the UN Environment Program’s Bank Declaration, committing the company to integrating appropriate environmental measures into its activities.

Recent Gifts

The Bren community wishes to acknowledge the vision and generosity of the following recent donors:

- Dennis Aigner and Camille Bertolaet
- American Ethanol
- Association of Environmental Professionals
- AT&T Foundation
- Tansy and Russell Birchim
- Harvey Bottelsen and Patsy Ann Grace
- Jim H. Boyden
- Breakpoint, LLC
- CH2M Hill, Inc.
- Tilm and Janemarie Cohen
- Conservation International Foundation
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- Doris Duke Foundation
- Earth Pledge
- EIP/ PBS&J
- ESA
- Greenopia
- Pamela and Fred Harris
- Investec
- Irvine Ranch Land Reserve Trust
- Richard Jantz
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- Naomi Schwartz
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- The Nurture Nature Foundation
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- Christine and Ernst von Weizäcker
- Heather and Doug Wheeler
- The John and Janet Wilczak Family
- Maria Wilhelm
- Charlotte and Ron Williams
- Danielle and Melvin Willis
- Laura Yang

For a complete list of Bren School Corporate Partners and for more information about the program, go to www.bren.ucsb.edu/supporting/corporate_giving.html

Special Thanks

The Bren School would like to acknowledge the special generosity of the following supporters:

- **The Herbert & Elaine Kendall Foundation** for their gift of $112,500 to recruit outstanding master’s and PhD students and support the Sino-American Working Group Project, a new effort linking Chinese and UC universities in creating a high-level working group to proactively shape climate policy for the U.S. and China.

- **John Wilczak**, whose gift of $75,000 will support the new Eco-Entrepreneurship Program, a collaborative effort linking the Bren School and the Technology Management Program in the Department of Engineering. (See story on page 3.)

- **Vulcan Inc.** for its generous gift of $45,000 for the Sino-American Working Group Project.
Earth Day

Bren School Well Grounded in Earth Day Activities

After a year of intensifying national discussion on climate change, Santa Barbara’s Earth Day celebration, to be held Sunday April 22 at the County Courthouse Sunken Gardens in downtown Santa Barbara, promises to have more resonance than ever.

Over the past several months, the Bren School has collaborated with numerous entities both on campus and beyond to present an array of events and speakers focused on the 2007 theme of “Global Warming: Change Begins with Learning.” Here’s some of what has taken place; for more about UCSB activities, go to www.bren.ucsb.edu/news/earth_day_2007.htm, and for more about events in Santa Barbara on Earth Day, visit www.sbearthtday.org.

Environmental Screenings: Bren faculty and their research have been highlighted in a series of interviews for UCTV, the cable and online television network of the University of California. Segments air multiple times in March and April and feature Jon Clark of the Community Environmental Council interviewing Bren faculty members about climate change in the context of ecosystems, resource productivity, policy, and water.

Shared Reading: The Bren School joined UCSB Libraries and the Santa Barbara Public Library on January 24 to present “UCSB Reads for Earth Day.” A discussion of the selected book, Field Notes from a Catastrophe: Man, Nature and Climate Change, by Elizabeth Kolbert, will be held April 17 at the main branch of the Santa Barbara Library in downtown Santa Barbara. On April 19, Kolbert will be the final speaker in a lecture series at UCSB that has also included presentations on anthropogenic climate change by Dr. James Hansen, head of the NASA’s Goddard Institute for Space Studies, and an energy-focused presentation by Steve E. Koonin, current chief scientist for British Petroleum.


Bren Students on Point: MESM students Jenny Phillips and Lexie Brown have coordinated a host of children’s activities for Earth Day, and have led a group of Bren students who have visited area elementary schools and used images of polar bears in presentations intended to educate kids about the consequences of climate change. Be sure to take your kids by the Bren booth at the Sunken Gardens downtown on Earth Day.

SB Goes Polar: Those traveling State Street in downtown Santa Barbara the week before Earth Day will spot banners carrying a subtle yet powerful image related to global warming. Created by Bren School supporter Howard Ruby during trips to the animals’ habitats, the image depicts a lone polar bear searching for food on an Arctic beach nearly devoid of snow. The picture underscores the effects of global warming on Arctic ice flows, which are critical to the bears’ survival.