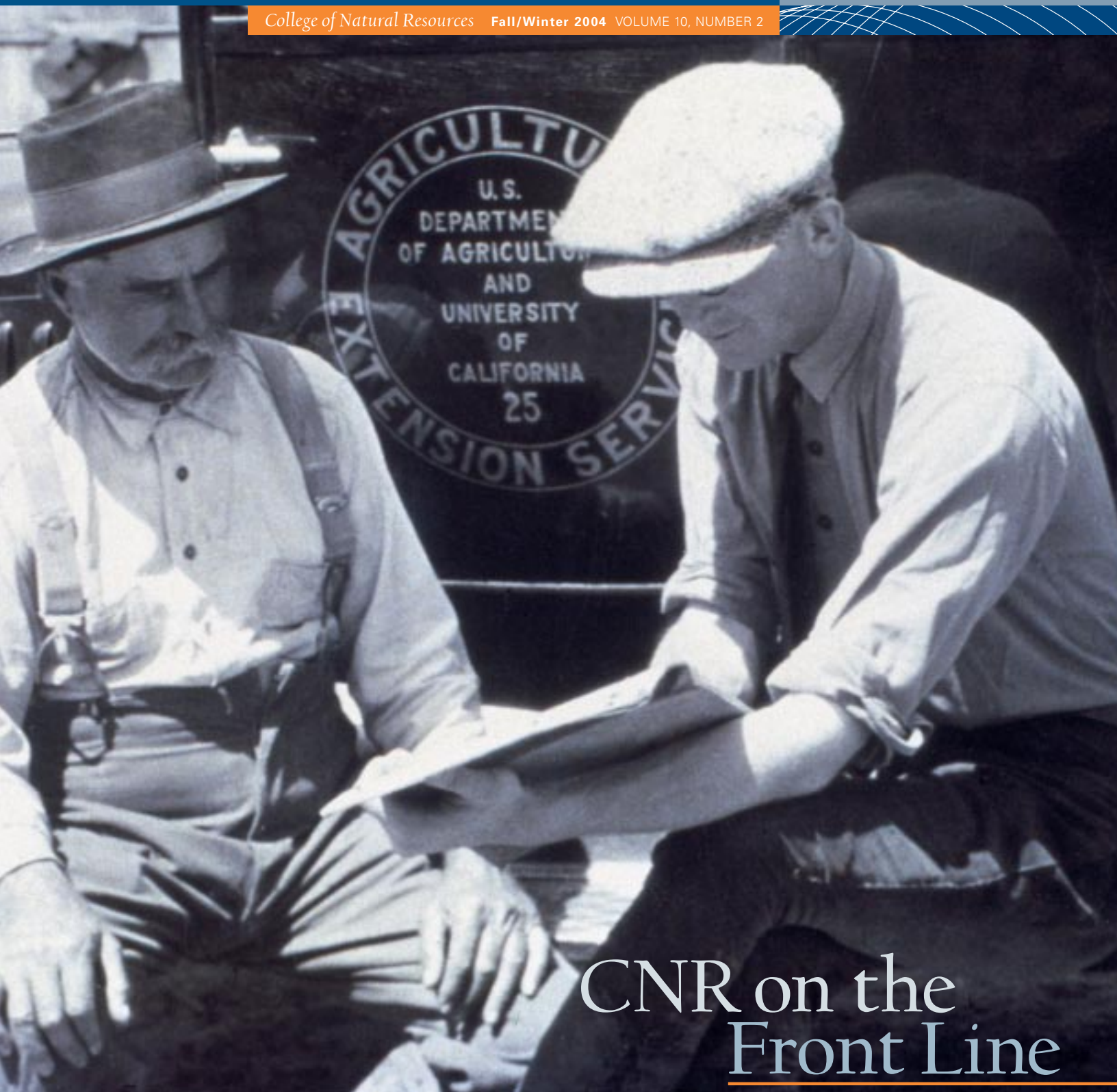


BREAKTHROUGHS

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

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CNR on the Front Line

SPECIAL COOPERATIVE EXTENSION ISSUE INCLUDING
A CONVERSATION WITH PRESIDENT DYNES

BREAKTHROUGHS®

COLLEGE OF
Natural Resources
UNIVERSITY OF CALIFORNIA, BERKELEY

in this issue



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A Note from the Dean

EXTENDED COOPERATION



Noah Berger

Paul W. Lee

Cooperative Extension (CE) is the branch of the University of California that brings scientifically based information to the people of the state in their home counties. The 90-year record of success of Cooperative Extension is impressive and CE remains a vital contributor to the quality of life of all Californians, but it is perhaps the least understood component of the University's land grant mission.

This issue of *Breakthroughs* is dedicated to creating a greater understanding of the vital role of Cooperative Extension at Berkeley and throughout the UC system. At the heart of the California Cooperative Extension system, there are 258 county-based CE advisors and 149 campus-based CE specialists.

Advisors provide information, services, and advice to residents of the counties they serve. Most issues require solutions that are specific to the local environment. That's why one great strength of the CE system is that talented, well trained individuals work on-site, supported by a statewide network of CE advisors who share information with each other, with CE specialists, and with faculty and students on the campuses.

CE specialists play a critical role in the continuum by seeking practical solutions to problems. Immersed in the basic research culture of the campuses, they are challenged with applying research results to solving problems identified by CE advisors and others. They also carry out research programs to test solutions, often in conjunction with faculty and with CE advisors. CE specialists are campus-based, and report through their department chair and the dean of

The bottom line from the client groups could be summarized as: "We love what you do—give us more."

the college. Berkeley is fortunate to have 21 CE specialists assigned to or primarily affiliated with CNR. You will meet just a few in this issue.

Some have questioned the continued role for Cooperative Extension in our increasingly urbanized state, where agriculture is perceived to be corporate. While an increasing percentage of the state's population resides in urban areas, the non-urban population is greater than it was when Cooperative Extension was established. It is also important to remember that the average size of California's 88,000 farming operations is a surprisingly small (non-corporate) 350 acres—slightly smaller than the national average. Furthermore, Cooperative Extension plays an important role in both urban and rural areas, providing important information and services for youth development, forestry, food safety, nutrition,

gardening, sustainable production, and pest control to farmers and non-farmers in all areas of the state. Recent budget cuts, which hit Cooperative Extension very hard, precipitated a

careful examination of Cooperative Extension by ANR Vice President Reg Gomes, his staff, and the deans at Berkeley, Davis, and Riverside. We administrators held listening sessions around the state to gather information and gauge the perceptions of the clients of Cooperative Extension—farmers, gardeners, foresters, 4H leaders, teachers, environmentalists, community leaders—and of our own advisors and specialists who provide the services. What are the expectations of small farmers from CE advisors in their counties? What challenges do advisors face? These sessions were organized into two parts. In the morning sessions, advisors, specialists, and other CE staff gathered to discuss perceptions, challenges, successes, concerns, and the future. In the afternoon sessions, the clients were invited to share their views and prescribe future directions. ANR and college leaders attentively joined in each of the sessions.

The result was a sometimes painful, sometimes joyous affirmation of the importance of Cooperative Extension to the state and the importance of the University to Cooperative Extension. The bottom line from the client groups could be summarized as: "We love what you do—give us more." The message from CE advisors and specialists was: "We are committed to the mission—let us do our jobs, help us do our jobs." There can be no doubt of the need for Cooperative Extension in California or its value to the state's citizens.

The message to me, as Dean of CNR, was that I had not invested enough time getting to know the personnel or programs of the county offices. I plan to arrange visits to as many county offices as possible in the coming year. Like the listening sessions, these visits have been eye-openers. County offices are one-stop shops for a wide range of information, all of it tested, all of it free, no appointment necessary. For 90 years, Cooperative Extension has served the citizens of California and enhanced the mission of UC. I encourage you to visit your county Extension office (<http://ucanr.org/ce.cfm>) and see what they have to offer you. 📧

WOOD CONTACT FOUND TO INCREASE RISK OF TICK EXPOSURE

Researchers find no safe place to sit in California forest



UC Berkeley researcher Denise Steinlein demonstrates the three actions found to be riskiest for acquiring the western black-legged tick: leaning against a tree, carrying wood, and sitting on a log.

After a long hike through some of California's forests, it may be tempting to rest on a log or lean against a tree. Wrong move, say researchers at the College of Natural Resources, who found that such activities may increase the risk of acquiring ticks harboring the Lyme disease bacterium.

"We sat on logs for only five minutes at a time, and in 30 percent of the cases, it resulted in exposure to ticks," said **Robert Lane**, professor in the Division of Insect Biology at the College. "It didn't matter if we sat on moss or the bare surface; the ticks were all over the log surface. The next riskiest behavior was gathering wood, followed by sitting against trees, which resulted in tick exposure 23 and 17 percent of the time, respectively."

The study, published in the current issue of the *Journal of Medical Entomology*, is the first quantitative analysis of human behaviors that may increase the risk of tick exposure in California's hardwood forests. The paper was published in April, just weeks before the start of northwestern California's nymphal tick season, which begins in early spring and continues into summer.

The western black-legged tick, found primarily in the far western United States as well as in British Columbia, is the primary carrier of the corkscrew-shaped spirochete *Borrelia burgdorferi*, a bacterium named after its discoverer, **Dr. Willy Burgdorfer**. *B. burgdorferi* is responsible for Lyme disease, which can lead to debilitating symptoms in humans. Most human cases of Lyme disease in northwestern California appears to be transmitted by young nymphal ticks, which are notoriously difficult to detect because they are as small as poppy seeds.

Lane and study co-author **Denise Steinlein**, a CNR graduate student in insect biology, trekked through a hardwood forest at the UC Hopland Research and Extension Center in southeastern Mendocino County to conduct the field trials. Lyme disease is endemic to the area, which is dominated by California black oak.

Jeomhee Mun, research specialist in insect biology at the College, is another co-author of the paper.

Lane and Steinlein conducted the experiments on two back-to-back days in three consecutive weeks in 2002 between late May and mid June. Decked out in white clothing from top to bottom, with pant legs tucked into white socks and seams sealed with duct tape, the researchers set out to learn how people might acquire nymphal ticks.

"If we're going to develop effective strategies and educational programs for the prevention of Lyme disease, it is critical that we understand how people are exposed to the ticks that transmit the bacteria in the first place," said Lane. "We intentionally looked at behaviors that people would typically engage in while spending time in the woods."

The researchers sat on logs, sat against trees, gathered wood, walked through leaves, sat still on leaf litter and stirred up leaf litter for set amounts of time. Lane noted that turkey hunters can easily spend up to an hour or longer sitting with their backs against trees while trying to call in toms during the spring hunting season.

After each activity, in scenes strikingly reminiscent of primate grooming behavior, the researchers meticulously picked off and counted the ticks on their clothing and bodies. They also used an adhesive lint roller to pick up ticks that might otherwise have escaped their attention. All told, they found a total of 86 nymphal ticks on their bodies during the field trials.

"Activities that were riskiest involved considerable contact with wood," said Steinlein. "Of the six behaviors we analyzed, sitting still on leaf litter was the least risky behavior, resulting in tick exposure only 8 percent of the time."

Why the difference between wood products and leaf litter? The clue may be in an important animal host for the larvae and nymphs of the western black-legged tick.



Robert Lane



Robert Lane

Once on a person, the nymph of the western black-legged tick is readily overlooked because of its minute size.

“The western fence lizard is an important host for the ticks, and the lizards often use logs in sunlit areas as basking sites,” said Lane. “Nymphal ticks that are seeking hosts to feed upon may be going to the place where they’ll have the greatest chance of finding a lizard. Humans or pets that happen to come along for a picnic lunch or a short rest on a log may be putting themselves in harm’s way.”

DNA tests revealed that 3 to 4 percent of the ticks the researchers found on their bodies, as well as through drag-sampling leaf litter with a white flannel cloth, tested positive for *B. burgdorferi* or another, less prevalent human disease-causing bacterium *Anaplasma phagocytophilum*. Estimates from prior studies of ticks infected with *B. burgdorferi* in Mendocino County are higher, ranging from 5 to 10 percent on average, with some spots occasionally yielding rates of 15 percent or higher.

Tick infection rates normally are significantly higher in the northeastern and upper midwestern United States, where most cases of Lyme disease occur. Lane cautioned that the findings in this study are not intended to be applicable to forested areas in other regions of the country.

But for people frequenting areas of California where Lyme disease is endemic, the researchers recommend precautions to prevent tick exposure.

“I would avoid prolonged contact with wood as well as with leaf-litter areas, and I would strongly suggest that people inspect themselves carefully after spending time in tick-infested areas,” said Lane. “Moreover, I would advise people to continue checking their skin for two to three days after the potential exposure. Nymphal ticks are so hard to see in the beginning—probably fewer than one in three people bitten by nymphs ever discovers the tick that bit them. But they become easier to detect once they start swelling up a bit after they’ve had a blood meal.

“Animal studies suggest that it usually takes longer than one day after the tick becomes attached for the bacteria to be transmitted to the host, so the sooner the tick is found and removed, the better,” said Lane.

The National Institutes of Health and the U.S. Centers for Disease Control and Prevention helped support this research. 🚩

—Sarah Yang

The Novartis Experiment

Many of you have read reports and reviews of the “Novartis Agreement,” which came to an end in November of 2003. Under the terms of this agreement Novartis, a large biotech company with an agricultural biotech division based in San Diego, provided \$25 million to CNR’s Department of Plant and Microbial Biology. The funds were treated as grant funds by UC and as such, were subject to the rules and regulations of grants received by the UC. In exchange, Novartis (now Syngenta) received first right of refusal on a portion of the patentable discoveries made under the auspices of the grant.

What made this agreement unusual was the involvement of all but a couple of the faculty of an entire department. In typical Berkeley fashion, the department, the College, the Academic Senate, and the campus administration debated this approach before, during, and after the agreement was in force. Within the College we have had a healthy, vigorous debate about what it means for a single, private entity to fund an entire department. What are the risks? What are the rewards? Is academic freedom maintained? How does this fit in the land grant mission of the University? Are the citizens of California well served? Are our students well served? From its inception, the agreement has been treated as an experiment.

Like all experiments, there is an idea or hypothesis, a methodology, results, and currently, there is discussion. The two major discussion pieces are the internal review, authored by Associate Vice Chancellor for Research Robert Price (www.berkeley.edu/news/media/releases/2004/07/admin_novartis_review.pdf), and an external review commissioned by the campus at the request of the Academic Senate (www.berkeley.edu/news/media/releases/2004/07/external_novartis_review.pdf). The external review was authored by a team of faculty from Michigan State University. The reports are in agreement that none of the stated fears of those who opposed the agreement came to pass.

Both reports also note the substantial increase in research productivity in the department during the period of the agreement. While the external review calls on universities to avoid such agreements in the future, (former) Chancellor Berhdaahl noted in his statement that with appropriate controls and oversight, private grants are an essential component of funding for public research universities. Research universities are called upon to serve as economic engines for the state, and private funding for research is a key to success in that arena. Chancellor Berhdaahl also reaffirmed the need for open review of all such agreements. We have learned from this experiment.

My personal observation on the reporting surrounding this experiment is that several newspapers and magazines have presented the College as divided into hostile camps as a result of the Novartis Agreement. Having arrived here two years ago, I can state that we do have the full range of opinions and beliefs on the wisdom of the agreement. I can also state that the debate has been, in my presence, collegial and honest. We have just admitted the largest class of incoming students in many years, and our new faculty are brilliant and excited to be here. Our faculty and staff encourage and promote one another. These are signs that our College has the unity, intellectual strength, and stature to undertake an ambitious experiment, openly debate its merits, shortfalls, and dangers, and analyze the results. Whatever we determine the final outcome to be, I’m proud to be on the leading edge of academia. Fiat Lux.

—Dean Paul Ludden

NEW CLIMATE-CHANGE STUDY PREDICTS HOTTER SUMMERS, WATER SHORTAGE IN CALIFORNIA



Mammoth Lakes Area

E. Lee Fitzhugh, Wildlife Management Specialist Emeritus, UC Davis

Using the latest, most sensitive climate models to date, a team of 19 scientists, including a researcher from the College of Natural Resources, predicts that California will experience significantly hotter summers by the year 2100. The resulting climate change will impact human health and the availability of water and could upend the state's current water rights system.

"These new predictions illustrate more than ever the urgent need to control greenhouse gas emissions now," said study co-author **W. Michael Hanemann**, professor of agricultural and resource economics and director of the California Climate Change Center at CNR. "Because of lags in the natural system, what we do today will affect climate 30 years from now."

The findings were released August 16 in the journal *Proceedings of the National Academy of Sciences*. The lead author is Katharine Hayhoe of ATMOS Research and Consulting. Other co-authors include Norman Miller and Larry Dale, both of Lawrence Berkeley National Laboratory.

The researchers studied two scenarios presented by the Intergovernmental Panel on Climate Change, an international organization formed by members of the United Nations and the World Meteorological Association. One scenario assumes a business-as-usual approach to the use of fossil fuels, while the other factors in lower emissions when switching to alternative energy and more fuel-efficient technology.

The researchers chose to focus on California because of its diverse climate and limited water supply.

Under the study's lower emissions scenario, summer temperatures in California will rise by 4 to 5 degrees Fahrenheit by the end of the century. If nothing is done to curb our use of fossil fuels, summer temperatures will rise a dramatic 7.5 to 15 degrees Fahrenheit, according to the study.

Those figures are several degrees higher than previous models had predicted, particularly in the summer months. Statewide, the length of the heatwave season extends from an average of 115 days in a year currently to a range of 178 to 204 days by the end of the century if fossil fuel use isn't curbed, compared to 149 to 162 days in the relatively lower emission scenario, the study says.

This rise in temperature corresponds to a projected increase in heat-related mortality in Los Angeles, according to the study. The region now averages 165 heat-related deaths per year, but that would increase two- to three-fold if emissions are controlled, or a stunning five- to seven-fold if emissions are left unchecked.

The researchers also find that hotter weather triggers reductions in the Sierra Nevada Mountains snowpack, which feeds into California's streams and reservoirs. By mid-century, the snowpack decline translates into a loss of 2.6 to 4 million acre-feet of water storage. By the end of the century, the snowpack could decline by as much as 30 to 90 percent, depending upon whether emissions are controlled, the study finds.

"The models show that even if we take action now to reduce emissions, we will still face serious stresses to water supply in California," said Hanemann. "Increases in temperature decrease water availability while increasing demand. It will no longer just be a battle among the farming industry, the environmental groups, and the cities, but those within each interest group will be competing with each other for water."

Hanemann said the change in water availability sets up a conflict between those who retain rights to summer streamflow, projected to decrease by 40 to 50 percent, and those who obtain water from storage in reservoirs operated by water projects.

"In many parts of California, water rights have not been formally quantified," said Hanemann. "We need to start clarifying water rights now in preparation for the coming shortage."

The climate models used for this study improve upon previous ones because they factor in the effects of land-surface and air temperature interaction, said Hanemann. 📧

—Sarah Yang

NEW SURVEY OF OBESE WOMEN FINDS MANY STARTED DIETING BEFORE AGE 14



A CNR-led survey of women defined as clinically obese shows that nearly two-thirds of them went on their first diet before age 14 and, as adults, were more likely to have higher body mass indexes than women who started dieting after age 14.

The survey, published in this month's issue of the *Journal of the American Dietetic Association*, also found that those who started dieting before age 14 were more than twice as likely to have dieted more than 20 times when compared with women who began dieting later in life.

Respondents said they tried a range of dieting techniques, from hypnosis to low-calorie diets to commercial weight loss programs, in their lifelong attempts to lose weight. Some women surveyed were even prescribed amphetamines, a common treatment for weight loss in the 1960s and early 1970s.

"These findings should counter the popular myth that fat people are lazy gluttons, and that they've never made an effort to manage their weight," said **Joanne Ikeda**, co-director of the College's Center for Weight and Health and lead author of the study.

She added that there is "growing evidence that repeated dieting adversely affects the body's metabolism, and that dieting before puberty disrupts the body's normal development."



The Center for Weight and Health leadership team (from left to right): Professor Sharon Fleming, Extension Specialist Joanne Ikeda, Extension Specialist Patricia Crawford, and Gail Woodward-Lopez

Ikeda, a Cooperative Extension specialist in nutrition education, collected the survey data over a period of nine months during 2000-2001. The 149 respondents were attendees at two annual conferences for large women, participants from a prior research study of large women, or participants in Internet discussions among large women. All respondents had a body mass index (BMI) of 30 or higher—the clinical definition of obesity—with a mean BMI of 46.

When asked about their ability to maintain weight loss, 77 percent of the respondents said they were not able to maintain any weight loss, 13 percent reported maintaining a 5- to 20- pound weight loss, and 9 percent said they maintained a weight loss of 21 pounds or more.

Among those who began dieting before age 14, 84 percent said they weren't able to maintain any permanent weight loss. This compares with 67 percent of those who started dieting at age 14 or later.

Ikeda said the survey results are particularly troubling, as other studies have shown that dieting during adolescence results in weight gain, not weight loss.

"There's a myth out there that calorie restriction on the whole is a positive way to lose weight," said Ikeda. "But studies have found that high school girls who said they were dieting were at greater risk for becoming obese three years later."

Several respondents in her survey said they were not significantly overweight when they started dieting as young teens. "My concern is that there is a subsample of the population that is particularly vulnerable to the negative effects of yo-yo dieting," said Ikeda. "Many women in the study said they wished they had never started dieting in the first place."

Ikeda cautions that her survey was not a randomized sampling of obese women in the United States and that this limits her ability to generalize the findings. In addition, there was no compar-

ison group of women with BMIs of less than 30.

Nevertheless, the survey provides some key insights into the dieting experiences of a significant number of obese women, said Ikeda.

"I suggest that dietitians and obese women shift their focus from weight to metabolic fitness," said Ikeda. "They should look at ways to improve blood pressure and levels of glucose, insulin, and lipids rather than what the scale says."

Ikeda admits that her anti-dieting views on weight and health put her in the minority among nutrition and health professionals. "If people have already seriously tried to lose weight three times and regained that weight back all three times, I'd say stop dieting and live with the weight they've got," said Ikeda. "At some point, you've got to say, 'This is not working for me.' You need to find an alternative. Adopt a healthy lifestyle, and let the weight stabilize."

To help advise families with overweight children, Ikeda has developed a pamphlet that focuses on behavioral changes rather than on the child's weight. Guidelines include limiting television viewing time to less than two hours a day, encouraging kids to play actively at least 60 minutes a day, checking to see that they are eating five or more servings of fruits and vegetables each day, and limiting consumption of nutrient-poor junk food.

Co-authors of the study are Patricia Lyons of Connection Women's Health Consulting; Flavia Schwartzman of Cooperative Extension Alameda County and a visiting scholar at UC Berkeley at the time of the study; and **Rita Mitchell** of CNR's Department of Nutritional Sciences and Toxicology.

The survey was co-sponsored by the National Association to Advance Fat Acceptance.

Copies of the pamphlet, "If My Child is Overweight, What Should I Do About It?" are available by calling (800) 994-8849 or through the UC Agricultural and Natural Resources online catalog of publications at <http://anrcatalog.ucdavis.edu>. The product code is 21455, and the cost is \$3.00 per pamphlet. 📄

From left, UCD fisheries specialist Lisa Thompson, UC Associate President Linda Williams, Shasta County Cooperative Extension Director Larry Forero, Senior Vice President Bruce Darling, President Robert Dynes, Dean Paul Ludden.



DIALOGUE: Dean Paul Ludden *talks with* Robert Dynes, President *of the* University of California



Last year, Robert C. Dynes became the 18th president of the University of California system. A distinguished physicist with a long career at AT&T Bell Laboratories, Dynes joined UC San Diego in 1991 as a professor of physics and was appointed chancellor of UCSD in 1996.

During his first year at the helm of the 10-campus UC system, Dynes has been traveling the state to see first-hand the myriad ways that UC directly affects California's residents and communities. In October, Dean Paul Ludden accompanied President Dynes, Senior Vice President Bruce Darling, and Vice President Reg Gomes on a tour of Northern California. Ludden took that opportunity to have the following conversation with the president about the future of the University, the College, and Cooperative Extension.

Paul Ludden: President Dynes, you took the helm of UC just as we were taking massive budget cuts and making difficult decisions regarding admissions, services, and staffing. How do you view the University's position now?

Robert Dynes: I am much more optimistic—much more positive—about our budget position, and in fact the University's position, now compared with a year ago. Remember, a year ago we were in the middle of a recall [election], so we didn't know who our governor was going to be. It's been a long year. Now we know who our governor is and we've forged a productive relationship with him. We now have a compact that promises to bring an end to the state budget cuts of the last few years and provide some funding stability to allow us to plan for the future.

PL: As President, what are your goals for UC? What do you hope will be your legacy?

RD: I hope that I will be able to look back and see that we have a model for successfully building a more integrated University of California. By that, I mean we have a plan in place that recognizes and understands the needs of undergraduates, graduates, and professional schools, and where we respect that any decision we make affects every part of the system.

PL: In your plans for UC, what do you see as the role for the Division of Agriculture and Natural Resources, of which CNR is a component?

RD: I have this view, and in fact it is part of my goal, that we are in the position of redefining universities for



Integrated Hardwood Range Management Program Director Doug McCreary describes UC's work with Shasta County cattle rancher George McArthur to restore oak stands on grazing lands. From left, UC Associate President Linda Williams, President Robert Dynes, George McArthur, Senior Vice President Bruce Darling, Doug McCreary, and Dean Paul Ludden.

“I think the biggest challenges, or the biggest opportunities, are associated with educating the people in the state of California and the legislature about the value of the University’s agricultural programs.”

the 21st century. Many of [the University’s] traditional divisions, organizations, and departments are there for historical reasons, but we must integrate what we do in a way that is different from what has been in the past. People use the term “interdisciplinary,” but I truly mean that we should be looking at the state we serve and trying to construct our work so that we are better serving the state. . . . I think that fits into the agricultural programs of the University in a very real way. I think there are so many good things going on, in science and social science within the University, that can serve [the state’s] agricultural programs in a new way.

PL: Last week, you and I were up in Northern California visiting natural resource, agriculture, and forestry programs. What really struck your interest?

RD: Several things come to mind. I was enthralled by the visit. We were on the McArthur’s ranch, where I saw resource management in its finest form. This was in collaboration with the owner of the ranch, George McArthur. What I saw was fisheries management, soil management, oak woodland management—all in collaboration with the University of California in a way that really was remarkable. I saw [at Sierra Pacific Industries] a forestry management plan that was driven by quantitative scientists who were planning for the next hundred years of forestry management and yet increasing productivity of wood products. It was clearly, in my view, the best kind of science and service that we can do for the state.

PL: I was particularly pleased to see how well some of our graduates performed.

RD: Yes, it was incredible. This young woman, Cajun James, who was a UC San Diego undergraduate in mathematics and then went on to get a Ph.D. in the College of Natural Resources at UC Berkeley, brought this quantitative rigor from mathematics and combined it with her Ph.D. in natural resources. She is clearly a driving force in Sierra Pacific’s future.

PL: You have often mentioned that you want to see the University of California system move from R&D (Research and Development) to RD&D (Research, Development, and Delivery). Of course the folks in our Cooperative Extension feel that they invented that delivery component of your vision.

RD: They did. I re-invented that term, or invented it independently after 9/11, when I realized that there were many, many things that the University could do in science and technology to deliver to first responders. Then, as I began touring the state, and looking at various parts of the state, looking at the agricultural programs, I realized that some of the best technology transfer in the country was being engaged in the agriculture/natural resources programs here in the University of California.

PL: What role do you see for Cooperative Extension specialists and advisors in this vision of RD&D?

RD: They are the vehicle for the second “D”—delivery. They clearly are the “translucents,” the translators, in both directions, from the growers and our customers who are facing the problems. They bring those [real-world] problems to the campuses and deliver the solutions [back to the field]. They really are in the middle of it.

PL: Both you and I arrived at UC and had to implement enormous budget cuts that the state has imposed on Cooperative Extension. What do you see as the biggest challenge for Cooperative Extension in the future?

RD: I think the biggest challenges, or the biggest opportunities, are associated with educating the people in the state of California and the legislature about the value of the [University’s] agricultural programs. People somehow think that groceries grow at Ralph’s or at Vons. So when the budgets get tough, legislators just don’t understand what they are doing when they are cutting.

PL: President Dynes, I’m sure our alumni will appreciate hearing your views. Thank you for your time. 🚩

COOPERATIVE EXTENSION

CNR on the Front Line



Extension Specialist Maggie Kelly demonstrates the usefulness of GPS technology

Since its 1868 inception as the College of Agriculture, the College of Natural Resources has been driven by the mission to link the University of California's research capabilities to the practical needs of the community. For the past 91 years, that link has been Cooperative Extension.

"Cooperative Extension (CE) is the part of the College of Natural Resources that serves people directly—it's the College on the front line," said CE Specialist and Associate Dean for CNR's forestry program Richard Standiford.

"Cooperative Extension takes the results of academic research and adapts it to people's needs," said Standiford. "It directly interacts with a broad array of people—from legislators and policy makers, to industry and professional groups, landowners, and homeowners—all the people who can benefit from our work. Our research is dynamic and practical because of that ongoing working relationship."

A Legacy of Outreach

Even before the Agricultural Extension Service (AES) was officially inaugurated in 1913, outreach and education were integral to the University's College of Agriculture. As far back as 1875, when Eugene Hilgard began his long career as dean, fostering positive relationships with local citizens

was critical to creating the research agenda for the fledgling college. Hilgard focused his attention on solving questions of practical importance to farmers, not only to further the university's role in assisting industrial development throughout California, but also to increase popular support for his institution.

Hilgard employed many tools of outreach and education still used by Extension today. As an administrator he was part entrepreneur, part publicist, and always politically astute. He met with groups of farmers all over the state to determine their most pressing issues, and their needs influenced the College's research agenda. He published practical reports that were distributed throughout the state, on the East Coast, and in Europe. He fostered the growth of Farmers' Institutes—educational conferences for rural residents sponsored by the University and local communities. By 1903, there were 113 institutes covering 41 of the state's 57 counties.

Right: Taking water samples below an upgraded stream crossing

Far right: What an upgraded stream crossing and road should look like after treatment



Early 20th century boys' and girls' agricultural clubs were forerunners for today's 4H clubs.

Birth of the Agricultural Extension Service

After Edward J. Wickson took over the helm of the College of Agriculture upon Hilgard's 1905 retirement, establishing the Agricultural Extension Service (AES) was a natural progression. This new service brought the University's research knowledge directly into rural areas by posting farm advisors in each county.

Wickson and the newly hired Extension director, B.H. Crocheron, were one year ahead of the rest of nation – in 1914 President Woodrow Wilson signed the Smith-Lever Act, which enabled all states to employ “county agents.” Their salaries were paid jointly by federal and state government, with local expenses covered by the counties in which they worked—hence the name “Cooperative” Extension.

Crocheron set the agenda for the new program. He contacted counties, spoke to local farmers, and organized “farm bureaus” to work with the county advisors. Rather than relying on the Grange, the already-established fraternal network in rural California that came with its own political agenda, he chose to develop new, stable, and non-controversial groups with whom to collaborate. He focused on progressive local opinion leaders to spearhead the farm bureaus. They, in turn, could influence other farmers to adopt new practices.

A “Ministers’ Week” was one of Crocheron’s successful innovations. In December of 1913, just six months into his term, he organized a conclave that attracted more than 700 clergy from rural communities all over the state to the University Farm at Davis for three days of lectures, discussions, and cultural exchange. The idea was to promote educational discussion of rural farm problems through the local clergy. Always with an eye toward the future, AES farm advisors began to oversee boys’ and girls’ agricultural clubs in 1914 in California schools. These forerunners of the 4-H clubs encouraged their young members to enter crop-growing contests, charting their costs, production, and sales. The winners were awarded trips to visit the College of Agriculture at Berkeley or the University Farm at Davis. From 1914 through 1916,

Who's Who in Cooperative Extension

All professors within the College hold agricultural experiment station positions and receive partial funding from the University of California-wide Division of Agriculture and Natural Resources. In addition, the College employs 21 Cooperative Extension specialists within our four departments to meet specific research and educational needs.

Agricultural & Resource Economics

Howard Rosenberg

Agricultural labor management

David Sunding

Water policy; environmental and natural resource economics, wetlands, endangered species

David Zilberman

Biotechnology/economics; intellectual property rights

Alix Zwane

International trade and the environment

Environmental Science, Policy, and Management

Kent Daane

Biological control

Matteo Garbelotto

Sudden oak death, forest pathology

Christina Getz

Natural-resource-dependent workers and communities

Richard Harris

Forestry; Native American natural resource management; riparian ecology

Nina Maggi Kelly

Monitoring environmental change; spatial analysis; GIS

Vernard Lewis

Biology and management of household insect pests

Doug McCreary

Oak regeneration
Riparian restoration; agroforestry

Adina Merenlender

Conservation biology and landscape ecology; watershed science and ecological monitoring

Max M. Moritz

Fire ecology and management; spatial analysis; GIS

Gary Nakamura

Forestry/soils; silviculture

Thomas Scott

Natural resources and wildlife urban interface

Rick Standiford

Forestry; resource economics; silviculture

William Tietje

Oak woodland ecology; human impact on wildlife

Robert Van Steenwyk

Pest management of deciduous fruit, nut, and vine crops

Nutritional Science

Patricia Crawford

Childhood obesity; osteoporosis prevention; child malnutrition

Joanne Ikeda

Weight and health education; diet product claims

Plant & Microbial Biology

Peggy Lemaux

Biotechnology education; genetic engineering of cereals



The tremendous growth of Extension in the early part of the 20th century had an enormous positive impact on rural communities throughout the state.



Crocheron organized transcontinental railroad tours for the top 20 statewide boys' club winners. The month-long trips included tours of several different farming areas of the nation as well as a visit to Washington, D.C. The trips opened the eyes of the young farmers to the world beyond their home state.

Today, 4-H is run through county Cooperative Extension offices, the UC System, the United States Department of Agriculture (USDA), and a variety of volunteer councils and foundations at the county, state, and national levels. Its mission is to engage youth in reaching their fullest potential.

A New Agenda

The advent of World War I and the passage of the national Emergency Food Production Act helped Extension programs grow throughout the nation. By 1914, 39 of California's then 58 counties had opened Extension offices, compared to only 19 prior to the start of the War. Extension hired home agents to teach food preservation techniques and food substitution strategies, encourage home gardens, and help start small-scale poultry flocks through monthly demonstration meetings. Local farm bureaus banded together as the California Farm Bureau Federation (CFBF)—part of a national movement—to take advantage of group purchasing power and to monitor legislation.



Patricia Crawford, Extension specialist and co-director of the Center for Weight and Health, delivers the center's research findings on obesity.

Leading Through Cooperation: The Center for Weight and Health

In its first five years, CNR's Center for Weight and Health has emerged as a national leader in the prevention of obesity in children and adults—precisely because it draws on Cooperative Extension's unique ability to foster community empowerment.

"We view ourselves as a community center without walls—anyone with an interest in addressing issues related to body weight can work with the Center on relevant projects, regardless of their department, campus,

institution, or county," said co-director Sharon Fleming, a professor in the Department of Nutritional Science and Toxicology. They may be academics at a university or government institution, administrators within institutes or programs, or residents who deliver programs at the local level."

"We encourage communities to learn about the problems they are facing, and let them decide how they want to respond," added Cooperative Extension Nutrition Education Specialist Joanne Ikeda, co-director of the Center. "We've found that if a group decides what changes to make, these changes will be permanent,"

One of the ways that the Center for Weight and Health accomplishes this is through an educational kit that guides local participants through a planning process, using five initial meetings. The kit, which is now used nationally, contains agendas, videotapes, activities, and a decision-making process. By the end of the five sessions, the group has evolved into a coalition that has determined the most effective and immediate ways to address childhood obesity in their communities.

"Some communities work with the school districts to replace the contents of school vending machines; others build sidewalks and install playground equipment in parks to encourage more exercise. Currently we have 22 coalitions in California, and Michigan just picked up our program, adapting it to their own needs," Ikeda explained.

The success of the Center for Weight and Health is closely tied to its Extension roots. "Cooperative Extension offers a statewide communication network," said CE Nutritional Specialist Patricia Crawford. "This system allows us to take advantage of infrastructure, expertise, and opportunities at all levels—federal, state, and local."

One example is a new nutrition workgroup, chaired by Crawford in cooperation with the CE advisors throughout the state, which explores the relationship between food shortage and obesity. "It's counterintuitive to think that people who have too little food are the heaviest, but we have found that lack of income often leads to erratic food consumption," explained Crawford.

"We just got an Economic Research Service (ERS) grant to do ground-breaking research on the differences between low-income women who didn't have enough food when they were growing up and those who did, and how they parent their children with regard to food. It could change how we educate parents about nutrition," she said.

"The advisors are excited about this research because it has enormous potential import to the communities they serve," said Crawford. "People throughout the state are collecting data. Without this kind of active partnership, projects such as these simply could not be done."

—Susan Piper

California Alumni Foresters (CAF) Dean's Tour hosted by forestry alumnus and CAF President Andy Juska of Collins Pine Company



Even though it was separate from Extension and the College of Agriculture, the CFBF kept close ties to Extension, maintaining its headquarters on the Berkeley campus for nearly 20 years.

Throughout the 1920s Extension expanded its work beyond just the transmission of information about ways to improve farm productivity; it began to develop social connections and foster leadership among rural residents. As participants grew to know each other at the monthly meetings, they began to build effective coalitions for change. Community-based work during this decade included the organization of rural fire protection districts; large-scale rodent control campaigns; cooperative construction of farm septic systems; home demonstrations in first aid, family nutrition, and healthy child development; landscaping around schools and homes; local economic outlook meetings; and businessmen's tours of rural areas. Much of this work was driven by funding sources—primarily the federal and state government.

These efforts helped broaden the scope of Extension's work. Home demonstration activities brought together overworked farm women and expanded their horizons. Likewise, the 4-H clubs opened up new opportunities and aspirations to thousands of young boys and girls in rural California. Crocheron, who was known for his detailed record keeping, reported that in 1926, farm and home advisors were making more than half a million contacts each year, a statistic that documents the enormous positive impact Extension had on rural communities during this period.

With the passage of the Federal Soil Conservation and Domestic Allotment Act in 1936, Extension was given the responsibility of organizing communities within each county to plan for optimal uses for local land. This continued until the early 1940s, when the program was discontinued.

Expanding Extension's Reach

By the time the United States entered World War II, the organizing capability of the country's Extension Services was well recognized. In California, Extension recruited 20,000 men for reserve duty. Farm advisors helped farmers expand production with reduced resources, and set up tractor "cooperatives" to share machinery. Engineering specialists offered repair clinics for irreplaceable older equipment. As part of emergency preparedness efforts, they worked with rural communities to strengthen fire protection in case incendiary bombs ignited California's dry vegetation during the fire season; they distributed "black out" instructions to keep dairy barns and other rural facilities from serving as beacons for enemy planes. More significantly, their work was no longer limited to the state's rural communities. Extension broadened its scope to include urban areas by organizing "victory garden" programs throughout the state, and conducted home demonstrations on food preservation and other ways to conserve materials needed for the war effort.

Reorganization and Growth

Crocheron died in 1949, just before he was to retire. J. Earl Coke was named the second director of Cooperative Extension. Coke, a former Extension specialist and graduate of the College of Agriculture, decentralized the organization and delegated more responsibility to the local leadership. He expanded the focus of Extension to include education for low-income families about health, nutrition, home management, and child care.

CE staff more than doubled between 1945 and 1955—from 269 to 549—as many specialists were recruited to address issues such as range management, ornamental horticulture, vegetable crops, marketing, and youth counseling. In 1955, "special needs" funds, newly designated by the Secretary of Agriculture under the Smith-



Statewide Special Programs

Agricultural Issues Center Analyzes issues important to California and western agriculture and conducts applied research.

California 4-H Youth Development Program Each year, helps more than 100,000 young Californians become responsible adults through an experiential education model of exploring, doing, and receiving feedback.

Center for Occupational and Environmental Health (COEH) Serves government, industry, schools, health professionals, and the general public through interdisciplinary programs designed to prevent injuries and disease in the workplace and to solve critical health problems in our communities.

Center for Water Resources Engages the resources of the University of California with other institutions in the state to develop ecologically sound and economically efficient water management policies and programs in California.

Expanded Food and Nutrition Educational Program (EFNEP) Teaches low-income families, particularly those with young children, to make the most of their food resources and meet their nutritional needs.

Farm Safety Program Promotes agricultural health and safety education and awareness in the workplace.

Genetic Resources Conservation Program (GRCP) Supports the identification, procurement, and conservation of animal, microbial, and plant genetic resources critical to California, and provides public education on genetic resources conservation.

Giannini Foundation of Agricultural Economics Supports library and research activities in agricultural economics at the University of California.

Integrated Hardwood Range Management Program Dedicated to the conservation of California's 10 million acres of oak woodlands.

Kearney Foundation of Soil Science An endowment-supported program that funds research and sponsors outreach activities dedicated to soil quality in California.

Mosquito Research Program Funds and coordinates research and education on mosquito-borne diseases and environmentally safe methods to improve mosquito control.

Office of Pesticide Information and Coordination Coordinates and reviews Agriculture and Natural Resource (ANR) activities pertaining to pesticide research, experimentation, and use.

Renewable Resources Extension Act Program Addresses educational needs pertaining to managing the nation's renewable resources.

Sea Grant Extension Program The California branch of a national effort that supports advanced research on vital marine issues.

Small Farm Center Provides production and marketing information to farmers not reached by traditional Extension programs.

Statewide Integrated Pest Management (IPM) Project Develops and promotes the use of integrated and ecologically sound pest management programs in California.

Sustainable Agricultural Research and Education Program Integrates environmental health, economic profitability, and social and economic equity.

Urban Garden Provides research-based education, information, and technical assistance on small-scale community agriculture projects such as container, home, and community gardens.

Lever Act, expanded the service's work with migrant families in Kings and Fresno counties.

The following year, George B. Alcorn took over the directorship of Extension. In his 19 years at the helm, Alcorn focused on improved farm management and business practices. He stressed efficiency and market expansion, and promulgated information on public policies relating to agriculture, taxation, zoning, and other governmental regulations. In the post-war environment, as the number of commercial farmers declined, Alcorn encouraged working relationships with processors, shippers, suppliers, and other sectors of agribusiness that could benefit from Extension's training opportunities and analysis of their business operations.

A National View

Even as California's Extension was casting a wider net throughout the state, a national Extension Committee on Organization and Policy (ECOP) began to take a serious look at the role of the nation's Extension programs. In response, in 1958 ECOP produced a "Statement of Scope and Responsibility"—popularly called "The Scope Report." The Scope Report recommended that Extension expand its vision and shift program priorities and methods to meet new societal needs.

By 1960, the age of the generalists was replaced by the Cooperative Extension Specialists. CE's more than 500-person academic staff included specialists in apiculture,



Top left: The University of California 4-H Youth Development Program engages youth in reaching their fullest potential while advancing the field of youth development.

Top right: These outplanted oak seedlings were planted at the Sierra Foothill Research and Extension Center as part of regeneration research by the Integrated Hardwood Range Management Program.

Above: Postdoc Jaswinder Singh shows off Extension Specialist Peggy Lemaux's display on plant diversity at Cal Day.

biometrics, climatology, crop processing, dairy products, soil and water salinity, forest products, nematology, parasitology, enology, pesticide safety, consumer marketing, wildlife management, and public affairs.

The late 1960s and 1970s saw Extension expand its presence in nonfarm, nonrural venues. Funding from the Expanded Federal Nutrition Education Program (EFNEP) launched Extension's first big step toward meeting the needs of urban minorities and other disadvantaged adults. By the late 1980s, Extension's urban program focused on three areas: EFNEP provided nutritional education to 100,000 low-income homemakers in 17 counties during its first 10 years; a youth EFNEP program put youth advisors in most urban counties and expanded the 4-H program into the inner city; and the Urban Horticulture program served landscapers and gardeners in metropolitan areas, with programs for both commercial and home ornamental horticulture. It was during

this time that the Master Gardener programs were established, and Extension took advantage of mass media to educate the public on drought-tolerant plantings and pest management for home gardens.

A marine advisory program for the commercial seafood industry began in 1972, and the following year, a statewide seafood-technology specialist was appointed. Marine advisors—"farm advisors in hip boots"—were later assigned to serve most of California's coastal counties.

In 1977 Cooperative Extension launched the nation's first CE program in farm personnel management. California's Extension again took the lead in 1990 when it appointed the nation's first biotechnology specialist—CE Specialist Peggy Lemaux, based here at the College of Natural Resources.

Right: Extension Specialist Peggy Lemaux's display on food genetics
Far right: Lemaux visits a local farm



GMOs: Sorting Science from Controversy

Genetically modified and genetically engineered organisms have long generated opposition, and the anti-GMO movement is still active today. The College of Natural Resources encountered this controversy back in 1983, when Professor Steven Lindow attempted to do a field trial of "ice-minus" bacteria—organisms that had been genetically engineered to protect plants from frost damage.

"The attempt to spray the bacteria on potato seedlings at the University's Tule Lake field station generated conflict that caused Lindow to spend almost three years explaining his project to concerned citizens, and diverted his time from important research," said Peggy Lemaux, who in 1990 became the first CE Specialist in the nation to focus on outreach about genetically engineered plants and foods.

"I was hired because the University felt they needed someone dedicated to addressing the community's questions and concerns," said Lemaux. "My role is to talk about the science of GMOs. I don't take a position for or against anti-GMO ordinances. I am pro-science—I want to make sure the scientific facts are part of the debate, and then people can make up their own minds," she said.

At first, Lemaux found it hard to get people interested in GMOs, which were not yet in the public dialogue. But by the late 1990s, concerns over Monarch butterflies and Starlink corn brought the issue to a head. Lemaux responded by translating technical information about genetic engineering into language an average consumer could comprehend.

Most recently, she was in Mendocino County, where in February residents approved a ban on the growth and propagation of genetically engineered plants and animals. With four more counties voting on similar ordinances this November and an additional six or seven considering legislation, Lemaux has a busy schedule traveling around the state.

Lemaux developed an informational Web site (www.ucbiotech.org) with more than 100 questions on foods, agriculture, and GMOs that she's heard over the years as a CE Specialist. The answers are linked to scientific literature. She travels throughout California, visiting county fairs, teacher meetings, and other venues to provide fact-based information. "We even participated in an educational forum for third graders in El Dorado County. To catch their attention we put our messages on colorful, fact-filled baseball cards. Where ever I go, I try to use plain language and lots of visuals so people can get enough information to make informed decisions."

"I wouldn't be able to do this job if I were not in Cooperative Extension," said Lemaux. "I rely on my connections with county CE advisors, who already have personal connections with their communities. Because they know who I am, it works the way it is supposed to work. They give me feedback to tailor my outreach to their communities and then they tell me when I succeed and when I fail."

—Susan Piper

Educational program on oak woodlands, featuring research by Professor Baldocchi and the Integrated Hardwood Range Management Program



A Multidisciplinary Approach to Outreach

Towards the end of the last century, the University began to implement a multidisciplinary approach to research and education. Advisors, specialists, and faculty from various academic disciplines cross-pollinated their expertise, allowing the College to solve priority problems in the management of California agriculture, natural resources, and human development. Today, Extension experts and faculty from throughout the UC system and the state work collaboratively at wide array of multidisciplinary centers based at Berkeley, Davis, and Riverside.

Berkeley's College of Natural Resources employs 21 Cooperative Extension scholars, most as full-time CE specialists (a full listing appears on page 9). CE specialists are members of the UC academic community. They oversee locally-based research and outreach and are often the direct link with communities; they work collaboratively with county advisors, and serve as liaisons between the advisors and campus-based faculty.



Professor and Extension Specialist David Zilberman with the Behrs Environmental Leadership Program participants

Challenges Ahead

Funding the work of Extension has always been a balancing act between need and resources. The last 30 years have been particularly grueling for Cooperative Extension. Deep budget cuts in 1967 by Governor Ronald Reagan reduced Extension's support by more than 10 percent and forced 22 staff members to retire early. Proposition 13 in 1978 further reduced CE's resources, necessitating fees for publications, conferences, and services. In response, Cooperative Extension developed a private funding program through gifts and grants. The ensuing years brought cycles of increases and cuts to CE's budget, depending on the economy and budget priorities at both the federal and state level.

Funding continues to be a challenge in today's flagging economic environment. "Budget issues have been severe during the last two years," noted Standiford. "We have faced unprecedented cuts—almost 25 percent of our base budget, which makes it much more difficult to be flexible and to respond to needs around the state. We are much more dependent on grants and private support to fulfill the mission of Extension."

Funding for Cooperative Extension comes from four main sources. The State of California receives a lump sum annually from the USDA, which constitutes about 10 percent of CE's budget. When the state budget for UC is passed, CE's funding for that year is set. County budgets provide staff, office space, transportation, and other support for CE advisors. Some counties are able to significantly sustain their CE advisors even during lean times; others are barely able to provide part-time administrative support, an office, and a phone. The ongoing budget crunch forces some CE scholars—whether advisors or specialists—to seek extramural funding.

“With the loss of state funding in recent years, I have had to modify some of what I do to fit with the sources of funding I receive. In the long run, this has huge implications for Cooperative Extension because, without state funding, some programs could lose their local focus,” explained CE biotechnology specialist Peggy Lemaux, who provides information on biotechnology to a variety of audiences.

Lemaux is resourceful and takes seriously her outreach and educational mandate. “I put together a variety of tools, from slide shows and exhibits to hand-outs and an award winning Web site that explains biotechnology in plain English.” She created baseball cards with information on biotechnology for school children and sent her “DNA for Dinner” exhibit to the California State Fair.

For Mendocino County CE forest advisor Greg Guisti, funding is less of a concern. “I get support for my efforts on a project-by project basis, but I don’t rely on those projects to fund my core mission,” he explained. Rather, his challenge is to ensure that he can provide information to all the players in any particular debate “...and that I am perceived by those players as an objective source of information that can advance the particular project they are involved with. I work very hard at this. Establishing a good working relationship with both sides is important. I spend a lot of time making sure that I am accessible and that people know that if they are hearing something from me, the other person will hear the same thing. “Most of all,” continued Guisti, a 19-year veteran of Cooperative Extension, “we are the public service component of the University. We are the face of UC in local communities. I take that very seriously. I am proud to represent a premier university in this capacity.”



Left: Adjunct Professor and Extension Specialist Matteo Garbelotto presents with UC Davis colleague Associate Professor David Rizzo
Right: Sudden Oak Death when left untreated

Practical Wisdom

CE leads the search for an end to the Sudden Oak Death epidemic

Frequently, a major scientific breakthrough is a matter of the right person being in the right place at the right time. In the recent high-profile case of Sudden Oak Death, Assistant Cooperative Extension Specialist Matteo Garbelotto was in just such a position.

One of Garbelotto’s areas of expertise is the study of introduced microorganisms in forest ecosystems, and Garbelotto, along with his colleague Dave Rizzo of UC Davis, first identified the pathogen causing Sudden Oak Death in 2000. The microbe was assumed to be limited to cankers in the Bay Area’s tanoak population, but it soon became apparent that it could be found in the bark, leaves, stems, and needles of understory plants of California’s oak forests, in bay trees of Oregon, and more alarmingly, in timber-producing redwoods and Douglas-firs. The disease was spreading fast and posed a threat to hundreds of thousands of people who were dependent on these trees for their livelihoods.

“Typically, you go into a forest, locate a suspicious plant, and try to culture the pathogen to confirm its presence. But we had too many sources and not enough time. We needed a tool that would allow us to culture from a variety of hosts, and much earlier in the disease process, before the canker even appeared,” explained Garbelotto. “DNA analysis, which was routine in the lab but new to the field, was quick and allowed us to identify the pathogen early in the disease, regardless of the source. The earlier we could detect its presence, the better able we would be to control its spread.”

Just last year, the federal government recognized the DNA analytic process developed by Garbelotto’s CE program as the official tool for identifying the pathogen that causes Sudden Oak Death. In the four years since Garbelotto and Rizzo announced that *Phytophthora ramorum* was the culprit behind Sudden Oak Death, he and his team have found ways to treat the disease.

“The discovery of the pathogen, and the search for a treatment — because it mattered to the people who depend on these plants for their livelihood — was a perfect example of how Cooperative Extension is supposed to work. For me, the satisfaction is not in making a scientific discovery, but in feeling that I did something important that will have great impact on people’s lives.”

—Susan Piper

Guisti added that he has seen a marked change in the focus of Cooperative Extension since he first started in 1985. “Back then, the more senior advisors were doing fertilizer trials and tree growth plots, and still focusing on products that would produce fiber or wood over time. I don’t know anyone in CE today who is focusing on fiber production. In forest management today we are working on fish and wildlife, watershed, community stability, sustainability, and forest certification. Even at the basic research level, people are looking at the impacts of forest management on global warming and nutrient cycling.

“In hindsight, it speaks well for UC that it allowed itself to evolve in a progressive fashion, said Guisti. “As new professors and new faculty members are hired on campus and into Extension, we aren’t looking at staying within a comfort zone. We’re looking for people who are willing to push the envelope and hunt for ways to provide new information on how to manage native forests or any natural resource.”



Left: California brushland fire

Right: Controlled burn study site at the Blodgett Forest Research Station

Wildfire Management: A New Application for Web-based GIS

When the College of Natural Resources appointed Max Moritz as the country’s first CE wildfire specialist in January of this year, the topic of fire in the urban-wildland interface moved front and center. It’s no wonder CNR is leading the charge—when the 1991 Oakland hills firestorm that killed 25 people and destroyed 3,000 homes nipped at the borders of campus, wildfire was a real threat to UC Berkeley.

Working closely with CE specialist Maggi Kelly, co-director of CNR’s Center for the Assessment and Monitoring of Forest and Environmental Resources (CAMFER), Moritz hopes to use geographic information systems (GIS) to provide statewide tracking of fire resources. GIS is a mapping system that shows the spatial relationship between entities on the surface of the earth. While GIS has recently found more mainstream applications (you use it when you log onto MapQuest,

for example), it is also a data storage tool that has tremendous analytical power for scientific research. In 2001, Kelly linked GIS with the internet in an effort to educate the public about Sudden Oak Death. She calls the tool she and her students developed the “OakMapper” (<http://kellylab.berkeley.edu/OakMapper/viewer.htm>). Building on the OakMapper’s success, Moritz and Kelly plan to develop similar Web-based GIS technology on fighting wildfires.

“Now, GIS is not just a scientific tool, but a management and outreach mechanism as well. OakMapper was the first time we used the internet to convey information to the public, and to solicit information back from them,” explained Kelly.

“Our goal,” added Moritz, “is to provide the public with the data they need before, during, and after a wildfire—topography, vegetation, fire history, access routes, structure characteristics, and water resources, to start with. All different communities have varying needs. We want to build a generic infrastructure that will provide a

lot of data, which individual communities can then tailor to their needs.

“Imagine if fire personnel could access real-time, GIS-based data about the conditions, structures, and available fire-fighting resources in the midst of a wildfire,” Moritz continued. “Or if those managing our landscapes after a fire could tap into the latest science-based knowledge on ecologically-sensitive restoration activities. City planners could use the data to avoid building in the wrong places and in the wrong ways. It could make such a difference in saving lives and developing in a sustainable way.”

Applying the University’s vast scientific expertise to the real-life needs of communities at risk of wildfire fits the mission of Cooperative Extension perfectly. “A huge part of our job,” said Moritz, “is trying to synthesize information and get the science into the hands of those making front-line decisions.”

—Susan Piper



Although budget challenges remain, the innovation, creativity, and entrepreneurial spirit that have remained a part of Cooperative Extension's culture have allowed it to serve all Californians by delivering the results of cutting-edge research directly to the community for application in every-day life. Our scientists study nutrition and educate the public about eating wisely; they study and help protect vast wildlands; they offer new ways to conserve natural resources and advise landowners who are managing much of California's open spaces; and they search for solutions to new problems. Science-based knowledge is vital to making intelligent decisions about the state's natural resources, and Cooperative Extension is a critical link in this educational process. While the challenges Californians face may be different, Cooperative Extension continues to represent the College of Natural Resources on the front line. 🇺🇸

—Susan Piper



Top left: Training at the Jackson Demonstration Forest

Top middle: Bloodgett Forest Open House

Top right: Redwood symposium in Sonoma County sponsored by the Center for Forestry

Above: Professor Miguel Altieri presents at Urban Agricultural Field Day

Cooperative Extension: A Brief Timeline

- 1913** Agricultural Extension Service is established. B.H. Cocheron begins his 35-year career as the first director of the new service.
- 1914** A joint funding agreement between federal, state, and county governments under Smith-Lever Act creates "Cooperative Extension."
- 1919** Emergency Food Production Act during World War I pumps funds into CE, doubling the number of California counties served.
- 1926** Woody Metcalf is named Extension forester at UC Berkeley, joining the first group of forest specialists in the nation to be appointed.
- 1935** The federal Bankhead-Jones Act allows Extension services to expand, growing to farm advisors in 42 of 58 California counties.
- 1942** In response to wartime needs, Extension recruits 20,000 men for reserve duty and helps farmers increase production despite reduced resources.
- 1949** Under J. Earl Coke's leadership, Extension is decentralized. An education component is added to teach low-income families about health, nutrition, home management, and child care.
- 1956** George B. Alcorn begins his 19-year tenure as CE director. Extension reaches beyond farmers to processors, shippers, and suppliers; Alcorn refocuses the program on farm efficiency and management and agricultural public policy.
- 1958** The national "Scope Report" recommends a broader vision, shifting program priorities and methods to meet new societal needs.
- 1960** Extension reorganizes. CE specialists conduct more applied research and reach out to wider audiences.
- 1967** Budget cuts by Governor Ronald Reagan reduce Extension support by more than 10 percent.
- 1969** EFNEP mandates outreach to urban minorities and other disadvantaged adults.
- 1972** Extension begins a marine advisory program for the commercial seafood industry.
- 1977** California establishes the nation's first Extension program in farm personnel management.
- 1978** Proposition 13 further reduces Extension's funding resources; Extension develops an endowment for grants and gifts.
- 1986** Integrated Hardwood Range Management Program launches the era of multidisciplinary programs.
- 1990** Berkeley appoints the nation's first biotechnology Extension specialist.
- 2000** The CE team of Matteo Garbelotto (UCB) and Dave Rizzo (UCD) discover the organism responsible for Sudden Oak Death. Early in the Sudden Oak Death epidemic, CE applies GIS to the internet, creating a new management and outreach tool.
- 2004** CNR appoints the nation's first CE specialist in Wildland Fire, Max M. Moritz.

Class and Field

It's clear that the "best kept secret on campus" is getting out.

CNR Celebrates a Year of Growth

The College of Natural Resources has much to celebrate. Freshman applications to CNR were up almost 31 percent this year, from 1,623 to 2,124, and our freshman class has increased to 368, up from 288 last year. Junior transfer applicant numbers also went up from 210 to 287, a 37 percent increase, with 70 new transfer students entering this fall, compared to 48 in fall 2003. Our freshman yield (the number of students accepting admission) was higher than for any other college on campus. The data is clear: interest in the College's undergraduate majors is on an upward swing.

Major popularity

Though the majority of incoming freshmen have yet to declare their majors, many who have already made up their minds have gravitated to one of the four most popular majors this year, choosing Nutritional Sciences, Molecular Environmental Biology, Microbial Biology, or Environmental Sciences. According to the results of a survey administered by the CNR Office of Instruction and Student Affairs at the freshman summer orientations, undeclared students are interested in CNR's broad array of majors, with Environmental Economics and Policy topping the list. Among the junior transfers, the four majors that saw the biggest increases were Conservation and Resource Studies, Microbial Biology, Nutritional Sciences, and Molecular Environmental Biology.

Our more traditional majors in forestry and natural resources still have room to grow. CNR hopes to increase the popularity of professionally-oriented majors, which serve students interested in "direct action" environmental improvement—restoration, ecosystem management, fire

hazard reduction, or graduate and professional school in natural resources—and which offer the opportunity to prepare for professional certification in forestry, range, and wildlife.

New offerings

Adding to the excitement of this academic year are two significant changes to the College's undergraduate programs. First, the Department of Nutritional Sciences and Toxicology is introducing a brand new major in Molecular Toxicology, which will focus on the hazardous and beneficial effects of natural and human-made toxic agents. Through exploration of everything from industrially produced environmental contaminants and designer drugs to food products and naturally occurring herbs, this field of study applies molecular and computational methods to better comprehend how these agents interact with living organisms, and what should be done to ensure human health and safety.


The second change is that the Environmental Economics and Policy (EEP) major will open up to students in the College of Letters and Science (L&S), allowing L&S students to combine interests in economics, policy, and the environment. The EEP major has also undergone significant revision, with major requirements streamlined, and breadth requirements satisfied by the L&S seven-course breadth guidelines. The major, and major advising, remains in CNR. Students in CNR will continue to be awarded a bachelor of science, while those in L&S will receive a bachelor of arts.

The EEP major lets students combine their concerns for the environment and human welfare with a firm foundation in economics and policy. It is excellent preparation for students who want to pursue careers in law, government, interna-



CNR's incoming freshman gather for lunch on Welcome Day.

tional development, public policy, academia, or business. International development, along with the environmental problems that are almost always involved, is a specialty of the major, though domestic issues are also a high priority. Students learn how to assess the ability of public policies to alter resource use and encourage protection of the environment, and to understand processes of international economic development and problems of world hunger and poverty.

As we improve our visibility on campus and beyond, reaching out to students who want to focus their studies or research on human welfare and the environment, the entire CNR community will benefit as the College makes a greater impact through our ongoing success. It's clear that the "best kept secret on campus" is getting out. 

—Monica Lin

Three CNR Scholars Win EPA Fellowships

Three graduate students from the College of Natural Resources have been selected for graduate fellowships from the U.S. Environmental Protection Agency (EPA). This year, through its Science to Achieve Results (STAR) program, the EPA awarded 126 graduate fellowships for masters and Ph.D. candidates in fields of study that relate to its mission. The EPA strives to promote leadership in the nation's environmental science, research, education, assessment, restoration, and preservation efforts. The STAR program supports promising students who are obtaining advanced degrees in the environmental sciences and who hope to pursue a career consistent with the EPA's objectives. UC Berkeley received six STAR awards in total, with three of them going to students from the College of Natural Resources. All of the

“I feel as though this research is only the beginning of a long and exciting adventure, not just for me, but for the future of rural Mexico.”



Elizabeth Havice (far right) with a family in Morelos, a community with high levels of outward migration

students from CNR represent the Department of Environmental Policy, Science, and Management. Award recipients include:

Jeff Lozier is examining host-plant and geographically based genetic population structuring of the mealy plum aphid and its parasitoid as a basis for improving the success of biological control. Lozier is a student in the Division of Insect Biology.

Sadie Ryan is creating a geographical information system (GIS) to project model simulations of management strategies for the Bovine Tuberculosis epidemic in African Buffalo. Ryan is also a student in the Division of Insect Biology.

Glenda Humiston is utilizing an extended-case-study approach to examine two existing farm policies for their potential effect on the U.S. agricultural sector and systems. Humiston is a student in the Division of Society and Environment.

The EPA STAR program was designed to ensure a steady stream of environmental specialists trained to meet the environmental challenges of the future. The College of Natural Resources is proud of its scholars who, once again, have confirmed CNR's vital role in creating tomorrow's environmental leaders. Congratulations to our CNR scholars who have been recognized for their hard work and academic achievements. 🇺🇸

—Steve Birndorf

Student Researcher Explores Mexican Migration Issues

Of all the joys of student life, carefree summers are likely the most enviable. But instead of lounging poolside, backpacking across Europe, or relaxing at home, for College of Natural Resources Ph.D. candidate Elizabeth Havice, the summer of 2004 was about much more than freedom from the academic rigors of the school year.

Thanks to fellowships from Cal's Human Rights Center and the National Science Foundation, as well as the help of Sin Fronteras, an organization supporting the rights of migrants, Havice was able to spend much of the summer traveling through Mexico to conduct her research. From urban Mexico City to tiny towns like Jomulquillo, she sought answers to tough questions about the causes and effects of Mexican emigration as it emerges in an increasingly integrated global economy.

Havice's quest for answers took her on a whirlwind trip beginning at the public meeting of the North American Free Trade Agreement's Commission for Environmental Cooperation, an organization founded to consider the environmental issues raised by NAFTA, and how those issues affect the individual citizens of Mexico. She wound down her trip with the director and star of the "mockumentary" *A Day Without Mexicans*, which explores the idea of a California without any of its citizens with Hispanic roots.

Along the way, Havice attempts to research all sides of the story of Mexican emigration, including public policy and the needs of the average small-town Mexican citizen. Among other things, Havice questions the economic viability of remittances—money sent to Mexico by former residents who are now living and working in the United States. In many communities, remittances

are used to provide public services such as bridges and community centers, relieving the government of that burden. While remittances offer rural development opportunities, she notes that they simultaneously create a dependence on outward migration.

Even while on a break from her many interviews and travels, Havice continued to make keen observations of the changes brought on by globalization, including those found on *ejidos*, which, until recently, were government-owned, peasant-operated land holdings. As part of Mexico's economic reforms of the late 1980s and early 1990s, *ejido* members now have the right to rent or mortgage the land that they have worked for generations. However, lacking the resources to make the land profitable, *ejido* members often opt for the short-term profits they can make by transferring their land to private interests. Not only does this leave rural community members without the ability to participate in the development of the land itself, but it also keeps them from participating in the country's economy.

Though her experience shed light on many of the aspects of migration, with every discovery came new questions. In the end, Havice recognizes the need to better understand the initial causes of migration, the impact it has on people and places, and what policies might best protect migrants and enable individuals to make decisions based on what is best for them and their families. “I feel as though this research is only the beginning of a long and exciting adventure, not just for me, but for the future of rural Mexico.”

To learn more about Havice's adventures in Mexico, read her online travel journal at www.berkeley.edu/news/students/2004/mexico.

—Sarah Wessell

Faculty and Specialists


NEW FACULTY: JUSTIN BRASHARES AND DAVID WINICKOFF

Justin Brashares



Justin Brashares has been appointed assistant professor of wildlife ecology, management and conservation in the Department of Environmental Science, Policy, and Management's Division of Ecosystem Sciences. He received a master's degree in wildlife ecology from the University of Wisconsin-Madison in 1997 and a Ph.D. in ecology and conservation biology from the University of British Columbia in 2001. He conducted postdoctoral research as a fellow in the Centre for Biodiversity Research at the University of British Columbia from 2001-2003, and as a National Science Foundation international fellow in the Department of Zoology at the University of Cambridge.

Since 1990, Brashares has studied the population, community, and behavioral ecology of mammals and birds in Africa, Australia, and North America. His research uses data from long-term counts of wildlife populations as well as information gained from the study of individually identified animals to advance the science and practice of conservation biology. His research currently focuses on the causes and consequences of bushmeat hunting in Africa, ecology and conservation of small populations in western North America, and inter- and intra-specific variation in ecology and behavior of African ungulates.

"The problems I try to tackle are multidisciplinary in nature," Brashares said. "It's exciting and a privilege to join a research community where such pursuits are encouraged and undertaken by so many outstanding minds." 

David Winickoff



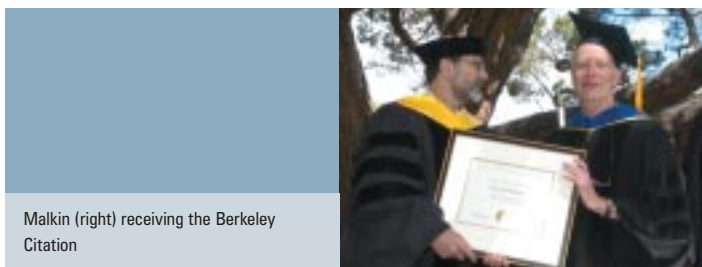
David Winickoff joins the Department of Environmental Science, Policy, and Management as assistant professor of bioethics and society. Winickoff's research focuses on the convergence of science and technology studies (STS) and law, especially in the areas of biotechnology, public health, and the environment. His work applies legal and STS analytic tools to socio-legal problems, and aims to develop solutions and models with policy relevance.

Winickoff's ongoing projects include a comparative study of genetics databanking practices across Iceland, the United States, and the United Kingdom, and an examination of the role of science in the formation of environmental regulatory policies at the World Trade Organization.

Winickoff holds a J.D. from Harvard Law School. He earned a B.A. summa cum laude from Yale University, and a second B.A. and an M.A. from Cambridge University as a Paul Mellon Fellow. While at Harvard Law School, he founded the Ethics, Law and Biotechnology Society, a student organization devoted to education and debate about important societal issues raised by genetics. He has worked at National Public Radio and World Resources Institute.

At Berkeley, Winickoff is excited to use research, teaching, and outreach to address core issues in bioethics and international trade politics. Hot topics include equal protection, privacy, property, human rights, individual versus group rights, regulation, due process, liberalism, and ethical and legal norms. "I relish the opportunity to join this great community of students and scholars, and the challenge of reaching across disciplines to engage the big resource issues of our time," he said.





Malkin (right) receiving the Berkeley Citation



CNR Awards. From left to right, CNR citation winner Professor Gordon Rausser, Young Faculty Award winner Steven Brenner, Dean Paul Ludden, and Staff Recognition Award winners Donna Symon and Mary Graham

Dick Malkin Wins Two Top Honors

Over the last several months, Professor **Richard Malkin** has been the recipient of two highly prestigious awards, the Berkeley Citation and the Charles F. Kettering Award.

In July, Professor Malkin received the Charles F. Kettering Award, presented every even year to an outstanding researcher for excellence in the field of photosynthesis. The recipient is selected by a committee of peers at the American Society of Plant Biologists. Malkin is an authority on the biophysical and biochemical aspects of photosynthesis. His research has been highly influential in advancing scientific understanding of how light energy is converted into a biologically useful form.

Additionally, Professor Malkin received the Berkeley Citation, one of the University's highest honors, at the College of Natural Resources May 23 commencement. The Citation, established in 1968, celebrates extraordinary achievement in the recipient's field, coupled with outstanding service to the Berkeley campus.

"Dick is a spectacular scientist and has been recognized as one of Berkeley's great teachers," said CNR Dean Paul Ludden, who presented the award.

In addition to his accomplishments as a researcher, Malkin has given back to the College and to the students of Berkeley. He received the College's Distinguished Teaching Award in 1999, and for more than 14 years he has been an instructor in Biology 1A. He also has taught upper-level and graduate courses in plant biochemistry. Malkin molded the Department of Plant Biology, and served as its first chair from 1988 to 1992. "He took faculty from four departments spanning two colleges and formed a cohesive unit that is now recognized as one of the best in the world," said Dean Ludden. Malkin was also the College's associate dean for academic affairs, and has twice served as interim Dean.

"Dick is a top-notch researcher and academic, and it is wonderful to see his work recognized," said Lew Feldman, associate dean of academic affairs. "This is a great honor for Dick and for the College."

Malkin received his bachelor's degree in chemistry from Antioch College in 1962 and earned his doctorate in biochemistry from UC Berkeley in 1967. He returned to Berkeley in 1969 after conducting postdoctoral research in Sweden, and became a faculty member in the College of Natural Resources in 1979. 🚩

—Steve Birndorf

College Recognizes Outstanding Faculty and Staff

On May 6, **Gordon Rausser**, professor of Agricultural and Resource Economics (ARE) and former dean of the College, received the CNR Citation at the inaugural CNR awards ceremony on the east lawn of Giannini Hall. The citation, now in its third year, honors an individual, couple, or group that has made important contributions to the College and its programs. It is the highest honor bestowed by the College.

"Gordon's service to the College has been demonstrated in all areas: teaching, research, outreach, administration, and fundraising. For his vision and dedication, he clearly deserves our highest recognition," said Dean Ludden, who presented the award. "Professor Rausser has had a profound impact on the College and has helped to chart the course we are on today." ARE Chair Tony Fisher, who led the nomination effort, noted praise from colleagues at Berkeley and around the world.

Dr. Rausser served as CNR dean from 1994-2000 and chaired his department, ARE, on two separate occasions. He has served as senior economist on the President's Council of Economic Advisors and subsequently as chief economist of the U.S. Agency for International Development.

Previous recipients of the CNR Citation are Cal alumnus **Dick Beharrs** and the late **Don Dahlsten**, professor of insect biology.

At the awards ceremony, other faculty and staff were honored as well. Assistant Professor **Steven Brenner** received the Young Faculty and Cooperative Extension Award. Dr. Brenner is internationally recognized for co-founding the rapidly growing field of structural genomics and the function of proteins. In his comments, Dr. Brenner thanked his colleagues, collaborators, and students.

Staff members **Mary Graham** and **Donna Symon** received the CNR Staff Awards. Graham has served the College in many different roles. She is currently the Human Resources Manager for the Department of Environmental Science, Policy, and Management and has been instrumental in the department's reorganization this past year. Symon serves as a student affairs officer for the College and has maintained a high degree of professionalism and service during her tenure at CNR. Both are Cal graduates.

Dean Ludden created the staff and young faculty awards this year to recognize the tremendous dedication and hard work that the College's employees put forth on a daily basis. "It is heartening to see such support and admiration within the CNR community," Ludden said of the ceremony and reception. Many friends and family members of the honorees attended the ceremony, along with CNR faculty, staff, and students. 🚩

—Steve Birndorf

“We think that research mentoring makes a vital contribution to academia by enabling and encouraging the intellectual contributions of the graduate student community.”

New Award Honors Two CNR Faculty Who Mentor Graduate Students

Asmet/Berke



Sally Fairfax (top row, fourth from left) celebrates with a group of students.

The annual Distinguished Teaching Awards, nearly half a century old, have become a Berkeley tradition. By contrast, this year's Distinguished Faculty Mentors Award, which were presented in May, marked the debut of this honor, designed specifically to highlight faculty members "who have shown an outstanding commitment to

mentoring, developing, and supporting graduate student researchers."

Nearly 200 grad students, postdocs, professors, and department chairs at Berkeley and other universities worldwide made nominations to the Graduate Assembly. The Award Selection Task Force found it challenging to winnow down the initial list of 38 nominees to settle on four winners ... so challenging that all 38 were honored at the ceremony.



Appreciative students pose with John Harte (top row, third from left).

The College of Natural Resources was especially well represented at this ceremony, as Sally Fairfax and John Harte, both professors in Environmental Science, Policy, and Management, were selected for this prestigious award. Dean Paul Ludden stated, "I think it is fantastic that two of our faculty were selected. It is a testament to their dedication to their students and to their research,

and the College is very proud of their respective achievements."

In addition to honoring faculty members who have contributed to their own academic development, the members of the Graduate Assembly who served on the task force also hope the award will "help shape merit and tenure review processes," according to Temina Madon, the Assembly's vice president for academic affairs. "We think that research mentoring makes a vital contribution to academia by enabling and encouraging the intellectual contributions of the graduate student community." 🚩

—Jonathan King

Melis Tapped for DOE Research Award



Tasios Melis, professor in CNR's Department of Plant and Microbial Biology, received the U.S. Department of Energy's 2004 Research Achievement Award for his outstanding achievements in research and development of photobiological hydrogen production.

Tasios received the award at the 2004 DOE Hydrogen, Fuel Cells, and Infrastructure Technologies Program annual meeting in Philadelphia. The award highlights Tasios's breakthrough contributions on the use of photosynthesis in unicellular green algae to produce hydrogen, and his more recent advances in optimizing the light absorption and utilization pathways in green algae. 🚩

College Support

HONOR ROLL OF DONORS



Planned Giving Spotlight: Jerry McLaine

Jerry McLaine ('62) and his wife Lynne recently established a charitable remainder unitrust benefiting students at the Richard B. Gump South Pacific Research Station in Moorea, Tahiti. The gift cemented a friendship with the College that blossomed during their 2001 trip to Moorea, led by insect biology professor Vince Resh.

What stayed with them were their memories of the station's students. Each year, 100 undergraduates take classes at the Gump Station, studying coral reef ecology, biology, archeology, and anthropology, among other subjects. As an alumnus, Jerry appreciated that the students could study in an atmosphere that was less intense than Berkeley's campus while collaborating closely with their classmates.

Eager to help, the McLaines learned of the station's goals to support young scholars studying the station's surrounding coral reefs, marine resources, and tropical forests. By funding a charitable remainder unitrust, Jerry and Lynne were able to provide for the future of a Berkeley institution they believed in, and achieve their own financial goals through tax-advantaged philanthropy. "For us, it solved a business problem, and allowed us to feel good about what we were doing," said Jerry on a recent visit to the College's Berkeley campus.

CNR is honored by the support of friends like Jerry and Lynne McLaine, without whom we would be neither as strong, nor as successful. If you have questions regarding charitable remainder trusts, or other planned gift vehicles which may convey significant tax advantages, we encourage you to contact Kathryn Moriarty Baldwin at (510) 643-6641.

Contributions to the College of Natural Resources help ensure that the College remains an intellectually vibrant institution. In fiscal year 2003/2004, we received many generous gifts, ranging from small gifts to more than \$1 million. We gratefully acknowledge the alumni, friends, foundations, and corporations listed below. These gifts and pledges support every aspect of the College, including research, scholarships, outreach, graduate and undergraduate students, scientific equipment, facilities, and special programs and projects.

All gifts are important to the College. The list below reflects donors giving \$100 or more. We thank all our donors for their loyal and generous support.

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Andrew M. Chapman, '77
Louis K. Cherin, '38
Wen S. Chern, '71 & Li F. Chern
Helen Chow, '96
Dr. John M. Chuck, '82 & Lesli Chuck
Mae Clark, '84
Professor Fields W. Cobb, Jr. & Octavia Cobb
Dr. Richard S. Colman, '70
Dr. Katherine M. Condon, '83
Dr. James E. Constantz, '73
Nancy Scott Coons, '62 & Allan H. Coons
Robert H. Culbertson, '47 & Sharon M. Culbertson
Gerald B. Cullinane, '49 & Carol White Cullinane, '50
Dr. Paul G. Da Silva, '79
Dr. Nita A. Davidson, '88
Nicholas B. Dederer, '73 & Robin S. Dederer
Department of Environmental Science, Policy and Management
John B. Dickinson, '79
Moire J. Donald, '79
Professor Richard L. Douth, '39 & Elizabeth M. Douth
The Dow Chemical Company
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Richard D. Drager, '71 & Annette Barry, '75
Dr. Steve H. Dreistadt, '85
Richard E. Dresser, '58 & Judy M. Dresser, '58
Richard F. Droege, '36 & Mildred Jones Droege, '36
Eric Eisenman, '78 & Tina Eisenman
Entomology Special Events Committee
A. Elizabeth Erman, '62
John h. Evans, USMC (Ret.), '48 & Kathryn Brazil Evans, '50
Dr. Robert A. Ewing, '67

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—Jerry McLaine

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Jennifer C. Fletcher
Mary L. Flint, '79
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Kathleen Suzukawa Forgach, '79 & Dr. Peter W. Forgach
Ronald E. Forsstrom, '55 & Barbara Thode Forsstrom, '57
Jacob M. Frankel, '40 & Barbara W. Frankel
Donald R. Franson, Jr., '74 & Anne Woolf Franson
Lester M. Fujii, '59 & Yumiko Fujii
Ann Began Furman, '78 & Harold W. Furman
William H. Gavelis, '72
Thomas A. Gey, '76
Vinay K. Gidwani, '96 & Divya Karan
Bruce F. Goines, '74
Dr. Erica Sweeting Goode, '62 & Barry P. Goode
Nancy K. Gorder, '90 & Greg W. Gorder
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Mrs. Herbert W. Graves
James P. Gray, '65 & Janet P. Gray
Richard L. Grendell, '87
Lorna MacDonald Groundwater, '91 & Lorna MacDonald Groundwater
Marylee Guinon, '80
Naomi Deguchi Guttmann, '66 & Gary J. Guttmann
Heidi Stettler Hagler, '82 & Chris S. Hagler
Dr. Ann E. Hajek, '74
Harriet L. Hamlin
Mark W. Hamlin, '77 & Gayle Erbe-Hamlin
Giles M. Marion, '74 & Dawn C. Hammond, '75
Vanessa M. Handley, '02
Dr. Tracy E. Hart, '93
Nina K. Heinzinger, '85 & Dr. David A. Krainacker
Anne Delaney Heissenbittel, '75 & John F. Heissenbittel
George W. Heller, '42 & Edith Peterson Heller, '44
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Dr. Wilbur F. Hieb, '59
Dr. David B. Hogg, '77 & Susan M. Hogg
Professor Patricia A. Holden, '92
Carol A. Hudson, '85
Kathleen Hunt, '80 & C. Thomas Hunt
Dr. Heather C. Huppe, '89
Karin A. Jacobson, '77 & Robert R. Seeman
David E. Jones, III, '78 & Dianne S. MacDaniels
Richard E. Jones, '49
Robert L. Jones, '80
Devonna M. Kaji, '75 & James A. Johnson
Samuel T. Kaneko, '49 & Jean K. Kaneko
Alan I. Kaplan, '79
Jeffrey H. Kato, '85 & Laurel M. Kato
Suzanne Cantou Keeler, '62 & Travis Keeler
Charles E. Kennett, '43
Betty Courtright Keogh, '41
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Dr. Gary A. Lamberti, '83
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Professor Angela Capobianco Little, '40
Professor Roy B. Litton, Jr., '41
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Dean W. Lloyd, '49
Christopher R. Lovest, '83
Rosemary Lucier, '65
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Laura D. Merrill, '91
Marian V. Merrill
Peter G. Messa, '75 & Susan Messa
Scott L. Miller, '78 & Judey Wall Miller, '75
Victoria S. Mitchell, '79
Seth O. Mitchner, '80 & Nancy L. Mitchner
Ross D. Mobley
Donna Rich Moody, '70 & Arnold R. Moody
Peggy E. Moore, '91
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Andrew G. Morse, '01
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Marjorie Snell Murray, '44 & John H. Murray
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Rolf R. Nebelung, '66 & Geraldine H. Nebelung
Jill A. Nelson, '83
Laurie Klein Nelson, '76
Robinson R. Ng, '79
Diana Nguyen, '04
Dr. John N. Nishio, '85 & Sandora J. Nishio
David C. Nuban, '82
Audrey Dale Nuechterlein, '51 & Duane C. Nuechterlein
Dr. Earl R. Oatman, '57 & Karin V. Oatman
Dr. Matthew D. O'Connor, '86 & Laura Jones O'Connor, '87
Oil Transactions
Kathleen M. O'Loughlin, '78
Pacer Global Logistics
Aileen M. Palmer, '75
Kevin K. Pang, '85 & Betty Pang
Janice Slater Parker, '46
Jason R. Patrick, '94
Robert S. Patterson, '76 & Anne Carpenter Patterson, '75
Robert J. Penzien, '74 & Dr. Beverly Downing Penzien, '74
Piyasena C. Perera, '83 & Natsuko S. Perera
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Dr. Cyrus A. Ramezani, '91
Srinivasa T. Reddy, '92 & Sailaja M. Reddy, '92
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Suzanne Delzell Rogers, '77
Deborah A. Rudnick, '03
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Dr. Carol M. Shimoto, '86
Dr. Surendra P. Shrivastava, '67
Jessica C. Siegel, '98
Arthur J. Slater, '74 & Judith K. Slater
Frederick O. Smith, '95 & Susan T. Bell
Peter E. Smouse, '65 & Linda Smouse
Susan A. Snedecor, '66
Randolph L. Sperry, '77
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Rachel C. Steinhart, '04
J. David Sterner, '90 & Kym Sterner
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Peter A. Stine, '75
Col. Quentin C. Stokes, '49 & Helen Marie Youngberg Stokes
Timothy J. Stokes, '81
Dr. John F. Stollsteimer, '61 & Angela Stollsteimer
Steven B. Suoja, '93*
Professor Emeritus Ian M. Sussex
Marjorie Menoher Sutton, '53 & Harold G. Sutton
Derek L. Suzuki, '96
Dr. Sigurd L. Szerlip, '80 & Patricia J. Szerlip
Richard K. Takahashi, '78 & Hitomi Takahashi
Bonnie W. Tam, '00
Dr. Yoshinori Tanada, '53 & Edna Tanada
Clay D. Taylor, '97 & Anne F. Taylor
Julie A. Teel, '95
Mark E. Teply, '86 & Janet G. Cherry
Brig. Gen. William A. Tope, '39 & Mary Jo Tope
Karen J. Toy, '79
Mark L. Travis, '88 & Annabelle E. Travis
E. Alison Tribble, '99
Barbara Post Trouton, '42 & Robert S. Trouton
Robert D. Tuck, '72 & Elizabeth Bolcom Tuck, '73
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John J. Waelti, '67
Brian E. Walgenbach, '86
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Christopher M. Wavrin, '87 & Pamela A. Wavrin
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Michael B. Winton, '79 & Robin R. Winton
Lawrence S. Wong, '72 & Stephanie Lee Wong, '77
Dr. Barbara A. Wood, '68
Diane Wayne Woods, '75 & Barry K. Woods
Peter Woods, '43 & Mary K. Woods
Richard C. Worden, '86
Dr. Charles L. Woronick, '55
John M. Wray, '79 & Sheila N. Wray
Greta N. Wu, '86
Fay A. Yee, '82 & Chris J. Clutton
Steven J. Zemsch, '79
David R. Zimpfer, '76 & Elizabeth S. Zimpfer

* Deceased

Alumni News

CLASS NOTES

'68

Carol I. Waslien, Ph.D., Nutrition, became chair of the Department of Public Health Sciences at the John A. Burns School of Medicine at the University of Hawaii at Manoa.

'69

Michael C. Stroud, B.S., Forestry, and M.S., Range Management, '70, retired in 2003 after 33 years with the Department of Defense Natural Resources Management Program. He is now the director of operations at the Center for Natural Lands Management, a non-profit, public-benefit land trust.

'74

Lauren H. Coodley, B.S., Conservation of Natural Resources, is currently a professor of history and president of the Academic Senate. Professor Coodley published two books this year: *Napa: The Transformation of an American Town*, available at www.arcadiapublishing.com, and *Land of Orange Groves and Jails: Upton Sinclair's California*, available at www.heyday-books.com. Both include an environmentalist perspective on California History.

'75

Ponciano M. Halos, Ph.D., Plant Pathology, is the CEO of Arnichem Corp., a biofertilizer business in the Philippines.

'76

Lloyd E. Burton, Jr., B.S., Conservation of Natural Resources; M.A., Jurisprudence and Social Policy, '80; and Ph.D., Jurisprudence and Social Policy, '84, is a former teaching associate in CNR and published his first book, *American Indian Water Rights and the Limits of Law* in 1991. His second book, *Worship and Wilderness: Culture, Religion, and Law in Public Lands Management* was published in 2002 (<http://www.wisc.edu/wisconsinpress/books/3100.htm>). The American Library Association's *Choice Magazine* just rated his second book as one of the outstanding academic titles for acquisition in 2004.

'78

Donna Tunkel Lilborn, B.S., Soil Resource Management, received her Master of Landscape Architecture from the University of Massachusetts at Amherst in May 2004.

'79

Andrew S. Coblenz, B.S., Biology-Natural Resources, is a sixth grade teacher in Daly City and looks for every opportunity to bring insects into the curriculum.

'84

David T. Leung, B.S., Political Economics of Natural Resources, and B.A., Applied Mathematics, '84, left New Jersey for China in 1997 to manage an American wireless manufacturing subsidiary. "It has been a truly rewarding experience participating in the reforms of the Chinese economy and in the reshaping of the society," he said. He will get another such opportunity when he moves into his new job, vice president of operations and strategy, helping a Chinese pharmaceutical company compete in the fast-growing pharmaceutical market. David will move with his wife and two daughters to a neighborhood adjacent to the 2008 Olympic Village in Beijing. "It will be an interesting challenge dealing with all the new building activities in the area, which include subways, highways and roads, public parks, and commercial and residential buildings," said Leung.

Michelle E. Portman, B.S., Political Economics of Natural Resources, is currently working part time for the Massachusetts Department of Environmental Protection in the Waterways Regulation Program. The program implements state regulations that aim to preserve and protect public access and benefits in public and private tidelands. She is also studying part-time in the public policy Ph.D. program at University of Massachusetts Boston, focusing on environmental policy. Michelle also just had a children's picture book published on the subject of vermicomposting (<http://www.wormwoman.com/acatalog/CompostByGosh.html>). She lives with her husband and two children in Newton, Massachusetts.

'88

John W. Kercheval, III, B.S., Genetics, went to work in the corporate finance department of Hambrecht & Quist in San Francisco following graduation. In 1991, he returned to Berkeley to earn his MBA in Finance in 1993. From 1993-1996 he returned to Hambrecht as a vice president in its technology investment banking division. In 1996, he relocated to his native Washington, D.C., area to become director of financial planning and analysis for the Orbital Sciences Corporation and was subsequently appointed vice president and treasurer of its ORBCOMM subsidiary.

'90

Sheila (Seshan) Steinberg, M.S., Wildland Resource Studies, 1990, had a baby boy, Joshua Steinberg. Both Dr. Steinberg and her husband, Steve Steinberg, just received tenure and promotion at Humboldt State University.

'93

Jennifer (Kline) Vallina, B.S., Political Economics of Natural Resources, 1993, moved to Washington D.C. and works for the Boston Consulting Group as the American marketing project coordinator.

'01

Rishie R. Laroia, B.S., Nutritional Science and Toxicology, is currently working for Chiron Corporation in Emeryville as a quality control analyst, testing cancer drugs for biological activity.

Tracy L. Held, B.S., Conservation and Resource Studies, is working for *Bay Nature* magazine as an outreach and development associate.

'03

Ian C. Herriott, B.S., Molecular Environmental Biology, entered the master's program at the University of Alaska Fairbanks. He is a recipient of a graduate research fellowship from the Experimental Program to Stimulate Competitive Research (EPSCoR) and will be studying soil fungal community dynamics during the winter in Alaska.

IN MEMORIAM

Theodore W. Daniel, '34, B.A., Forestry; Ph.D., Forestry, died on Friday, July 30, 2004, in Logan, Utah. He was 96 years old. "Doc" Daniel was a pioneer of American forestry. He started by swinging an axe in the north woods of Canada and went on to study forestry at UC Berkeley, where he received a bachelor's degree in 1934 and a doctorate in 1942. He was an active member of the Society of American Foresters for his entire career and was elected Fellow in 1983. Daniel devoted a lifetime of service to natural resources by contributing to the professional development of foresters. He joined the faculty at Utah State University in 1944, and his reputation as a demanding and effective teacher became the stuff of legends. He has had an incredible impact on forestry through his influence on generations of students. Daniel was born in San Francisco on Nov. 16, 1907, to John and Margaret Daniel. He had a sister named Marguerite. He married Bernice Starr in 1935; they divorced in 1945. Ted married USU's Dean of Women, Ione Bennion in 1947. They remained together until her death in 1998. He is survived by his son, Bill, and his grandchildren, Marcy and Sean. Daniel is also survived by his very special friend, Allison Thorne.



John William Mamer, '58, Ph.D., Agricultural Economics, died Friday, July 2, 2004. He was 83. Mamer, a UC Cooperative Extension emeritus labor economist who spent the last 28 years of his career at the University of California, died in his Berkeley home after a long battle with cancer. Colleagues credit Mamer for leadership in applying the field of human resource management to agriculture. Recognizing the significance of personnel-management practices within every production farm, he brought attention to decisions that had been largely ignored from agricultural economics perspectives. His landmark study, co-authored with Donald Rosedale, showed how structured recruitment, selection, and pay practices in a lemon harvesting cooperative yielded both efficiencies for the farm and gains for workers. "John was in the vanguard of a movement encouraging and enabling managers throughout agriculture to consider precepts of human resource management," said Howard Rosenberg, a farm personnel management specialist based at CNR. "I think that his interest in this field stemmed from his genuine love and respect for people. Those of us fortunate to have worked directly with John will remember him as a most perceptive, visionary, amiable, and supportive colleague." Born April 13, 1921, in Mount Angel, Ore., Mamer grew up with his 15 siblings on a farm in California's Imperial Valley. In 1946, Mamer received his bachelor's degree in labor economics from San Diego State University, and in 1958, earned his Ph.D. in agricultural economics from UC Berkeley. In 1962, he joined UC Berkeley as a UC Cooperative Extension junior specialist in agricultural labor economics. He later served at UC Davis as the dean of University Extension and assistant vice chancellor for the University and Public Programs, before returning to work full-time at UC Berkeley. His work is of continuing influence across the nation. He is survived by his wife, Mary of Berkeley; son John and his wife, Susan of Los Angeles; son Roger and his wife, Constance of Sebastopol; and granddaughter, Lauren of Los Angeles. 🚩

KOSHLAND CIVIC UNITY AWARD HONORS CNR ALUM



Richmond native and environmentalist Sharon Fuller was honored with the San Francisco Foundation's 2004 Daniel E. Koshland Civic Unity Award during a recent awards ceremony at the Richmond Convention Center. The Koshland Civic Unity Program recognizes Bay Area grassroots social innovators in a target community—this year's focus was Richmond's Iron Triangle—who work to improve the quality of life in their neighborhoods. Fuller was praised by the foundation for her "outstanding efforts in the vibrant and diverse Iron Triangle neighborhood."

Fuller received this special commendation due to her ongoing youth advocacy as the founder and director of the Maat Youth Academy (MYA). MYA is a community-based environmental organization dedicated to a safer, cleaner, healthier environment for youth. Ultimately MYA seeks to build the capacity, in both low-income and ethnically diverse communities, to significantly reduce public exposure to environmental hazards. Under Fuller's direction, local high school interns are conducting the Fish Consumption Study for Women and Children, which is designed to investigate the health effects of consuming San Francisco Bay fish contaminated with methylmercury.

The recent awards ceremony launched a \$300,000, five-year initiative in the Iron Triangle to enhance civic unity by promoting mutual respect and collaboration among diverse communities. As one of twelve 2004 Koshland awardees, Fuller received a personal award, as well as \$5,000 to grant to the neighborhood non-profit organization of her choice. In years two through five of the initiative, Fuller will join her fellow award recipients in a community planning process that will determine the distribution of \$60,000 per year. The money will be used to fund efforts that promote civic unity and improve the quality of life in the Iron Triangle neighborhood.

Fuller remarked, "As a lifelong Richmond resident, the environmental education and advocacy work I perform in the Iron Triangle is both a personal and professional passion. As such, I am truly honored to be a 2004 award recipient, and look forward to collaborating with fellow community activists and continuing my efforts towards further enriching this culturally bountiful neighborhood."

Established by Fuller in 1994, MYA helps empower communities by involving youth in local investigations and workshops, developing culturally relevant educational material, and partnering with school districts, universities, governmental agencies, community-based organizations, and residents. This nationally recognized academy brings curricula that focus on urban ecology and environmental health to public schools in communities of color and in low-income areas throughout Contra Costa and Alameda Counties. Fuller earned a B.S. in conservation and resource studies from the College of Natural Resources and an M.S. in Environmental Education from CSU Hayward. She is a Contra Costa County Hazardous Materials Commissioner and a member of the Point Molate Restoration Advisory Board. In addition to receiving the 2004 Koshland Civic Unity Award, Fuller is also a 2004 recipient of California's 14th Assembly District's "Woman of the Year" award. As she did with her last award, Fuller is dedicating the Koshland honor to the memory of her mother Dolores S. Jackson, who devoted her life to ensuring all children have access to quality education. 🚩

—Katherine Chouteau

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Sudden Oak Death Science Symposium, 1/18–1/21
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MARCH 2005

Daniel Arnon Memorial Lecture, TBD

APRIL 2005

Calloway Memorial Lecture, TBD
Charter Banquet, 4/16
Chancellor Birgeneau's Inauguration Ceremony, 4/16
Cal Day, 4/16

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College of Natural Resources Commencement, 5/23

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