

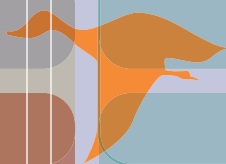
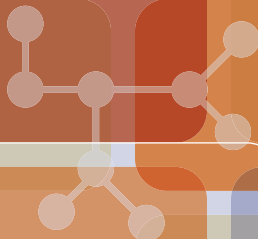


BREAKTHROUGHS[®]

College of Natural Resources

Spring 2002 VOLUME 8, NUMBER 1

A Magazine for Alumni and Friends of the College of Natural Resources, University of California, Berkeley



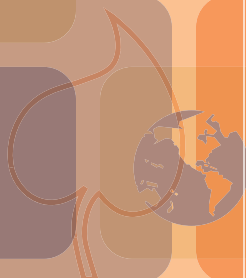
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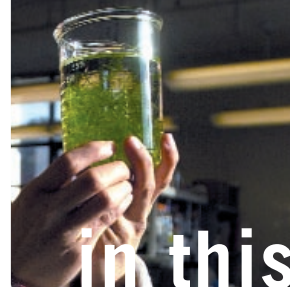
> @ CNR



Spring 2002

BREAKTHROUGHS®

A College of Natural Resources education offers limitless career possibilities



NOAH BERGER

in this issue

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A Note from the Dean

THE GREAT EXPLORATION

In our fast-paced world, it's easy to forget that the first and perhaps highest goal of a university education is to explore — oneself, a variety of disciplines, different views of the world. Stories of both undergraduates and alumni in this issue remind us that our goals or interests as college freshmen may not predict the varied and exciting paths that life can take.

The rich, interdisciplinary approach of the College of Natural Resources can prepare students for virtually any academic or professional career. Our faculty teach students to think critically and openly about environmental and related natural resource issues. Instruction in the classroom, laboratory, and field gives CNR students experience using scientific methods to explore physical, biological, and social processes. And with our commitment to applied as well as basic research, students take cutting-edge skills with them to their advanced education, their chosen career, and their adult lives.

Most importantly, our students gain confidence and leadership skills, enabling them to contribute solutions for today's complex natural resource challenges. The universal application of these skills is evidenced by the interesting alumni profiles you'll read inside, among them:

- a plant molecular biologist who helps solve crimes,
- a nutritionist who launched a multi-million dollar industry in performance-enhancing food,
- a forester who manages human resources for North America's largest supplier of softwood lumber, and

- a political economist who co-founded an international network to promote green pest-management alternatives.

You will enjoy reading about these CNR alumni in "Exploring a World of Opportunities @CNR," *Breakthroughs'* feature story on page 11.

As I look back over my two-year term as interim dean of the College of Natural Resources, I reflect with pride on these and the many other alumni with whom I have met. The College has loyal and dedicated alumni who have gone on to make a real difference in the world. Additionally, they have formed the core of CNR's recent success in our first-ever capital campaign. Along with friends, current and emeritus faculty, staff, foundations, and corporations, they have moved the College to a new level of fundraising accomplishment.

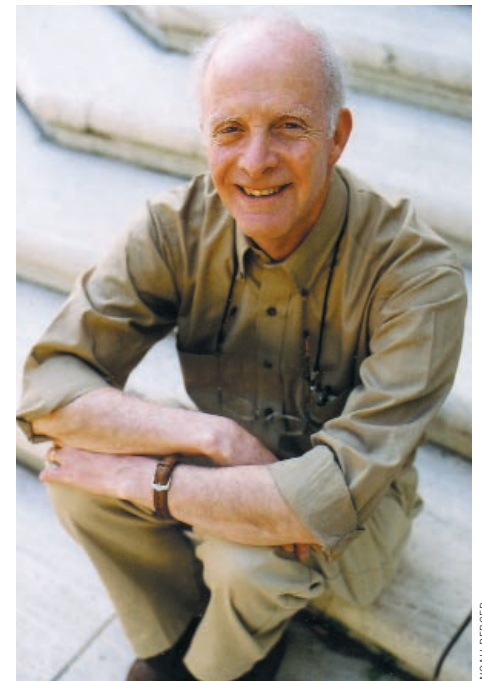
We owe a special thanks to the many volunteers whose leadership and hard work catalyzed the campaign, especially CNR Advisory Board chairs Ted Briggs and Jim Lugg as well as Development Committee chair Rod Park. And thanks to each one of you whose gifts enabled us to meet and exceed our \$25 million goal! You have set the benchmark for future fundraising efforts just at the time when we turn our attention to our much-needed building renovation projects. See page 24 for more campaign news.

You will be hearing more about new CNR and campus-wide initiatives as we increase our use of electronic communication and provide more timely and focused information to prospective students and alumni. In the coming months, we'll be launching a new

website and using e-mail to contact alumni and friends. This effort coincides with the University-sponsored alumni community, @cal, that launched in April.

As this issue of *Breakthroughs* goes to press, I am close to completing my term as interim dean. It has been a time of challenges that I hope will set new directions for the College in the future. On July 1, I will begin a sabbatical leave that will allow some time for relaxation and reflection.

At this time, the campus is continuing its search for a Dean and we are hopeful this will come to a successful conclusion in the near future.



NOAH BERGER

Richard Malkin

Research News

SOY PROTEIN PREVENTS SKIN TUMORS IN MICE, RESEARCHERS REPORT



JANE SCHERR

Professor Benito de Lumen heads the lab where soy protein's anti-cancer properties were first discovered.

New research may add yet another boost to the healthy reputation of the humble soybean. A study published in the journal *Cancer Research* shows that mice with the soy protein lunasin applied to their skin had significantly lower rates of skin cancer than mice without the lunasin treatment.

More than two years ago, **Benito de Lumen**,

professor in the Department of Nutritional Sciences and Toxicology, and colleagues discovered that injecting the lunasin gene into cancer cells in a culture stopped cell division. In their latest work, they tested whether the lunasin protein could prevent normal cells from becoming cancerous in both cell cultures and in mice.

In the study, varying doses of lunasin were applied to groups of mice over a period of 19 weeks. They were compared with a control group that had received no lunasin treatments.

"In the high-dose group, some mice did develop some tumors, but there were fewer tumors per mouse and there was a two-week delay in their appearance compared with the control group," said de Lumen, principal investigator of the study.

De Lumen heads the lab where lunasin's anti-cancer properties were first discovered, and where **Alfredo Galvez**, lead author of the study, worked as a post-doctoral researcher.

"The chemical changes that occur in normal cells before and during cancer formation signal lunasin," said de Lumen. "We believe lunasin is like a watchdog; it's out there sniffing. When it sees a normal cell transforming, it gets in there and attacks the cell."

Studies on the health effects of soy products have been building over the years. Epidemiological studies in Japan and China, where soy-rich diets are common, show people in those regions have significantly lower rates of certain cancers and heart disease than people in Western countries, where typical diets contain little to no soy. 🌱

—Sarah Yang

JOBS AND SALES DOUBLE WHEN TRASH IS RECYCLED



Recycling creates jobs and personal income as well as diverting waste from landfills.

The environment isn't the only thing benefiting from recycling. Diverting garbage also gives the California economy a hefty boost, according to a report by **George Goldman**, a Cooperative Extension economist in the Department of Agricultural and Resource Economics (ARE).

An analysis of 1999 data from government and private industry reveals that diverting trash in California created twice as much personal income and generated twice as many jobs as dumping it into landfills.

The analysis is the first attempt to calculate the economic impact of the state's waste disposal and diversion system. It was authored by Goldman and **Aya Ogishi**, ARE doctoral student.

The California Integrated Waste Management Board (CIWMB) commissioned the report. The CIWMB is the agency responsible for managing the trash produced in the state and encouraging recycling efforts in local communities.

When calculated per ton of waste, diverting garbage produced \$254 in sales and \$209 in personal income. Disposing of

garbage, in contrast, produced \$119 in sales and \$108 in personal income. In addition, for every 1,000 tons of waste disposed, 2.46 jobs are needed compared to 4.73 jobs for waste diversion.

From recycled bottles and feedstock to transformation of biomass products into energy, the reach of recyclable materials extends farther than that of waste simply taken to landfills. The extra steps involved in recycling — including sorting, processing, manufacturing, and distribution — lead to "spin-off effects" of more jobs and sales, explained Goldman.

"The economic models we use allow us to see how the money spreads out over the whole economy," he said.

The report found that in 1999, solid waste disposal and diversion accounted for 179,000 jobs, generated \$8 billion in personal income, and produced \$9 billion in sales statewide. Had all the garbage in the state been sent to landfills, those numbers would have seen declines of 17 to 20 percent.

There has been a concerted effort to increase waste diversion in California since

state legislators passed AB 939 in 1989. That year, the state generated 45 million tons of solid waste and recycled only 10 percent of the trash produced. The bill called for a 50 percent reduction in the amount of trash going to landfills in the year 2000.

By 1999, California had diverted 37 percent of its 60 million tons of waste from landfills, significantly higher than the nationwide average of 27.8 percent. In 2000, the state recycling rate increased to 42 percent, just short of the 50 percent goal called for in the bill. "We will get to 50 percent (reduction of waste disposal), most likely next year," said the chair of the waste board, Linda Moulton-Patterson.

So, should Californians eventually strive to recycle every scrap of trash? Not necessarily, at least from an economic standpoint. Doctoral student Ogishi said recycling rates that go far above 50 or 60 percent become less cost-efficient. "The question then is, 'How much is our society willing to pay for a better, cleaner environment?'" she said.

While the state felt a positive economic impact overall from diverting trash, the Eastern region of California — Alpine, Mono and Inyo counties — did not.

Goldman noted that more remote communities may need subsidies to help establish an effective recycling infrastructure. "Developing a strong recycling industry in an area could help stimulate economic activity, and most communities regard that as a good thing." 🍌

—Sarah Yang

RESEARCHERS PROBE SPREAD OF SUDDEN OAK DEATH



NOAH BERGER

*Bay laurel leaves displaying black tips bordered by a yellow halo may indicate infection with *Phytophthora ramorum*, the pathogen that causes Sudden Oak Death.*

Sudden Oak Death, a disease injuring or killing trees up and down the Pacific Coast, has likely invaded much of the East Bay, given the recent discovery that the disease is widespread on the University of California, Berkeley, campus.

"I don't think it has been around the East Bay for a long time, but long enough to spread," said **Matteo Garbelotto**, a Cooperative Extension forest pathologist and assistant adjunct professor in the Department of Environmental Science, Policy and Management. "The Berkeley campus isn't an island, so if it's here, it's probably all around us, and we just haven't noticed it yet."

Last fall, Garbelotto noticed yellowed leaves on some California bay laurels and a California buckeye on the campus and, after DNA tests, confirmed the presence of the pathogen that causes Sudden Oak Death (SOD). A more complete survey of the

campus in November turned up 34 infected trees and shrubs, including some at the world-renowned UC Botanical Garden.

No treatment or cure for the disease is known, but Garbelotto is at the forefront of research to understand the disease and its host range, and to find effective treatments.

The campus has already formed an SOD Task Force and alerted the surrounding community, including the City of Berkeley and the East Bay Regional Parks, that the disease could be elsewhere in the East Bay. It's also mounted an effort to educate campus groundskeepers, gardeners, arborists, and horticulturists on how to recognize infected plants.

Once the campus survey confirmed Sudden Oak Death in the UC Botanical Garden, Director Ellen Simms immediately instituted a quarantine on all plants and plant parts, stopping distribution to scientists and arboretums and suspending the

sale of plants to the public.

"The UC Botanical Garden is a museum of living plants, one of the most diverse botanical gardens in the country," said Simms, associate professor of integrative biology. "Sudden Oak Death could profoundly affect the garden and its scientific mission."

Simms cautions that the disease is so new and so little is yet known about it that the ultimate impact on the garden is impossible to predict. The garden now has an important scientific role to play in clarifying the host range of the microbe responsible for the disease.

"Not only does the pathogen infect an alarming number of species, its hosts are taxonomically diverse, currently comprising 12 plant families," Simms said. "This broad taxonomic diversity suggests that the actual host range is likely to be much larger. With its enormous taxonomic diversity exposed to the pathogen at a relatively early stage in

the epidemic, the UC Botanical Garden will now play a significant role in documenting the list of hosts.”

While some hosts are very efficient at transmitting the pathogen, others appear unable to do so. Research at the UC Botanical Garden can determine which hosts are poor transmitters of the disease, and that will help limit the number of plants destroyed in eradication efforts.

Also, because the garden holds plants from many habitats and continents, research there could rapidly assess the world-wide taxonomic diversity of hosts and put the garden in a position to provide web-accessible tools for identifying infections on these hosts.

“With this information, homeowners and other gardeners would be able to identify infected plants, and those living in infested areas would be able to make informed decisions as to which plants will best succeed in their gardens,” Simms said. “Knowing the host range will also help to narrow the import restrictions that are being placed on California plant and wood products by other states and countries.”

The wooded UC Berkeley campus is planted with some 300 species of trees, many dating from the 1870s and including between 800 and 1,000 coast live oaks.

The campus survey turned up potential new hosts, including the coast redwood, *Sequoia sempervirens*. The pathogen was found on dying shoots at the base of a redwood, but more tests must be done to determine if the pathogen killed the shoots and whether it affects mature trees. 🍌

—Robert Sanders

“CLEARINGHOUSE” FOR INTELLECTUAL PROPERTY RIGHTS GAINS MOMENTUM

Breakthroughs in agricultural biotechnology have the potential to alleviate hunger, improve nutrition, and benefit the environment. But protection of intellectual property rights increasingly forms a barrier to achieving these goals.

“For example, high vitamin-A ‘golden’ rice potentially infringed or conflicted with 44 patents in the United States,” said **David Zilberman**, professor in the Department of Agricultural and Resource Economics (ARE).

“Legal costs, licensing fees, and time-consuming searches to identify property rights take researchers away from their primary goals and reduce private industry’s ability to fund biotech advancements,” he said.

A potential solution is taking form thanks to ideas put forth by Zilberman and ARE graduate student **Gregory Graff** in a recent article in *Nature Biotechnology*. They have suggested that a clearinghouse could be developed to facilitate the exchange of intellectual property.

The idea came about as they were considering why the biotechnology industry is not progressing as rapidly as it could. “Part of the reason is that concerns about safety are not being addressed adequately because too much time is being spent sorting out the details of patents, licenses, and use permits.”

A clearinghouse would alleviate some of these problems. “The goals would be to identify relevant technologies and their owners, reduce transaction costs, and improve ‘freedom-to-operate,’” said Zilberman. Freedom-to-operate is the process by which a company grants permission for other researchers to use proprietary biotechnologies.

Other benefits would be to streamline the approval process for humanitarian projects and to level the playing field so smaller companies and researchers in developing countries would be better able to participate in the global biotechnology market.

Zilberman and Graff are collaborating with ARE Professor **Brian Wright**, and Alan Bennet and Kent Bradford from UC Davis, to refine the concept. They have presented the clearinghouse idea at international conferences and in journals, and many academic and federal institutions support the idea. Two philanthropic foundations are proposing to spearhead the establishment of such a clearinghouse.

Once a mechanism is established, Zilberman hopes to take a scientific look at the outcome.

“We have come up with the ideas and I’m an interested onlooker who will help evaluate how it evolves,” he said. 🍌

Class and Field

TAKE A DOSE OF SELF-ESTEEM
AND CALL ME IN THE MORNING...



Jennifer O'Dea

NOAH BERGER

The number of overweight children and adolescents has tripled in the Western world during the last decade, and it's estimated that up to 45 percent of young women have some sort of eating disorder.

Visiting Scholar **Jennifer O'Dea** has a radical new approach: don't tell the kids to diet, just help them feel better about themselves.

"Children, adolescents, and young adults are attempting to derive self-worth from how they look. As grown-ups, we need to counter that," said O'Dea. She's a senior lecturer in nutrition and health education at the University of Sydney, Australia, and a 1986 Cal alumna in public health.

O'Dea was the first researcher to demonstrate that self-esteem alone can improve body image and reduce the risk of eating disorders in teenagers.

"Young people with a poor self image are more likely to become socially isolated, inactive, emotional eaters," O'Dea said.

"I believe if you treat overweight children with a good dose of self-esteem, they'll be more physically and socially active and interested in taking care of themselves."

The College's Center for Weight and Health featured O'Dea in "Love Your Body," a Valentine's Day conference to promote positive body image. More than 200 health professionals and educators attended the day-long conference at Clark Kerr campus.

"I think the medical community is a bit desperate. We have a 90 percent failure rate at treatment of overweight and eating disorders in young people," O'Dea said. "It's time to admit we've failed and adopt a new paradigm."

She's also studying data collected by CNR Cooperative Extension Specialist **Patricia Crawford** to find out which comes first: low self-esteem or overweight.

O'Dea first considered her self-esteem approach while she was studying iron-deficient anemia in girls 11 to 16 years old.

"All they wanted to talk about was their weight. That was the most important issue to them."

In the past, educators thought they could prevent eating disorders by teaching girls and young women about nutrition and the health consequences of disorders like bulimia and anorexia nervosa. In fact, they were just teaching kids new things to try to lose weight.

"That type of education doesn't get to the core issues. We need to help kids feel better about themselves," O'Dea said.

And O'Dea predicts that a new epidemic of eating disorders is about to explode—that of boys and young men. In a recent study of 100 male college students, O'Dea found that 20 percent of them worried about their weight and shape and followed strict rules about eating. An additional 3 to 8 percent exhibited eating or exercise disorders.

"With men it's a double-edged sword," said O'Dea. "They incorrectly believe that they shouldn't have any body fat and at the same time want muscularity. Those are almost physiologically impossible to achieve simultaneously, and their goals put them at risk for eating disorders, sports injuries, and steroid abuse."

O'Dea said that in the past, eating disorders were considered primarily a gender issue. But she believes pervasive and unrealistic advertising images are more to blame. "Body image is the perfect marketing tool because you will never achieve the perfect look and it breeds a chronic discontent and self-deficiency in our youth. We can break the cycle by helping children feel better about themselves," said O'Dea. 🍌

SOLVING SOIL QUALITY PROBLEMS WITH LOCAL RESOURCES

In the graduate seminar Tropical Resources, Visiting Professor **Pedro Sanchez** emphasizes the relationships between food security, poverty, and environmental protection.

“High-tech solutions like genetically engineered crops can help hunger-ravaged Africans after we invest in development programs that resolve basic soil fertility issues,” he said. Sanchez has just returned to the states after 10 years as Director of the International Center for Research in Agroforestry in Nairobi.

“The potential of genetically improved crops cannot be realized when soils are depleted of nitrogen and phosphorus,” he said. Small-scale farmers in Africa have removed nutrients equivalent to US \$4 billion in fertilizer. Traditionally, farmers elsewhere replace these nutrients with mineral fertilizers. But at a cost two to six times higher than in Europe or the U.S., Africans can’t afford them.

Working with farmers, Sanchez helped develop a new program for restoring soil fertility. The key is using naturally available resources.

The farmer-designed program uses leguminous trees as a rotation crop to fix nitrogen into the soil. Indigenous phosphate rocks that break down in the mildly acidic soil are incorporated to provide phosphorus. These techniques increase maize yield two- to four-fold. And for high-value crops, farmers till leaves and biomass into the soil from the nutrient-accumulating roadside shrub, *Tithonia diversifolia*.

“This works because we involved the farmers from the beginning,” Sanchez said.



BASHIR JAMA

Pedro Sanchez and a farmer in Western Kenya evaluate a Crotalaria grahamiana fallow that will provide large amounts of nitrogen to her next corn crop.

The goal now is to increase participation from tens of thousands to tens of millions of African farmers.

For the seminar program, Sanchez uses his experiences in Africa to demonstrate the trade-offs between conservation and development in the tropics. A soil scientist by training, Sanchez is also using his time at Berkeley to revise his classic book, *Properties and Management of Soils in the Tropics*. Though accepted as the standard, Sanchez said it is out of date and he has received a grant from the Kearney Foundation of Soil Science to update it.

For his work, Sanchez has recently

received recognition from opposite ends of the academic spectrum. He was awarded an honorary doctorate degree from the prestigious Catholic University of Leuven, Belgium, and he was adopted as an elder into the Kenyan Luo community. “That’s a very rare honor for a non-Luo, non-Kenyan,” he said. But the Luo said Sanchez was not an appropriate name for one of their elders. They renamed him Odera Kang’o, after one of their prior kings who was very concerned about the environment. 🍌

Class and Field

CONFERENCE BRINGS STAKEHOLDERS TOGETHER TO DISCUSS “WEST SIDE”



David Sunding (right) moderated a conference panel that included local stakeholders, leaders of environmental organizations, and researchers.

About 125 farmers, policy makers, environmentalists, researchers, and land managers met to discuss the future of the Central Valley’s “West Side” in a conference at the University of California’s Kearney Agricultural Center on March 22, 2002, in Parlier.

The West Side is a geographic region bounded by Tracy in the north to Kettleman City in the south, and running up to several dozen miles east of I-5. The region is primarily agricultural, and receives water deliveries from the Central Valley Project. While large portions of the West Side are exceptionally productive, farming in the area suffers the twin problems of unreliable water supplies and management of saline drainage water.

Sponsored by the College’s Center for Sustainable Resource Development, the conference aimed to bring water stakeholders together to share opinions on policy decisions that need to be made

to keep the area economically viable and environmentally sound.

College scientists have a long history studying the physical and socioeconomic aspects of water supply in California. For example, CNR Associate Professor **David Sunding** and other UC economists have worked to develop water markets on the West Side to help farmers efficiently allocate their scarce water supplies.

A number of policy options are currently on the table with respect to stabilizing and improving the situation of the West Side. Chief among these are land retirement, water trading between the West Side and other regions, construction of surface storage to increase water supplies, provision of improved drainage service, and local supply and storage projects. Also at issue is who will pay for whatever solution Valley stakeholders can fashion for themselves; in particular, how much should federal taxpayers be asked to contribute?

Conference participants raised concerns about various alternatives and financing arrangements. These concerns ranged from the environmental side effects of surface storage to the effect of land retirement on West Side communities that are consistently among the poorest in the state.

Despite these differences, “it is clear that the current situation on the West Side is not working for *anyone* – for West Side farmers, for environmental interests, or for West Side communities,” said Sunding. “What all interests are seeking is a formula by which farming on the West Side is sustainable and reflects water needs and availability in other parts of the state.”

Stuart Woolf, ’82, a member of the College’s Advisory Board and one of the largest tomato products producers in the state, along with the Giannini Foundation, supported the event. 🍅

New Faculty AND SPECIALISTS

DOMBECK OUTLINES LAND CONSERVATION CHALLENGES

At the Horace M. Albright Conservation Lecture in November, former U.S. Forest Service Chief and University of Wisconsin Professor Michael Dombeck outlined ten challenges to preserving public lands:

- Updating the 1872 Mining Law
- Reintroducing wildland fire
- Managing exotic species
- Slowing public land fragmentation and sprawl
- Protecting old growth forests
- Reversing the loss of biodiversity
- Resolving off-road vehicle use conflicts
- Encouraging scientifically based plans for private land conservation
- Restoring watershed function
- Improving natural resource education.

"You and I, as citizens of the United States, together own hundreds of millions of acres of land. This is our birthright, a gift from our forbearers, many of whom died securing the land and the freedoms we enjoy. One of the most patriotic things we can all do as citizens of the United States is care for the land," Dombeck said.

The full lecture is available online at <http://www.cnr.berkeley.edu/forestry/dombeck.html> 🍌



Jillian Banfield



Guido Imbens

Jillian Banfield joins the Division of Ecosystem Sciences as professor of geochemistry from the University of Wisconsin, Madison. Born in Armidale, Australia, she earned B.S. and M.S. degrees in geochemistry from the Australian National University, followed by M.A. and Ph.D. degrees in Earth and Planetary Sciences from The Johns Hopkins University in Baltimore.

Banfield's research focuses on the study of interactions between microorganisms and minerals, such as the impact of the organisms on mineral weathering and crystal growth. She is using molecular biological analyses to understand the biochemical pathways that underpin these interactions. She's also hoping to contribute to the search for evidence of life on other planets.

"We are studying topics such as the impact of microbes on mineral surfaces and the biomineralization of nanoparticles in order to contribute to this quest," she said.

Banfield has received numerous scientific honors, including MacArthur Foundation and John Simon Guggenheim fellowships. She serves on the National Academy of Sciences Board on Earth Sciences and Resources.

Guido Imbens has been appointed professor in the Department of Agricultural and Resource Economics. Born in the Netherlands, he received an M.S. in economics and econometrics from The University of Hull in the U.K. and A.M. and Ph.D. degrees in economics from Brown University in Providence, Rhode Island. Imbens began his teaching career at Harvard University and has since taught at Arizona State University, UCLA, and the European University Institute in Florence, Italy. Imbens's research expertise is in theoretical and applied econometrics, especially the identification and estimation of causal effects. In December, he was elected a fellow of the Econometric Society.

New Faculty



Christina Getz



David Sunding

Christina Getz is a new assistant cooperative extension specialist in the Division of Resource Institutions, Policy and Management. She earned her B.A. at Pomona College and her M.A. and Ph.D. in UC Berkeley's Department of Sociology. For her dissertation, Getz spent 10 months in northern Mexico evaluating the experience of farmers as they transitioned from subsistence farming to providing crops for export under the North American Free Trade Agreement.

Getz's research and outreach programs will focus on natural resource-dependent workers and communities. "I am particularly interested in focusing on labor issues in both agriculture and forestry," Getz said. For example, she'll be helping identify the needs of the workforce that provides non-timber forestry products such as mushrooms and greens.

"A number of researchers are focusing on agricultural labor, but forestry labor is understudied," she said. "Forest workers are often the on-the-ground stewards of the forest."

David Sunding is the first cooperative extension specialist at UC Berkeley to receive a split academic appointment. He is now an associate professor as well as an associate CE specialist in the Department of Agricultural and Resource Economics (ARE). The split appointment gives Sunding formal teaching responsibilities, tenure and Academic Senate membership.

"It is common at other land-grant universities for academic and extension appointments to be split," said Sunding. "This new position at Berkeley provides a terrific model for encouraging academics with good outreach skills to be involved in Extension."

Sunding serves as co-director of CNR's Center for Sustainable Resource Development. Previously, he worked as a senior economist for the White House Council of Economic Advisers. His prior teaching appointments included visiting professor at Boalt Hall School of Law and as assistant professor at Boston College.

Sunding's research areas include water resources, pesticide use and regulation, and endangered species policy. Last year, Sunding co-authored "Insect Population Dynamics, Pesticide Use, and Farmworker Health," which was honored as the year's Outstanding Journal Article in the American Journal of Agricultural Economics.

To maintain an appropriate specialist ratio on campus, **David Zilberman**, professor in ARE, has also split his appointment to become a CE specialist for the department. 🍌

At first glance, the wide-ranging disciplines at the College of Natural Resources may seem disparate—nutrition to forestry, molecular biology to economics, environmental policy to microbial ecology. But their intersections lie at the heart of today's natural resource issues.

> EXPLORING

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"Bringing these fields together allows us to offer a curriculum that emphasizes the interdependence of human health, society, and the environment, and illustrates the crucial role of science in understanding these interactions," said Dean **Richard Malkin**.

With this background, College of Natural Resource graduates are prepared for a nearly limitless choice of careers. "Our interdisciplinary approach and small classes help students go in their chosen direction with an understanding of how the world works. They can discover not only the wide range of careers open to them, but how their actions influence society and the global environment."

Profiles of just a few alumni in this issue demonstrate the diverse application of a College of Natural Resources education.

ARIK OLSON

Plant Biology, B.S., 1993

Physician, Director of Home Visit Program
NYU Downtown Hospital
New York, NY



"When I was in college, I felt pressure to have the right major and to know what I was going to do with my life...but you never know where life is going to take you," said Arik Olson.

Although Olson considered becoming a doctor while in high school, he was sure he didn't want to be in the pre-med program at Berkeley.

"I came from a high school with a senior class of twenty. At Cal, I felt lost in a sea of undergrads," he said. "I liked biology and chose plant biology because I liked gardening, the classes were small, and the professors were nice."

He did an undergraduate research project in Adjunct Professor **Sarah Hake's** lab, in the Division of Plant Biology. "She's brilliant and funny," he said. But for him, the project confirmed that he preferred people to the lab bench.

He decided to become a medical doctor after all, but not before another stint among plants during the

summer. Olson worked in the lettuce fields of Salinas, looking for insects and taking soil samples as part of a project to design a computer-based water management system.

Olson graduated from the Medical College of Virginia and completed a residency in internal medicine at Mt. Sinai Hospital in New York City.

"Medicine is a way to use science but work with people," he said. Although some of the medical school interviewers asked him why he studied plant biology, Olson said he told them "he thought it was interesting and they seemed to respect that."

Today, he directs the newly formed Home Visit Program for New York University's Downtown Hospital.

And just like at Cal, you're unlikely to find him in a lab coat.

"In New York, there are lots of rent-controlled apartments without elevators. If you're elderly, you may be too weak to get out for primary care medical visits, so we go to them. Our goal is to keep people out of the hospital." Working in Chinatown, he also gets to speak Mandarin, which he studied at Berkeley.

"I'm interested in being a person with my patients," he said. "Maybe it makes me a better doctor."

Backing Up Coursework With Experience

Courses and research combine in the College to cover both basic and applied science.

“Understanding how nature works is key to developing viable strategies for conserving biological diversity and managing our natural resources in a sustainable manner,” said Professor **Steven Beissinger**, Chair of the Department of Environmental Science, Policy and Management. “Most faculty conduct studies that are driven both to understand the mechanisms of natural processes, and to determine how this knowledge can be used in wise management.” Similar application of basic science or theoretical tools takes place in all College departments.

JOHN SWIFT

**Conservation of Natural Resources,
B.S., 1976**

**Sustainable Specialty Farmer
Swift Subtropicals
Los Osos, CA**



“When I came to Berkeley, I had no idea what I wanted to do,” said John Swift. “I could have gone into psychology, criminology, or forestry.”

But his interest in eco-farming led him to the College of Natural Resources.

Now, he owns and manages Swift Subtropicals near San Luis Obispo, California. Swift raises organic specialty fruits and vegetables such as feijoas from Brazil, pepino melons from Chile, and horned melons from Africa. Swift sells the produce to farmers’ markets to promote the food locally, and to specialty brokers in Los Angeles.

“The College was a stepping stone,” said Swift. From there, he traveled by truck from London, England, to Kathmandu, Nepal, “pretty much for fun,” but also looking at agricultural systems across Iran, India, and Afghanistan. Then he returned to California Polytechnic Institute and graduated in 1979 with an M.S. in international agriculture.

He remembers Insect Biology Professor **Donald Dahlsten’s** holistic approach to viewing systems and Berkeley’s approach to looking at broader issues as motivating influences.

“I remember a discussion paper on the Green Revolution and the problems with introducing some of those technologies to Third World countries,” he said. “Those ideas were validated later on in my career when I was overseas.”

After Cal Poly, Swift volunteered for two years as a project manager in Papua, New Guinea, with the International Voluntary Service. At the Wau Ecology Institute, he worked to improve traditional cultivation techniques during the shift from slash-and-burn agriculture to using composting and agroforestry.

Swift returned to the states in 1982 and began identifying, importing, and propagating specialty produce varieties on the 600-acre Bear Creek Ranch that he purchased with his brother, Jim. Swift Subtropicals takes up 25 acres on the ranch. On the rest of the land, the Swifts raise purebred Texas longhorn cattle and thoroughbred horses.

“My background gives me flexibility to try new things” he said.

Undergraduates can delve deeper into an issue by conducting their own research. A hands-on project can lead to a love for research, or in some cases, a way to identify preferences.

That was the case for **Michelle Michalek**, a senior in Environmental Economics and Policy (EEP).

"When I was a freshman, I was interested in why plants grow a certain way. I wanted to study plant biology, but didn't realize the questions I was asking were really questions about genetics," said Michalek. So she spent a semester in CNR Professor **Michael Freeling's** genetics laboratory, looking at the expression of a genetic mutant in maize that causes stunted growth.

DANIEL STOTTER

Conservation and Resource Studies (CRS), B.S., 1985

Environmental Attorney
Bahr & Stotter Law Offices
Eugene, OR

For Daniel Stotter, the beautiful redwood trees around Giannini Hall were spiritually motivating. The professors were stimulating. And the always politically active CRS student organization was inspirational.

"I had no idea what law school would be like, but the classes I took at the College of Natural Resources led me to believe that legal strategies were needed to protect environmental resources," says Stotter.

Now he's partner in a distinguished environmental law firm, representing clients trying to protect natural resource areas.

With his CNR degree, Stotter says he was accepted into several environmental law programs. "I was able to select the law school that I wanted to go to," he said.

He graduated from the University of Oregon School of Law, which was "like undergraduate finals every day of the week for three years." Then Stotter worked in legal arenas ranging from the halls of Congress as an environmental legislative aide, to the National Wildlife Federation in Washington, D.C., to several forest conservation groups in Oregon.

In 1994, he established a law office in Eugene, Oregon, with law school classmate David Bahr.

Typical of his work is a current case representing Thistle Down Farms. "They're opposing the conversion of prime farmland to aggregate for a proposed gravel pit in Lane County, Oregon." To make his case, Stotter has to synthesize technical information

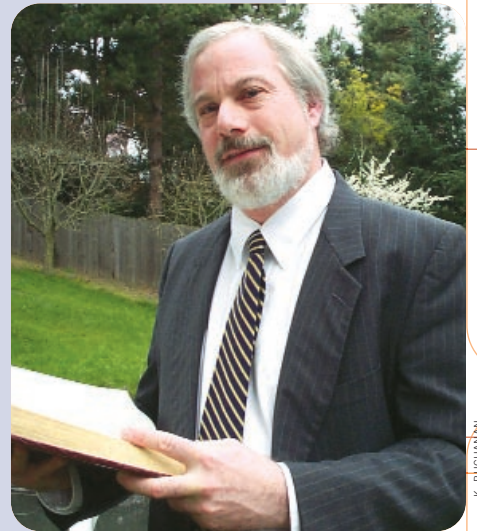
from a wide range of technical disciplines, such as hydrology, pollution monitoring, geology, and traffic analysis to demonstrate the impact of such a conversion.

"The scientific side of my education helps me deal with the full range of interdisciplinary natural resource issues that may have bearing upon a particular controversy," Stotter said.

His firm has been recognized by the environmental law community with the prestigious Kerry Rydberg Award for Environmental Activism in 1999, for "public interest environmental activists from around the world who have demonstrated outstanding lifetime achievements and leadership in environmental litigation and advocacy."

Stotter also helped develop FOIAdvocates.com, a website dedicated to helping citizens obtain public records from hesitant agencies. Last year, the site received the Sunshine Award from the Society of Professional Journalists.

"That's been a real exciting area, because we've gotten records from public agencies that have been very helpful to our clients, many of whom are public interest groups," said Stotter.



K. BUCHANAN

"The lab work was interesting, but I discovered that I don't want to work in the lab all the time. I was more interested in working outdoors," Michalek said.

Next, she chose to do field research as part of a beginning biology course. At the campus' Richmond Field Station, she and other researchers studied how mice and voles shared space in a field. Although she liked working outside, she still wasn't satisfied. She wanted to look at larger environmental issues and realized that she needed to bring in the human element.

"I was really excited when I found environmental economics," Michalek said. "I think it's important that economists and environmentalists speak the same language," she said. "Environmental policy often uses economics to motivate change. The EEP major teaches us that kind of communication," she said.

And research is still part of the picture.

Gina King had already arranged to work for the Yakama Nation when she came to the College of Natural Resources.

After King studied zoology at the University of Washington, she worked seasonally on the Yakama reservation. But she knew an advanced degree would benefit both her and her work in the 600,000-acre Yakama Reservation Forest.

The forest, part of the Yakama tribe's homeland, historically supported endangered species such as lynx, wolves, and spotted owls. The tribe uses the forest for non-economic resource values as well as the financial support of its timber sales.

As part of a cooperative agreement between the tribe and the U.S. Forest Service, King wrote her master's thesis on spotted-owl habitat characterization. The owl is the one threatened species that biologists know still breeds on the reservation.

"A lot of the work on spotted owls was done on the west side of the Cascade crest, which has different forest compositions and used different forestry techniques," King said. On the east side, fire suppression has replaced the Ponderosa pine forests with grand fir and Douglas fir.

Instead of clear-cutting even-aged stands, they typically remove about a third of uneven-aged stands.

"The change in trees has actually provided more continuous expanses of spotted owl habitat than would have been there historically," she said. "Unfortunately, that continuous tree cover also provides the perfect conditions for the spruce budworm. It's a real balancing act to deal with forest health problems while maintaining enough habitat for the owls."

As she expected, the College's courses and faculty prepared her to meet the challenges of protecting threatened and endangered species in the forest. What surprises her, though, is how important silviculture and forest economics — classes she was reluctant to take — are to her effectiveness.

"The foresters don't expect a wildlife biologist to understand them, and it really gets their attention when you can talk to them in their terms," King said. "When you're out in the field with the timber sale officers, you can really see the challenges and try to come to compromises."

GINA KING

**Wildland Resource Studies,
M.S., 1993**

**Wildlife Biologist
Spotted Owl Project Leader
Yakama Nation
Toppenish, WA**



YAKAMA NATION WILDLIFE

Michalek combined her education in environmental economics with an internship at Transfair USA in Oakland. Transfair works with small-farmer cooperatives in the developing world to promote social justice and agricultural sustainability in coffee-producing communities. Participants in the program receive a “Fair Trade” label for their product.

As part of her senior honor’s thesis research, Michalek interviewed coffee producers in Nicaragua over two weeks beginning in December 2001. A grant through her department from the Hung Wo Ching Student Assistance Fund paid her travel costs to Nicaragua.

“According to the International Fair Trade Labeling Organization (FLO), coffee growers with Fair Trade certification are supposed to practice a degree of environmental stewardship in their production. I wanted to investigate the relationship between economic and environmental sustainability that potentially coexists in this model of trade,” she said.

Michalek found that the relationship was indirect. “The farmers grow organically not because FLO tells them to, but because it gives them a higher price. In this context, the Fair Trade model makes a difference in requiring that the farmers be a part of an exporting cooperative. Producers learn about the demand for organic coffee because they have a direct connection to the international marketplace through the cooperative.”

STEVEN HILL

Forest Management, B.S., 1969

Senior Vice President
Human Resources
Weyerhaeuser Company
Federal Way, WA



Steven Hill was one of many students that then Blodgett Forest Manager **Herb Sampert** took on tours of companies in the forest industry. “He had an extremely high regard for Weyerhaeuser Company, and that had a lot to do with my choosing to have a career there,” said Hill.

While in school, Hill spent two summers as a field forester with Weyerhaeuser. But Hill’s career is in business, not forestry.

“I decided I didn’t want to be a forester, per se,” he said. So Hill obtained an M.B.A. from UCLA and joined Weyerhaeuser’s raw materials division as an analyst.

“Even though I didn’t pursue a science career, I learned important critical thinking skills from Forestry Professor **Bill Libby** (emeritus) and other CNR faculty. A forestry education provided exposure to biology, economics, and policy—all those areas have helped me as I’ve moved forward in my career.”

He also learned leadership skills, acting as student manager of CNR’s forestry summer camp. “That is another aspect of forestry education — the expectation of teamwork.”

In 1978, Hill served as a White House Fellow in Washington, D.C. He worked as a staff assistant in the management of large-scale research and development projects in the Department of Energy.

When he returned to Weyerhaeuser, he moved into human resources and now leads the company’s HR area. And even though it is quite different than he anticipated when he first went to Cal, he still finds connections to his forestry degree.

“When I first went into human resources, I was given a briefing on actuarial tables. It reminded me of forest science laboratory—one has to do with people’s lives and the other with trees’ lives,” he said.

Even though she changed direction several times, Michalek is happy with the path she took.

"Understanding the details of plant growth and animal behavior brings us a step closer to understanding how the world works," she said. "In Nicaragua, my knowledge of both the scientific process and biology helped me talk with the coffee growers — I understand not only their economic decisions but also something about the ecosystem in which they work everyday. For the agricultural producer, this connection is essential — the land is their well-being."

Turning Students On With Research

Other students, like **Anita Lee**, discovered that they love laboratory research and go on for more.

Lee, a CNR graduate student, started her laboratory experience as a work-study student in CNR Professor **Norman Terry's** plant physiology lab.

"I was analyzing samples for a selenium phytoremediation project, and I was interested in learning more," she said. Postgraduate researcher **Zhiqing Lin** explained to her that selenium is one of the major pollutants in California's Central Valley. Researchers in Terry's laboratory are developing biological methods to clean up contaminated soil and water.

"I thought it was really cool to generate new knowledge from a simple experiment in the lab," Lee said. She developed a research proposal and won a place in the highly competitive Haas Scholar's Program. She developed the summer-long research project into her senior thesis.



NOAH BERGER

**MICHELLE
MICHALEK**

*Graduating senior in Environmental
Economics and Policy*



NOAH BERGER

ANITA LEE

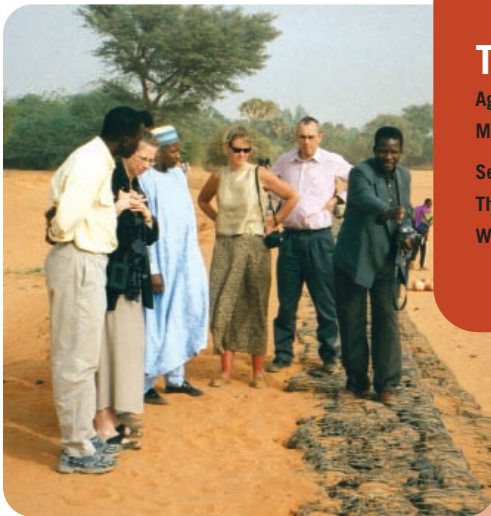
*Graduate student in
Atmospheric Chemistry*

Under Lin's guidance, Lee designed a greenhouse experiment to look at how pickleweed volatilized selenium from the soil into the atmosphere. This work followed up on a 1999 discovery by Terry and Lin that pickleweed converted inorganic selenium to volatile organic selenium at rates 10-fold higher than other tested plant species.

Lee's research showed that unlike other plant species, pickleweed did not need soil microbes to convert the selenium. The work was so well received that she published a paper in a respected scientific journal, *Planta*.

"Research can turn students on," said Terry. "Students like Lee who come to our lab become really motivated and interested. They get real-life research experience in a modern, cutting-edge laboratory. Many get to collaborate on scientific papers. All of that is a pretty strong recommendation when they apply to graduate school," he said.

And for Lee, the undergraduate research experience led indirectly to her graduate interests.



TRACY HART

Agricultural and Resource Economics,
M.S., 1993; Ph.D., 1997

Senior Economist
The World Bank
Washington, D.C.

"There wasn't much question where I'd go to graduate school," Tracy Hart said once she was accepted into the College's Agricultural and Resource

Economics (ARE) graduate program.

Hart (center in photo) obtained a B.S. in foreign service from Georgetown University in Washington, D.C. She spent her junior year abroad in Senegal, and served in the Peace Corps in Mauritania after graduation.

To back up her international experience, she wanted a technical focus in international development. "Economics would give me that backbone," she said. "CNR is the top school for ag and resource economics."

At CNR, Hart said she benefited from being with the same people over many years in small classes. "I was taught to think very critically," she said. In addition to the academic side, she also gained work experience.

ARE Professor **Alain de Janvry** helped her apply for a 6-month research assistantship at the World Bank. After graduation, she returned to the World Bank through its Young Professionals Program.

"Most of my colleagues from my graduate class went on into academia," said Hart. "I decided that academic research and publishing wasn't for me, but the same skills and rigorous thought serve me well at the World Bank. We're lending large amounts of money that needs to be used wisely."

Many of her current responsibilities involve water resources in Africa. "We look at the costs and benefits of investments such as rural water supply projects," she said. "It's easy to see that cleaner water will benefit people, but that doesn't immediately translate into making money to pay back the loan." She works with governments and local communities to help them select appropriate locations for such development projects and feasible repayment plans.

Although there are other types of training that prepare international development professionals, Hart said that employers highly value the ARE graduate program. In fact, she said the World Bank hires ARE students as often as they can, because they know the program has such a strong environmental focus.

"Environmental economics is difficult to do well. If I need the theoretical tools, I can pull them out of my pocket," she said.



MONICA MOORE

Political Economy of Natural Resources, B.S., 1980; Wildland Resource Studies, M.S., 1997

Co-founder and Co-director, Pesticide Action Network North America Berkeley, CA

Monica Moore came to Berkeley because she knew she could learn about the thread that ties human rights, women's issues, and ecological issues together.

"What I got out of my education was a new set of questions, an understanding that I needed to learn more, and some really excellent advice on how to get more experience."

As a student, Moore found that she disagreed with many of the assumptions that formed the basis of resource policy and economics. But she didn't have enough experience to resolve her concerns.

With the help of her advisor, Professor **Richard Norgaard** in the Department of Agricultural and Resource Economics, Moore spent a year after graduation in Brazil. There, she volunteered with environmental groups, women's organizations, and other non-governmental organizations in exchange for room and board.

"That's where I first became active around pesticide issues," she said. "I was surprised to find that all those groups were working together with religious and community groups to critique and demand alternatives for pesticides."

When she returned, Moore joined with groups in San Francisco to protest U.S. military intervention in Central America and to work for social justice in countries with refugee camps.

Then, with colleagues she developed through these efforts, Moore helped organize the Pesticide Action Network in 1982. In 1984, she co-founded the organization's North American regional center (PANNA). PANNA's goal is to replace pesticide use with ecologically sound and socially just alternatives. The group works by identifying dangerous pesticide uses, coordinating interested groups at local through international levels, and advocating ecologically sound approaches to pest management in agriculture and public places.

To deepen her theoretical background, Moore returned to the College of Natural Resources for a graduate degree. "It was very valuable to have time to study in depth and take classes in biological control and agroecology," she said. "There's no way I could have done that while I was working."

PANNA's greatest accomplishment, said Moore, has been to "establish and nurture an international capacity for change that didn't exist before."

"Twenty years ago, people said we were crazy," said Moore. "Now a lot of our ideas about pest management are considered conventional wisdom."

"The project sparked my interest in how we are affecting the environment — are our efforts to fix pollution causing other problems?" Selenium, she said, is even more interesting, because it is an essential nutrient as well as a pollutant. "If you could transport the selenium from a place of high concentration to a place of low concentration, it would not cause a problem," she said.

She followed up her research in Terry's lab by studying dimethyl selenide in the San Joaquin Valley for an atmospheric chemistry class with CNR Associate Professor **Allen Goldstein**. That class sparked a greater interest; she's now a graduate student with Goldstein, studying how monoterpene emissions from pine trees influence regional air chemistry.



John Tonkyn came to CNR to study with experts in plant genetic engineering. He graduated in 1991 with the "educational foundation and laboratory skills that could take me to any position in molecular biology," he said.

Now he's using his experience to help solve crimes and missing persons cases.

With an interest in plants and a B.S. in botany from the University of Washington in Seattle, Tonkyn expected to pursue a career in plant biotechnology. He joined (former) Professor **Wilhelm Gruissem**'s laboratory to study the molecular genetics of spinach chloroplast DNA. Then he completed a

post-doctoral position at Rutgers University looking at the expression of disease-related proteins in tobacco.

But when it was time to find work, "the field was suffering from some hesitation about genetically modified organisms and the job prospects were slim," Tonkyn recalled.

At the advice of a friend, he joined the California Department of Justice's DNA laboratory.

Tonkyn's task was to help develop DNA tests that were more sensitive for human identification. "We had to develop these tests and then convince others in the field that they worked," he said.

Last July, Tonkyn's team finished converting the information in their criminal offender database. "We have more than 200,000 profiles from convicted felons." The profiles are compared to crime scene evidence when there is no specific suspect.

"To date, we've made 74 matches and aided more than 100 investigations," Tonkyn said. "We know this is just the tip of the iceberg."

Now Tonkyn's applying his molecular biology skills to help identify missing persons. "We have approximately 2,100 sets of human remains that can't be identified by other methods, and about 3,100 missing persons that were never located." Similar to the criminal database, this database will allow investigators to compare the remains to DNA from missing persons and their family members. "We've just begun analyses and we've already had one match."

"Although it was extremely difficult to leave the field of plant biology, I really enjoy my job," he said.

JOHN TONKYN

Plant Molecular Biology, Ph.D., 1991

Assistant Laboratory Director
Missing Persons DNA Program
California Department of Justice
Richmond, CA

But perhaps the biggest benefit of undergraduate research for Lee was increasing her contact with faculty. "It's really easy to feel lost at Cal, and a lot of people feel anxiety talking with professors because they seem so advanced. Working in the laboratory, you learn that professors are people, too."



JENNIFER MAXWELL

Nutrition and Food Science, B.S., 1988

Co-Founder, PowerBar, Inc.
Marin County, CA

Most undergraduates stop for food or a library book between classes. Jennifer Maxwell (then Biddulph) went to her mailbox.

Likely to be there were mail orders for PowerBars, a revolutionary new energy bar.

She and her future husband, former Cal track and cross country coach Brian Maxwell, launched PowerBar in 1987 while she was an undergraduate in nutrition at the College of Natural Resources. Brian supplied the idea and the business plan. Jennifer used her nutrition education and love of cooking to refine the bar's formulation.

"I remember a food chemistry lab with Professor **Len Bjeldanes**," she said. "I brought in the bar to analyze it for vitamin and mineral content."

The idea for PowerBar was unique. As competitive runners, the Maxwells wanted to create a fuel source to help athletes maximize their performance. "At the time, athletes did not eat before they ran."

The Maxwells were also pioneers in educating athletes about low fat, soluble fiber. "We were using oat bran, which was sold to us as horse feed, as a fat substitute so we didn't have to coat the bar with hydrogenated oil," she said.

"Everyone said the oil was necessary in the manufacturing process, and that what we wanted to do

wouldn't work," Maxwell said. "But my professors and the atmosphere at Cal encouraged free thinking and the courage to try something new," she said.

So along with their product, they developed a new manufacturing process. Starting by word of mouth, they gave away PowerBars at track meets. They made the dry mix, oversaw the manufacturing, and started selling them through the mail.

After she graduated in 1988, Jennifer and Brian married. In 2000, they sold PowerBar to Nestle USA for about \$375 million dollars. Today, they're still running and working to meet their greatest challenge: raising five children.

"Set a goal, think openly, and bring your own personal passion," cited Maxwell as keys to her success. "Because we're athletes, we were incredibly passionate about our goal. There was never a doubt in my mind that it would work."

Undergrads in the Lab: Both Students and Faculty Benefit

Faculty also benefit from the interaction. "It's a mutual process," says CNR Assistant Professor **Jean-Marc Schwarz**. "For me, it's very exciting if I can trigger some interest for research in undergraduate students," he said. It's also practical. "They get to learn how a research question can be tackled and we get a hard-working person in the lab."

That's true for **Joo-Young Han**, a graduating senior in nutritional sciences who works in Schwarz's lab. She transferred from Santa Monica College in 2000 and plans to apply to medical school next year.

She's helping Schwarz in a collaborative study with UC San Francisco on the effects of treating HIV-infected patients with growth hormone. Schwarz and colleagues have found that growth hormone helps stabilize an imbalance in fat deposition in patients treated with antiprotease inhibitors. But growth-hormone therapy could have a negative effect on carbohydrate metabolism.

Han is analyzing urine samples to identify the differences in how the liver processes glucose in those patients treated with growth hormone.

"I wasn't sure I would do research when I came to Berkeley, but I wanted to learn more outside of class," Han said. In the beginning, it was hard, at times boring, and seemed to go nowhere.

"Now that I'm almost done with my research and I'm seeing some good results, I think 'wow, it works!' and that is really rewarding for me."

Schwarz knows how it is to be a student researcher as well. "I did some similar things when I was a student in Switzerland," Schwarz said. "It was a determining factor for me to become a graduate student. I hope it will do the same for my students." 🍌

JOO-YOUNG HAN

Graduating senior in Nutritional Sciences



NOAH BERGER

The Undergraduate Research Opportunities Program

"Students who want to pursue research careers need to understand that both laboratory and field work can be tedious and frustrating as well as rewarding. By getting some direct experience, they will learn whether a research career suits them," said Dean Richard Malkin.

"Undergraduate research also helps break down the bigness of Berkeley. Instead of classes with hundreds of people, students enjoy very close interaction with a team of six or seven," he said.

One way to get that experience is through the College of Natural Resources' Undergraduate Research Opportunities Program. Each year, faculty submit proposals identifying projects that could be completed by an undergraduate student researcher. "We typically fund 40 to 50 of those proposals at an average of about \$2,000 each," Malkin said. Funding pays for supplies, travel, and student stipends. Students can also get course credit. Funds for the UROP grants come from gifts to the College's annual fund, the Berkeley Fund for Natural Resources.

CNR Honors

Russell Jones, professor in the Division of Plant Biology, was elected in 2001 as a Fellow of the American Association for the Advancement of Science (AAAS). The fellowship recognizes Jones' research contributions on the effects of plant hormones on seed germination and growth, signal transduction, and programmed cell death.

Founded in 1848, AAAS is the world's largest general scientific society, with more than 134,000 members and 120 elected fellows. Jones was one of 11 Berkeley faculty elected in 2001.

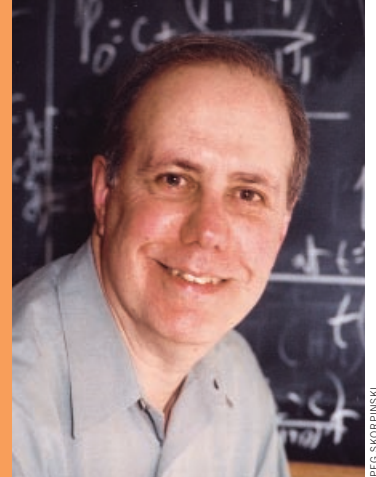
Jones' research focuses on how plant hormones act to control plant development. His laboratory has shown that plant hormones act via complex signaling pathways that involve molecules such as calcium and cyclic nucleotides. Jones' laboratory also showed that plant hormones regulate the viability and eventual death of plant cells by regulating antioxidants within cells.



Russell Jones



Nancy Lee Peluso



Anthony Fisher

Jones received his B.Sc. and Ph.D. from the University of Wales and has been teaching at Berkeley since 1966. As part of an active professional commitment to his field, he served as managing editor of the journal *Planta* and as President of the American Society of Plant Physiologists. He is currently on sabbatical in Australia, where he is studying the role of nitric oxide in plant development. His current research interests include the use of DNA microarrays to study germination and dormancy in seeds.

Nancy Lee Peluso, professor in the Division of Resource Institutions, Policy and Management, has received a Harry Frank Guggenheim Foundation award to write a book, *Violent Territorialities and the Cultural Politics of Community*. The book will provide an in-depth case study of Peluso's research on the role violence has played in the production of landscapes and control of resources in West Kalimantan, Indonesia. The foundation sponsors scholarly research on problems of violence, aggression, and dominance in order to develop new solutions.

Anthony Fisher, professor and chair in the Department of Agricultural and Resource Economics, has been elected President of the Association of Environmental and Resource Economists (AERE). He will serve as President-elect for the 2002 calendar year and President for years 2003 and 2004. AERE has just under 1,000 members and produces the leading journal in the field, the *Journal of Environmental Economics & Management*. As president, Fisher will represent AERE at international conferences such as the annual conference of the European Association of Environmental and Resource Economists.

Garrison Sposito, professor in the Division of Ecosystem Sciences, has been elected a Fellow of the European Association of Geochemistry and of the Geochemical Society for his research contributions to environmental geochemistry. Sposito also presented the 2002 Walter J. Weber Distinguished Lecture in Environmental Science and Engineering, "Three Memos for the Millennium," at the University of Michigan in April. 🍌

College Support

CELEBRATING OUR SUCCESS:
THE CNR NEW CENTURY CAMPAIGN

To Our Friends:

We are truly proud — and grateful — to announce the extraordinary success of the first College of Natural Resources capital campaign. Our initial goal of \$25 million was met — and exceeded — with over 7,000 gifts totaling \$25.5 million. The extraordinary generosity of our alumni, friends, faculty, staff, foundations, and corporations has actively demonstrated commitment to the future growth of the College and our teaching, research, and outreach priorities.

Some highlights:

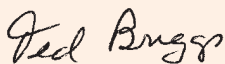
- The establishment of the College's first two distinguished professorships — the Haydn P. Reinecker Distinguished Professorship in Forest Genetics and the Henry J. Vaux Distinguished Professorship in Forest Policy
- The creation of the Richard and Carolyn Beahrs Environmental Leadership Program, a unique educational opportunity to train environmental managers from around the world in sustainable development
- Support for new faculty teaching, research, and outreach initiatives
- Renovation and equipping of teaching and research labs
- Expansion of undergraduate research opportunities with support from donors to the Berkeley Fund for Natural Resources
- Funding for undergraduate and graduate scholarships, awards, and prizes.

To each of you who supported the campaign, we extend our congratulations and deepest thanks.

Sincerely,



Jim Lugg, CNR Advisory Board Chair



Ted Briggs, CNR Advisory Board Chair Emeritus

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Pebble Beach Company
Theodore B. Plair*, '31 &
Katharine Plair, '30
Professor Gordon C. Rausser
Dr. Loy L. Sammet*, '58
Professor Emeritus Edward C. Stone, '40
Professor David J. Teece & Leigh G. Teece
Time Warner, Inc.
Harold E. Woodworth*, '17

\$50,000-\$99,999

3M Canada
Abbott Laboratories
Agouron Pharmaceuticals, Inc.
American Society of Plant Physiologists
American Vineyard Foundation
Amyotrophic Lateral Sclerosis
California Alumni Foresters
California Grape & Tree Fruit League
Walter H. Ching*
Cinergy Corporation
Damon Runyon-Walter Winchell
Foundation
Andrew T. Duncan, '92
DuPont Company
Epilepsy Foundation of America
David M. Fineman & Ellen Gunn Fineman
General Chemical Corporation
Robert E. Gilbert, Sr., '47 &
Beverly S. Gilbert
John S. Hall*, '35
Frank Hildebrand*
ILSI Nutrition Foundation
INNW Fund
Insurance Industry Charitable Fund
K/T Foundation
John D. and Catherine T.
MacArthur Foundation
Marin Community Foundation
Monsanto Company
National Endowment for the Humanities
National Parks Foundation
The Pew Charitable Trusts
Roussel-UCLAF

Russell L. Rustici, '48
Sierra Pacific Foundation, Inc.
United States Borax, Inc.
Veterans' Medical Research Foundation
of San Diego

\$25,000-\$49,999

Advanced Nutritional Technology
Incorporated
Almond Board of California
American Malting Barley Association, Inc.
Applied Phytologics, Inc.
Mary M. Bailey*
Dwight L. Barker, '59 &
Nancy Thompson Barker
Beet Sugar Development Foundation
Clarence E. Heller Charitable Foundation
Charles E. Culpepper Foundation
George A. Craig, '39 &
Viola Harris Craig, '39
Del Monte Forest Foundation, Inc.
Dow AgroSciences LLC
Ducks Unlimited Inc.
International Nutrition Foundation for
Developing Countries
Institute of International Education
The Japan Foundation
Frances Joos
Dr. Philip N. Knorr, '38
Louisiana-Pacific Corporation
Gerald B. McClaine, '62 & Lynne McClaine
Mead Johnson Nutritionals
Rancho Santa Fe Association
Donald W. Raymond, '64 &
Barbara A. Raymond
Elsie Merrill Robinson*, '31
The Rockefeller Foundation
Harry Rosen, '36
Safari Club International,
Golden Gate Chapter
The San Francisco Foundation
David R. Schwarz
Sierra Pacific Industries
Springer-Verlag
Stephen M. Silberstein, '64 &
Anne G. Lipow
Stephen M. Silberstein Foundation
Tappi Foundation
Weyerhaeuser Company Foundation
Dr. Jennifer Meux White, '67 &
Dr. Marshall White, '67
William L. Woods, III, '73 &
Kathleen C. Woods
Zeneca, Inc.

\$10,000-\$24,999

3M
Academic Press
Alameda Co. Mosquito Abatement District
Alza Corporation
American Cyanamid Co.
Asgrow Seed Company
Claude Unsel Babcock, '52
Bayer Corporation, Agriculture Division
John V. Beahrs, '35 & Virginia Oakley
Beahrs, '34
Phillip S. Berry
Biolog Inc.
Biologically Integrated Organics Inc.
Thorley D. Briggs
Earl M. Buckingham*
Burroughs Wellcome Fund
California Cedar Products Company
California Council for the Humanities
California Olive Committee
Carlsberg Forningscenter
Chevron Corporation
Hua-Thye Chua, '61 &
Jessie Tsao Chua, '61
The Clorox Company
Dow Agrosciences
Earthwatch
Electric Power Research Institute
Environmental Defense Fund
Farm Foundation
Donald R. Franson, Jr., '74 &
Anne Woolf Franson
F. Eugene Forsburg, III, '75 &
Kass Green, '74
Professor Emeritus Wilford R. Gardner &
Marjorie C. Gardner
Georgia-Pacific Corporation
Robert G. Goddard, '84 &
Robin K. Goddard
Mary Beahrs Grah, '39
William A. Hasler & Betty Hasler
Harry L. Hathaway, '59 &
Betsy Falkenburg Hathaway
Raymond E. Helm, '51
Annie Allan Henry, '31
Herbert M. Hull, '46 &
Mary Hull Hathaway, '62
Horticultural Research Institute
Endowment Fund
Hyman-Levine Family Foundation
Jaeger Vineyards
Kaneka Corporation
Kellogg USA, Inc.
Hendrik J. Kranenburg, '76
Large Scale Biology Corporation
Mel Levine, '64

Shirley Blum Levine, '36
Professor Steven E. Lindow &
Elizabeth L. Krieg, '78
Edmund W. Littlefield* &
Jeannik M. Littlefield
James R. Lugg, '56 & Marilyn G. Lugg
Nancy Kresser Lusk, '64
Helen Goodwin MacCollister*, '30
Alexander G. MacInnis & Bo Y. MacInnis
Iona Rockwell Main, '49
John A. Manners & Suzanne Manners
Dale McMurren
The Mitchell Kapor Foundation
Moleculaire Genetica Van Westrenelaan
Richard H. Morrison, '58 &
Laurie Cockburn Morrison, '61
E. Robert Munsey, '69
Natural Source Vitamin E Associates
Nestle USA, Inc.
Northwest Forest Resource Council
Novartis Agricultural Discovery Institute Inc.
Nurserymen's Exchange
Pacific Gas & Electric Company
Paramount Farming Company
Paramount Publishing Elementary Division
Pioneer Hi-Bred International Inc.
Professor Vincent H. Resh &
Cheryl Haigh Resh, '91
Rohm and Haas Company
Roque Adames
San Francisco Jewish Community Federation
Sankyo Co. Ltd.
S C Johnson & Son Inc.
William Russell-Shapiro &
Alice C. Russell-Shapiro
Shasta Wildlife Conservation Foundation
Sierra Nevada Alliance
Simpson Timber Company
SpectruMedix Corporation
Mabry C. Steinhaus
Christian A. Stokstad, '38
Paul A. Stokstad & Shelley B. Stokstad
Dr. Robert G. Stokstad &
Julianne R. Stokstad
Sumitomo Chemical America Inc.
TransFRESH Corporation
Uniroyal Chemical
United Nations Educational Scientific &
Cultural Organization
U.S. Civilian Research and
Development Foundation
VESTRA Resources Inc.
Vino Farms Inc.
Professor Fernando E. Viteri &
Adelina F. Viteri

College Support

TELEMARKETING: THE FACE ON THE OTHER END OF THE PHONE



Leslie Mosley

Like many Cal students, you may have had to work to help pay your way through Berkeley.

Students like **Leslie Mosley**, who work in the student calling center, pay their rent and help other College of Natural Resources students by soliciting donations from alumni. While the callers come from across campus, all of the gifts made by College alumni and friends support CNR undergraduate research projects, such as those described in this issue.

"I like talking to alumni—they've been through the process of graduating and looking for work. They can be a good resource," Mosley said. A sophomore in Environmental Sciences, she hopes to go to medical school. Mosley spends about 11 hours each week calling former CNR students.

"The hardest part about telemarketing is rejection," she said. "I go into slumps where

I'm tired of people saying 'no' to me."

But then there are the successes, like the alum who donated \$1,000 during her call. "I felt elated, like there was hope and I could continue working," she said.

Even though many people don't like telemarketing calls, the annual fund relies on donations from this source.

"Typically, more than half of our total donors to the annual fund come from over the phone," said Robert Ashe, Director of the College's annual fund. "Their gifts are enough to support 18 undergraduates and their research projects for a year."

The key, Mosley said, is "to love what you're calling for, and to know it's for a good cause."

And someday Mosley may benefit directly, since she may apply to the same undergraduate research program for which she's been raising gifts. 🍌

REDISCOVER THE COLLEGE OF NATURAL RESOURCES

Join us on June 6, 2002, for an exciting program highlighting the research and outreach in the College of Natural Resources' Department of Environmental Science, Policy and Management (ESPM).

Professor **Vincent Resh** will lead alumni in a discussion of habitat restoration, water-quality assessment, and disease in the Third World streamside at Strawberry Creek. A second tour will illustrate state-of-the-art global positioning technology used to study Sudden Oak Death.

Following a dinner reception with the faculty, Associate Professor **Lynn Huntsinger** will explore the ecological logic that underpins the way we raise beef in America. Then Assistant Professor **Scott Stephens** will explore the role of fire in the forest ecosystem, demonstrating the very best of an emerging trend towards building an interdisciplinary response to the wider environmental issues associated with fire in our forests.

For more information, please contact college.relations@nature.berkeley.edu. 🍌



Professor Vincent Resh works with West African communities to prevent additional cases of river blindness, an insect-borne disease that has already affected these individuals.

Alumni News

IN MEMORIAM — WILLIAM ALLEN

JAMES BRUNER HONORED BY UC BERKELEY FOUNDATION

James W. Bruner, Jr., '71, received a 2001 Trustee's Citation Award from the University of California, Berkeley Foundation (UCBF). The award recognizes "alumni and friends who have demonstrated outstanding achievement in a major fund raising program." The governing Board of Trustees includes professional, business, and philanthropic leaders who have a dedicated interest in the well-being of the University.

Bruner, who serves as a UCBF trustee, obtained a B.S. in Conservation of Natural Resources in 1970 and an M.S. in Wildland Resource Studies in 1971.

Bruner is the Director of Government Affairs at the Orrick, Herrington & Sutcliffe law firm in Sacramento. 🍓



James W. Bruner, Jr.



William Allen

Entomologist Emeritus **William Allen**, whose work helped the California strawberry industry become the nation's primary strawberry producer, died December 21, 2001, of cancer. He was 80. Allen served in several leadership positions in the College of Natural Resources.

Allen's main scientific contributions were identifying spider mites, lygus bugs, root weevils, and aphids as the most economically significant strawberry insect pests.

He was the key strawberry entomologist in the state from the 1950s until he retired, according to Frank Zalom, former director of the California Statewide Integrated Pest Management Project and Cooperative Extension specialist, in Davis, Calif. "During that time, the industry grew from a few hundred acres to 85 percent of the national production. This productivity requires intensive pest management."

"When growers saw an insect feeding on their crop," Zalom said, "they automatically assumed it was causing a problem; the natural thing was to spray anything."

Allen, however, used monitoring and other tools of the then-emerging field of integrated pest management to help the industry concentrate on the economically significant insects. As a result, Zalom said, the industry began using pesticide more judiciously and slowed the rate at which insects developed resistance to the chemicals.

Allen earned his B.S. in 1943 and his Ph.D. in entomology in 1952, both at Berkeley; he interrupted his education briefly to serve in World War II, joined the College in 1953 and became associate dean for research in 1985.

After his retirement in 1991, Allen was recalled to serve, until 1992, as associate dean and associate director for the College of Natural Resource's Division of Agricultural and Natural Resources Programs.

Allen is survived by his wife, Adele, of Orinda, Calif., and daughters Joan Husted, of Pleasant Hill, and Mary Knott, of Martinez. 🍓

In Memoriam

Daniel Stephen Shinoda, '36, B.S., Agricultural Science, died September 17, 2001, at age 83. Reverend Shinoda was a pastor and a former business executive of the San Lorenzo Nursery Company.

Lura M. Morse, '46, B.A., Ph.D., Biochemistry, passed away January 29, 2002, at age 88.

Alumni News

CLASS NOTES

'44

Marie H. McKeown, B.S., Home Economics, is now retired from 20 years as a "professional grandmother" after 14 years as a school librarian.

'47

William P. Ronayne, B.S., Forestry, recently moved to a home in Oregon.

'64

Tsuneo Watanabe, Ph.D., Plant Pathology, recently published the book *Pictorial Atlas of Soil and Seed Fungi*. He works at the National Institute of Advanced Industrial Science & Technology, Ibaraki, Japan.

'67

Guy Symes, M.S., Forest Management, completed 10 years as a consultant in Ghana for a series of projects funded by FAO, the World Bank, and the European Union.

'68

John H. Diehl, B.S., Food Science, is the manager of new business development for Valley Research, a global manufacturer that supplies enzymes for the food and pharmaceutical industries.

'73

Steven S. Bremner, B.S., Forestry, is chief financial officer for Kennedy Associates Real Estate Counsel, Inc. His career has been involved in international trade in the forest industries.

Winifred B. Kessler, M.S., Range Management, is the director of wildlife, fisheries, ecology, and watershed for the USDA Forest Service in Alaska.

'77

Mary Hatzenbehler, B.S. Forestry, works for Kelly Services in Stockton.

'79

Joel Haggard, B.S., Political Economy of Natural Resources, joined the USDA's Foreign Agricultural Service and moved to Beijing, China, to serve as the U.S. Agricultural Attaché. Now he works for the US Meat Export Federation in Hong Kong, promoting the trade of US red meats.

'84

Lisa Kirchhoffer, B.S., Political Economy of Natural Resources, works with victims of domestic violence in Coeur d'Alene, Idaho.

'85

Suzanne Hendrich, Ph.D., Nutrition, is a professor of Food Science and Human Nutrition and Associate Dean of Undergraduate Programs for the College of Family and Consumer Sciences at Iowa State University.

Michael J. Simsik, B.S., Forestry, is environmental team leader for the New York City office of Cornell University Cooperative Extension.

'89

James Ferris, M.S., Wildland Resource Science, is a geologist studying trace elements and mineral waters in relation to plant, animal, and human health. He lives in western Massachusetts.

James Houpis, Ph.D., Wildland Resource Science, was recently named Dean of the College of Natural Sciences at California State University, Chico.

'92

Michael J. Costello, Ph.D., Entomology, is an assistant professor in the Crop Science Department at California Polytechnic State University, San Luis Obispo.

Jolie B. Kaytes, B.S., Conservation and Resource Science, is a visiting instructor in landscape architecture at the University of Colorado. She will be an assistant professor at Washington State University in the Fall.

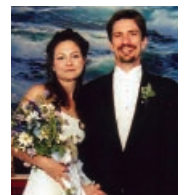
Sherri (Thibeaux) Shafer, B.S., Nutrition and Dietetics, married in 1999 and gave birth to a boy in 2000. She recently published the book, *Diabetes Type 2- Complete Food Management Program*.

'93

Laurie (Tucker) Lerner, B.S., Conservation and Resource Science, is in medical school at the University of Rochester.

'99

William Russell, Ph.D., Wildland Resource Science, is an ecologist with the U.S. Geological Survey in Sausalito. **Ky Carnell Russell**, B.S.,



Conservation and Resource Studies, works at the Institute of Fisheries in San Francisco. William and Ky met at a William Main Distinguished Lecture in 1997 and married in 2001.

Amanda Y. Lin, B.S., Environmental Economics and Policy, works for Saatchi & Saatchi Advertising Agency in Taiwan. 🍀

Natural Resources @cal



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The community is open to anyone who has attended Berkeley or is a member of the California Alumni Association.

College of Natural Resources

CNR Alumni: Where are you and what are you doing?

The College wants to hear from you.

Many of our alumni and friends have expressed their pleasure in reading the Class Notes column. Please share your news with us by filling out this coupon and sending it to the address below or send us news via e-mail at:

breakthroughs@nature.berkeley.edu. Photos are welcome!

NAME _____

ADDRESS _____ NEW ADDRESS? _____

PHONE _____ EMAIL _____

YEAR OF GRADUATION _____ DEGREE _____ MAJOR _____

EMPLOYER _____

OCCUPATION _____

BUSINESS ADDRESS _____ BUSINESS PHONE _____

NEWS _____

University of California, Berkeley – Office of College Relations
College of Natural Resources
101 Giannini Hall #3100
Berkeley, CA 94720-3100
Phone: (510) 643-8860 Fax: (510) 642-4612
E-mail: breakthroughs@nature.berkeley.edu
CNR web page: <http://www.cnr.berkeley.edu>

MAY 26

CNR Commencement. Keynote Speaker: Steven McCormick, '73, President and CEO of the Nature Conservancy. 10 a.m. – 12 noon, Chancellor's Esplanade.

JUNE 6

Rediscover the College of Natural Resources: Environmental Science, Policy and Management. Join faculty and alumni from ESPM to socialize and learn about the latest research. 5:30 – 8:30 p.m. For more information, contact Robert Ashe at (510) 643-1041 or robert.ashe@nature.berkeley.edu.

JUNE 24-27

World Congress of Environmental and Resource Economists, Monterey. Hosted by Giannini Foundation. For more information, visit <http://weber.ucsd.edu/~carsonvs/>.

JUNE 20

Cal Alumni Foresters Annual Picnic. Forestry Summer Camp, Meadow Valley. For more information, contact Al Stangenberger at (510) 642-4424 or forags@nature.berkeley.edu.

JULY 4-27

Behrs ELP summer certificate course in Sustainable Environmental Management, UC Berkeley. For more information, call (510) 642-4612 or visit <http://cnr.berkeley.edu/BehrsELP>.

OCTOBER 8-11

Sierra Nevada Science Symposium, North Lake Tahoe. For more information, visit <http://danr.ucop.edu/wrc/snssweb/snss.html> or contact Joni Rippee at (510) 642-0095 or rippee@nature.berkeley.edu

OCTOBER 18

Cal Alumni Foresters Banquet and Annual Meeting. For more information, contact Al Stangenberger at (510) 642-4424 or forags@nature.berkeley.edu.

OCTOBER 18-20

Homecoming Reunion and Parents Weekend. Celebrated classes: '48, '49, '52, '57, '62, '67, '72, '77, '82, '87, '92, '97. For more information, visit <http://homecoming.berkeley.edu>.