

COLLEGE OF  
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UNIVERSITY OF CALIFORNIA, BERKELEY

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# BREAKTHROUGHS

UC BERKELEY COLLEGE OF NATURAL RESOURCES • **SUMMER 2008**



Some 90 million people rely on the Mekong River for their way of life, but eight new Chinese dams threaten untold changes in the region. Story on page 19.



## ENDING AFRICAN RIVER BLINDNESS

PUTTING AGRICULTURE  
BACK ON THE MAP

THE NEW GENDER GAP

# LETTER FROM THE DEAN

Despite the extraordinary rewards of teaching Berkeley undergraduate and graduate students, there can be no denying that it is an exhausting, time-consuming, and sometimes humbling endeavor. At Berkeley, the standards for teaching are as high as they are for research—in addition to being among the very best researchers in their chosen field, every Berkeley faculty member is expected to excel in the transmission of knowledge and in nurturing their students' own creative intellects. While teaching and research can be viewed as making competing demands for a professor's time, great teaching and extraordinary research more frequently go hand-in-hand.

In this issue, *Breakthroughs* launches a new feature, "On the Ground," that highlights some of the world-changing work we're doing around the world, focusing first on Africa. This work in turn enriches the College's teaching programs, as the faculty highlighted on pages 4 and 5 bring their experiences solving critical world problems back to the classroom, giving students ample answers to that enduring query, "But how is this relevant in the real world?"

This is certainly the case with Professor Vincent Resh, whose work in West Africa and along the Mekong River is featured beginning on page 14. A winner of Berkeley's Distinguished Teaching Award, the university's highest honor for extraordinary educators, Vince proves to his students that a biologist's work can make the world a better place. He is known for challenging his students to understand the implications that ecology has in each of our lives. And though he travels the world for his research, a great deal of his teaching takes place at the heart of the Berkeley campus: on the banks and in the waters of Strawberry Creek. (Many of Vince's lectures are available to the world via podcast; I encourage you to listen at <http://nature.berkeley.edu/breakthroughs>.)

In the end, great teaching comes from professors who make a deep, personal connection to their own field of study—whether in the Mekong Delta or at the bench of a Berkeley laboratory. As Dean, I'm incredibly proud that so many of CNR's faculty do just that.

J. Keith Gilles



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# BREAKTHROUGHS

## SUMMER 2008

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CNR entomologist Vincent Resh has leveraged science and diplomacy to help bring an epidemic under control along 30,000 miles of West African rivers.

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A common motif in West African folk art, this sculpture depicts a blind man being led by a child—the legacy of an epidemic known as African river blindness. Story on page 14. Photograph by: Genevieve Shiffar

#### THIS PAGE

Some 90 million people rely on the Mekong River for food, water, and transportation, but the region is on the cusp of major change. Story on page 19. Photograph by: Vincent Resh



## 5 KEY LESSONS FROM ESPM 10, “ENVIRONMENTAL ISSUES”

Distinguished Teaching Award winner **Stephen Welter**, professor of environmental science, policy, and management, teaches ESPM 10, *Environmental Issues*. “When it comes to real environmental solutions, there are so many trade-offs that are heartbreaking and difficult,” says Welter. “This course

attempts to blend the facts of each issue with a strong ethical base, from which you must examine your own assumptions—and make your own decisions.”

*Breakthroughs* asked Welter to share five key lessons he hopes will stick with his students—and with you:



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**1** “Many environmental ‘dilemmas’ are not dilemmas at all. However, the solutions may have costs that we don’t understand, that we choose not to acknowledge, or that we’re simply not willing to bear.”

**2** “Resolving any environmental issue requires more than just passion. It requires a clear understanding of fundamental causes. It also requires the will to make difficult decisions that involve real, and often painful, trade-offs.”

**3** “Environmental changes are happening very quickly. In fact, the scope and rate of change are much greater than many people understand.”

**4** “No one discipline is going to come up with sustainable environmental solutions. These problems touch every aspect of our lives; we need to confront them in a scientific context, a social context, a political context, and an economic context.”

**5** “If you want to make change, you have to step up and bear part of the burden.”

## BEATING SPECIES EXTINCTION

### *Wildlife map highlights species hotspots*

As wildlife spectaculars go, it doesn’t get much better than Madagascar, and if scientists have their way, many of the island’s most biologically rich areas will soon be protected. That’s because a mammoth effort to collect data on the island’s wildlife has yielded one of the world’s most detailed conservation proposals to date.

A consortium of 22 international researchers led by **Claire Kremen**, professor of environmental science, policy, and management, conducted a survey of 2,315 species to identify which areas the government of Madagascar should protect in order to conserve as many plants and animals as possible. Madagascar has already committed to protecting 10 percent of its land by 2012. The new analysis will help them identify the most species-diverse areas.

“Conservation planning has historically focused on protecting one species or one group of species at a time,” says Kremen. This may help the charismatic species, but the “behind-the-scenes” species that are essential to ecosystem function are often neglected. “In our race to beat species

extinction, the old approach is not going to be quick enough,” she says.

The proposed strategy would extend the same protection to creepy crawlies as it would to large and cuddly mammals such as the island’s famous lemurs, which are not seen in the wild anywhere else on Earth. Kremen and her colleagues collected information on the exact location of over 2,300 species of plants, insects, frogs, geckos and mammals. They then built a computer model to extrapolate the range of each species, and used a second model to identify which regions are most vital for saving the largest number of species, giving priority to the most endangered species.

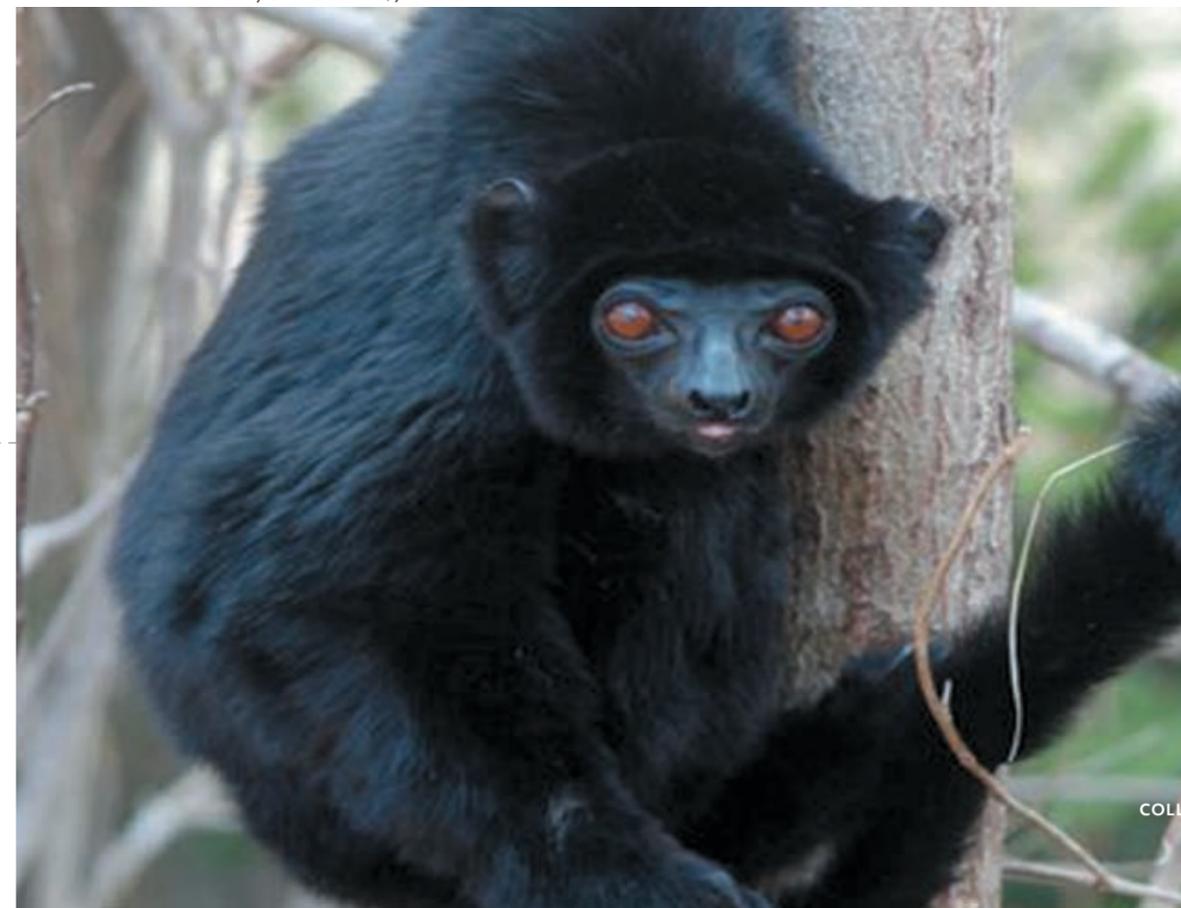
Their survey yielded a detailed map of the most biologically valuable areas in Madagascar.

“Never before have biologists and policy makers had the tools that allow analysis of such a broad range of species, at such fine scale, over this large a geographic area,” says Kremen. “Our analysis raises the bar on what’s possible in conservation planning.”

—CATHERINE BRAHIC

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Photo by Edward E. Louis, Jr.



*PROPTHECUS PERRIEM* IS ONE OF THE MOST ENDANGERED OF ALL LEMURS. COMMONLY KNOWN AS *PERRIER’S SIEAKA*, THIS LEMUR INHABITS A SMALL AREA OF DRY FOREST IN EXTREME NORTHERN MADAGASCAR.

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# AFRICA

—AIMEE KELLEY

CNR is not an ivory tower—its people, from graduate students to faculty, are engaged with people and problems at every corner of the world. Here's a sampling of some of the faculty projects making a difference on the African continent.



### Conserving Big Game

Conservation ecologist **JUSTIN BRASHARES'** work has examined the black-market trade of African bushmeat throughout the world, and his critical role linking the precipitous decline of African wildlife to the international fishing trade was recently featured in the National Geographic program *Strange Days on Planet Earth*, available online at <http://nature.berkeley.edu/breakthroughs>.

### Human and Ecological Health of the Rivers of West Africa

Professor **VINCENT RESH** has served as an advisor on water sustainability issues regarding disease control, habitat management and population resettlement to 11 West African nations for over 15 years. See "Ending African River Blindness" on page 14.

### Modeling Deadly Diseases

In Namibia's Etosha National Park, Professor **WAYNE GETZ'S** research group is using a combination of fieldwork and population modeling to study the link between animal deaths and bacterial anthrax infection. They aspire to fill a crucial knowledge gap and improve local control efforts by understanding the episodic nature of anthrax outbreaks. In the context of human disease, Getz is also working on the analysis and modeling of the HIV-tuberculosis pandemic in sub-Saharan Africa.



### Agricultural Development

An expert in poverty analysis and rural development, economist **ALAIN DE JANVRY'S** recent report for the World Bank focused on the need for greater investment in agriculture in sub-Saharan Africa (see page 23). With Professor **ELISABETH SADOULET**, de Janvry has also worked extensively on rural banks and "microcredit" projects that empower individuals and communities within Africa.

### Building a Better Staple Crop

Through the Africa Biofortified Sorghum Project, **BOB BUCHANAN** and **PEGGY LEMAUX** are working with their colleagues in Africa to improve the digestibility of sorghum, a main food staple for hundreds of millions of sub-Saharan Africans. In its unmodified form, sorghum's protein and starch are difficult to digest, but these plant biologists are seeking to unlock the nutritional potential of this important food source.



### Managing Conservation in Madagascar

Conservation biologist **CLAIRE KREMEN** has led a pioneering conservation planning initiative in Masoala National Park, Madagascar's largest nature reserve. Her continued work examines the impacts of deforestation on species distributions, and she is creating a web-based biodiversity database that promises to provide researchers with necessary tools for conservation planning and monitoring. Read about Kremen's most recent success, developing a biodiversity hot-spot protection map of Madagascar, on page 3.

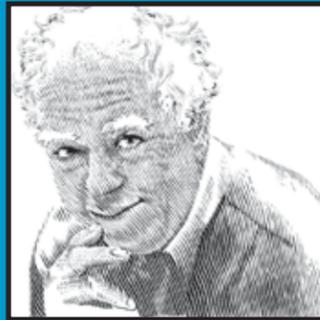
### Social Upheaval in Zimbabwe

Professor **LOUISE FORTMANN'S** Longitudinal Tree Products Access Study examines the link between social change in Zimbabwe and access to tree products. Fortmann also takes a close look at science and democracy, highlighting new ways in which local farmers and other non-scientists are making important contributions to scientific knowledge.



All photos and illustration; iStockphoto.

# WHY I DO SCIENCE



Miro Salazar

With nearly half a century of pioneering research behind him, the work of renowned insect biochemist and toxicologist John Casida is beyond categorization. He has trained generations of scientists, and his work has led to the design of safer pesticides and more active, less persistent insecticides that play critical roles in modern agriculture.

*"I find that crossword and jigsaw puzzles* are not so much fun because you know there is a solution. But try a mechanism study on a chemical that works on a totally unknown target—now you can really have fun. It may be easy, or it may take 50 years before the background science is available. Alternatively, the new chemical and novel mode of action serves as a probe to dissect a new area of science."

"Pesticides—chemicals that affect the growth or survival of a pest—are particularly intriguing. Hundreds of thousands of compounds are sifted every year in the search for very unusual effects, which are great fun to sort out. Each new discovery, advance, or stage of understanding carries with it the thrill of the moment, but they are really for all time as they become part of our knowledge base and toolkit."

"The approach of our laboratory is to take a new compound and optimize its potency—meaning that you can use less of it because it is designed to go to just the right place to do the assigned job. When other strategies fail, we use tritium to make the compound highly radioactive and then use this radioligand to quantitate, assay, purify, isolate, and ultimately identify the target. Genomics, proteomics, and all the other "omics" really help us solve problems as never before."

"Once you identify the mechanism, you can manipulate a life process. Can you create a useful new pesticide, a new cancer drug, or a new way to measure and modulate a receptor in the brain? Then the challenge is to find a way to use the chemical without side effects while fitting the economic reality of the marketplace. We leave that to the entrepreneurs."

—John Casida



## BIOFUEL TRADEOFF

*Save at the pump... but not at the market*

Biofuels like ethanol have been touted by nations such as Brazil as an answer to the world's energy crisis, but research from CNR economists suggests that the costs of ethanol may outweigh the benefits of cheaper gas prices.

Ethanol, a colorless chemical compound made from distilling crops such as corn, sugar cane, and maize, can be blended with gasoline or used by itself as a more affordable alternative fuel for cars and other machinery. An economic analysis by agriculture and resource economics professor **David Zilberman** shows that a U.S. ethanol production subsidy saved U.S. gasoline consumers \$11 billion and saved gasoline consumers in the rest of the world \$36.3 billion in 2006.

However, according to Zilberman's report, "Biofuel Challenge: Filling the Tank without Emptying the Stomach," there is an economic downside to ethanol. Its use has already resulted in a surge in the price of grains, meat, and soda, among other commodities. For example, the average price of corn in 2006 increased \$0.52 per bushel due to the demand for corn for ethanol production. The higher corn prices cost U.S. consumers \$4.4 billion, and consumers outside the U.S. \$1.1 billion, making ethanol production potentially devastating to third world countries.

"Much of the discussion about ethanol focuses on benefits such as lessening carbon emissions and boosting farm income, but the potential benefit to everyone who drives in this country is substantial," said Zilberman. "Of course, there is also the tradeoff for food. The poor may go hungry so that the rich can drive their SUVs more cheaply."

—STEPHANIE LUDWIG

### CLIPPINGS

Studying recorded coyote sounds, wildlife biologist **Reginald Barrett** found that howls and barks play distinct roles in canine communication. Yodeling howls convey information, directing coyote packs to hunting sites, for instance. Barks seem to be less sophisticated, used for alarm calls and determining distance. In both cases, individual coyotes appear to have distinct "voices."

# BRIEFS

## BAD NEWS GETS WORSE

*China's emissions will overshadow Kyoto progress*

China's carbon dioxide emissions seem to be growing at a much faster pace than previously thought, making the already-daunting goal of stabilizing its atmospheric greenhouse gases even more difficult to reach.

Previous estimates indicate that the region that includes China will experience a 2.5 to 5 percent annual increase in CO<sub>2</sub> emissions between 2004 and 2010. But a new analysis by UC economists estimates the annual growth rate for China at 11 percent—and that's their conservative estimate. The authors of the study, **Maximilian Auffhammer**, assistant professor of agricultural and resource economics, and **Richard Carson**, UC San Diego professor of economics, based their findings on detailed pollution data from China's 30 provincial entities. They believe that this method is more sophisticated and reliable than methods used in previous studies.

Even the most conservative forecast predicts that by 2010 there will be an increase (since 2000) of 600 million metric tons of carbon emissions in China. This amount of growth from China alone would dramatically overshadow the 116 million metric tons of emissions-reductions pledged collectively

by all the developed countries in the Kyoto Protocol. Stated another way, the projected annual increase in emissions in China over the next several years is greater than the current emissions produced by either Great Britain or Germany.

Auffhammer says this challenges the widely held belief that actions taken by the wealthy, industrialized nations alone offer a viable strategy to stabilize atmospheric carbon dioxide levels.

"Making China and other developing countries an integral part of any future climate agreement is now even more important," says Auffhammer. "It was expected that the efficiency of China's power generation would continue to improve as per capita income increased, slowing emissions growth. What we're finding instead is that the emissions growth rate is surpassing our worst expectations, and that means the goal of stabilizing atmospheric CO<sub>2</sub> is going to be much, much harder to achieve."

For audio and video clips in which Auffhammer discusses the implications of this study, visit <http://nature.berkeley.edu/breakthroughs>.

—SARAH YANG

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China may experience an 11 percent annual increase in CO<sub>2</sub> emissions between 2004 and 2010.

# BRIEFS

## BERKELEY SHINES THE CLIMATE CHANGE SPOTLIGHT ON MOBILIZING SOLUTIONS

Joining with campuses across America, UC Berkeley recently took part in an all-day “Focus the Nation” event, as hundreds gathered at International House to craft their collective concerns about climate change into a clear message for politicians and society at large.

The January 31, 2008 conversation included staff and faculty experts, Berkeley mayor Tom Bates, former three-term

assemblywoman Fran Pavley, the head of Norway’s environment ministry, and the executive producer of the film *Blood Diamond* and the television series *Thirty-something*. In addition, many of the attendees participated in student-led breakout sessions to discuss policy and local action.

It was, in many ways, a bad news/good news kind of day. A panel of Berkeley faculty began

the morning with a grim look at the planet as “a living organism that has a fever” (in the metaphor of **Inez Fung**, professor of environmental science, policy, and management). Later, a “solutions panel” explored methods of limiting the extent of warming by controlling carbon emissions.

Campus sustainability specialist **Fahmida Ahmed** spoke of the need to “transform behavior.” UC Berkeley is now engaged in a comprehensive effort to create a carbon-emissions inventory for campus activities, identify mitigation projects, and, as Ahmed put it, “educate by example.”

Producer and director Marshall Herskovitz, citing “a lack of articulate, clear messaging on what needs to be done,”

**“This energy crisis is not like your grandmother or grandfather’s, or your father or mother’s energy crisis.”**

took the opportunity to promote his new Internet and television series, *Quarterlife*. A short film clip delivered the message that social commitment is sexy, and Herskovitz called for young people to join in a “societal mobilization such as has not been seen since World War II.”

It was Professor **Dan Kammen** who may have best captured the spirit of the day long forum. “This energy crisis is not like your grandmother or grandfather’s, or your father or mother’s energy crisis,” he noted. “Hopefully, events like this will give politicians the backing and the courage to make a new energy and climate policy part of the agenda.”

—BARRY BERGMAN

### CLIPPINGS

Perhaps when presidential hopefuls John McCain and Hillary Clinton started calling for a summer “gas tax holiday” back in April, they should have first consulted agricultural economist **Jeffrey Perloff**. He has modeled just such a scenario, and found that consumers would only see about half of the 18.4-cents-per-gallon price drop. For the average gas consumer, that’s just enough savings to cover . . . a gallon of gas.

## RESILIENT SPORES, TENACIOUS KILLERS

*Decline of Sierra frogs may unravel an ecosystem*

Mountain yellow-legged frogs are disappearing from the Sierra Nevada, and the culprit appears to be the resilient spores produced by the sexual reproduction of a water-borne fungus, *Batrachochytrium dendrobatidis*. “This group of fungi, when it reproduces sexually, creates spores that can last for a decade,” says **John Taylor**, professor of plant and microbial biology. This finding, which Taylor discovered through genetic analysis, means that the pathogen could be especially difficult to defeat. “As a resistant spore, the fungus can be transported by animals—including humans or birds—or it can lay dormant in an infected area until a new host comes along.”

Biologists are still determining exactly how this fungus, first identified in 1998, kills the amphibians it infects, but most believe that the pathogen disrupts the frog’s ability to absorb water through its skin. Tens of thousands of mountain yellow-legged frogs in hundreds of Sierra Nevada sites have disappeared in the wake of the pathogen’s emergence.

While the U.S. Fish and Wildlife Service considers listing the mountain yellow-legged frog as an endangered species, biologists are racing to find ways to halt the spread of the frog-killing fungus.

“This frog used to be the most abundant amphibian, perhaps even the most abundant vertebrate, in the whole Sierra Nevada,” says Taylor.

“Over the past 30 years, it has disappeared from almost 95 percent of its historic range, and its absence is impacting other organisms. Garter snakes that used to prey on these frogs are now declining as well. The frog’s disappearance is leading to the unraveling of a high-elevation ecosystem.”

—SARAH YANG



William Flaxington/stock wildlife pictures

## PLANT AND MICROBIAL BIOLOGY

By the Numbers

- 0 Number of Plant Biology classes taught entirely by graduate students
- 17 Percentage of current graduate students who are receiving major outside fellowships
- 20 Percentage of graduate students from outside the U.S.
- 24 Maximum number of students taught in the PMB teaching laboratories at one time
- 26 Percentage of faculty who are members of the National Academy of Sciences
- 28 Percentage of faculty members who are women
- 41 Undergrads who completed independent research projects (Fall, 2007)
- 62 Percentage of graduate students who are women (Fall, 2007)
- 89 Combined number of students in the agricultural and environmental chemistry, microbiology, and plant biology graduate degree programs (2007–2008)
- 225 Combined number of undergrads majoring in genetics and plant biology or microbial biology (2007–2008)

# BRIEFS

## BOOST YOUR MEMORY AND LEARNING CAPACITY

*Using vitamin A to grow new brain-cell branches*

Nutritionists have long believed that vitamin A plays a vital role in memory and learning. In fact, studies have shown that mice lacking key molecules needed to use vitamin A flunk spatial ability and memory tests. Vitamin-A deficiency during pregnancy has also been associated with memory problems in humans.

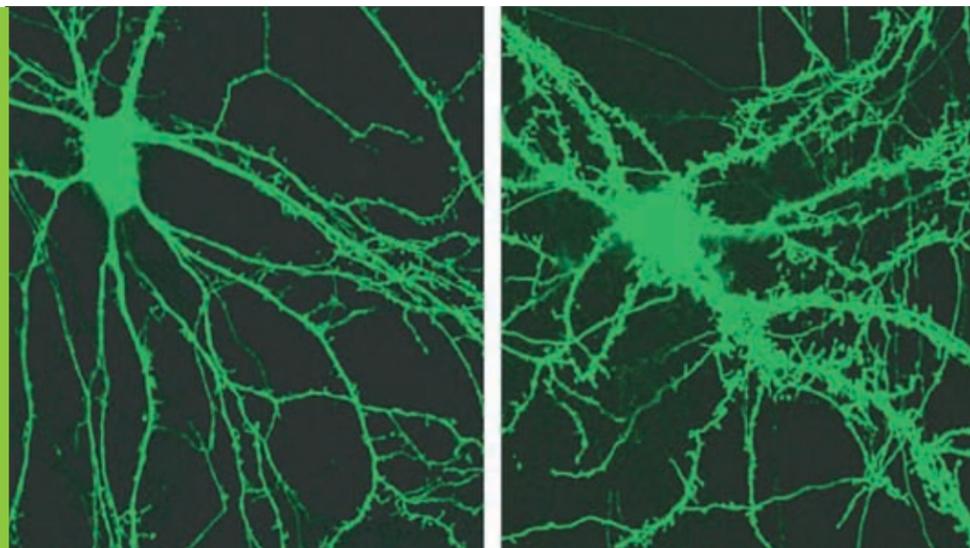
Nutritional scientists from CNR have recently discovered the key mechanism of the vitamin's brain-boosting powers. **Na Chen**, a graduate student in Professor **Joe Napoli's** laboratory, treated cells from the brain's memory center (the hippocampus) with retinoic acid. This molecular signal, also known

as RA, is fashioned from vitamin A and "turns on" specialized receptors (known as RAR) found on neurons. Chen and Napoli found that this interaction initiates the translation of molecular signals from messenger RNA, causing the neurons to explode with new dendrites—spiny branches that receive information from other nerve cells.

If the neurochemistry is over your head, just remember this: to grow new branches on your brain cells, seek out vitamin A from natural sources of beta-carotene: orange-colored foods such as apricots, carrots, papayas, cantaloupes, pumpkin, sweet potatoes, and mangoes.

—CYRIL MANNING

NERVE CELLS FROM THE MEMORY CENTER OF THE BRAIN, BEFORE (LEFT) AND AFTER (RIGHT) EXPOSURE TO RA, A PRODUCT OF VITAMIN A. THE PROFUSION OF SPINES ON THE RA-TREATED CELLS ARE DENDRITES, OR STRUCTURES THAT BRING INFORMATION FROM OTHER BRAIN CELLS.



### CLIPPINGS

Participation is not necessarily the most important element in participatory research, according to **Carl Wilmsen** and his colleagues in the Community Forestry and Environmental Research Partnerships. Their new book, *Partnerships for Empowerment*, assesses the state of participatory research in sustainable resource management, and concludes that the relationship between community members and professional researchers is the most important ingredient.

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## BROWER YOUTH AWARD

*Young environmentalist "isn't waiting" for solutions*

Harvey S. Brosler



RACHEL BARGE

**Rachel Barge**, a senior majoring in conservation and resource studies and minoring in forestry, was among six young North American environmental leaders to win a 2007 Brower Youth Award for her work in boosting environmental sustainability at Cal.

Barge spearheaded campus projects, including the Green Initiative Fund that finances clean energy and transportation, water conservation, and improved recycling and composting programs. This fall, she plans to launch a nationwide version of the program, training dozens of universities to establish sustainability funds based on the Berkeley model.

"Rachel is smart, impassioned and, above all, energetic," said David Phillips, executive director of Earth Island Institute, the organization that bestows the annual award. "She isn't waiting for environmental solutions to come down from those in power. She is taking action now to conserve, protect, and restore the earth."

Barge accepted her award last October. Her inspirational acceptance speech is available at <http://nature.berkeley.edu/breakthroughs>.

—YASMIN ANWAR

## Snapshot

It's Friday evening and the sun is setting over San Francisco Bay. Faculty, graduate students, and post-docs pry themselves from their labs. Cold, bubbling beverages are poured, and the hum of conversation grows to a buzz.

It's a new, weekly tradition within the department of Environmental Science, Policy and Management—reminiscent of the post-World War II scientists who argued about scientific ideas in British beer halls. "Even in the days before professional science careers, working people used pubs as spaces for scientific discussions," says James Sumner, a professor of the history of science, technology and medicine at the University of Manchester, U.K.

ESPM scientists say their weekly get-togethers have helped build a stronger community within the department. "I think everyone agreed that in a department as large and diverse as ours, cohesion was a problem," says **Bradley Balukjian**, a Ph.D. student who helps organize the weekly social event. He says the new social gatherings foster "fortuitous academic networking and conversations that inevitably involve sharing research ideas." And that's a scientific tradition worth continuing.

—CYRIL MANNING



Genevieve Shiffar

## NEW CLUES IN OAK—SCOURGE PUZZLE

*Genetic sleuthing IDs origin of deadly disease*

The pathogen responsible for Sudden Oak Death first got its grip on California's forests outside a nursery in Santa Cruz and on Mt. Tamalpais in Marin County, before spreading and eventually killing millions of oaks and tan oaks along the Pacific Coast. A new study led by **Matteo Garbelotto**, associate extension specialist and adjunct professor of forest pathology, provides evidence of how the epidemic unfolded in this state.

The study shows that the pathogen is currently evolving in California, with mutant genotypes appearing as new areas are infested. These findings suggest that movement of infected plants between different regions where Sudden Oak Death is established should be minimized, said Garbelotto.

From nearly 300 samples of the fungus-like pathogen, the researchers identified 35 unique strains. A computer analysis further revealed how those strains were related to each other. Armed with that information, the researchers were able to create a history of the epidemic.

Two sites emerged as the origin of Sudden Oak Death in California: Bean Creek in Santa Cruz County, located just outside a nursery that had been shut down because of its Sudden Oak Death infestation, and the Bolinas Ridge site in Marin County's

Golden Gate National Recreation Area on Mt. Tamalpais, near the site where the disease was first observed in California.

"Although our study identified two locations from which the Sudden Oak Death pathogen spread to other parts of California, the close proximity of the site in Santa Cruz to a nursery makes it highly probable that the epidemic began there rather than at Mt. Tam," says Garbelotto.

The most likely scenario, says Garbelotto, is that the pathogen arrived in California through the nursery trade, and then spread from the nursery in Santa Cruz to trees bordering the facility. The site at Mt. Tamalpais is not adjacent to a nursery; however, there is anecdotal evidence of frequent use of ornamental plants from nurseries in landscaping projects in the area, said Garbelotto.

Based upon the genetic analysis of this study, the disease could have then progressed to other parts of California's coast, including Sonoma County and Big Sur.

The study also found that strains from areas of recent infestations are more genetically distant from current nursery strains, which suggests that regulations controlling the spread of the pathogen from the nursery to the wild are working. "Nurseries do not seem to be the source of current outbreaks of Sudden Oak Death in the wild," says Garbelotto. "Unfortunately, evidence shows that the pathogen is spreading on its own in the wild. New strains are evolving."

—SARAH YANG

## THE NEW GENDER GAP

*Success, and more questions, for women in science*

**Christina Johnson** wanted to study plants ever since she became fascinated with her family's fruit trees as a child, but she came close to abandoning science. At Brigham Young University, where she began college before transferring to Berkeley, she was one of few female science students. "I felt really discouraged trying to do sciences there. People said, 'You're a girl, you're never going to do well in this.' When she arrived at Berkeley, Johnson, who graduated with a degree in plant biology last spring, was pleased to find as many female students as males at CNR.

**"If you have women in your department already successful and tenured, you can really visualize yourself there."**

She was, in fact, among a record number of female students at CNR. Sixty-four percent of the college's undergraduates are female, the highest percentage of any college at Berkeley. At the graduate level, 54 percent of CNR students are women, twice the number found in the colleges of engineering and chemistry.

**Louise Fortmann**, professor of natural resource sociology, remembers when it was much different. When she joined the Department of Forestry in 1984, there were 11 female graduate students. And when she was a student at Cornell in the 1970s, she never had a female professor and once received an invitation to a school event addressed to her and her wife.

Today, microbial biology graduate student **Elaine Shapland** can't think of a specific instance of discrimination for being a woman in science. With more women than men in many of her classes, she says women feel more comfortable "jumping into discussions without feeling on-the-spot. And it's always fun to gang up on the guys."

Students and faculty say CNR provides a welcoming atmosphere for women, which might explain how it has managed to recruit so many more women than the other sciences. In fact, that influenced Johnson's choice. "It's a lot easier for



CHRISTINA JOHNSON, GENETICS AND PLANT BIOLOGY '08, PLANS TO START A FAMILY WHILE PURSUING HER Ph. D., SO THAT THE ELEMENTARY SCHOOL YEARS WILL COINCIDE WITH HER OWN PURSUIT OF A TENURED PROFESSORSHIP.

Matt Strausser

women to decide to study something that other women have been doing. I probably would have had a harder time with the program if there weren't as many other women," she says.

Biosciences also offer more female mentors. "If you have women in your department already successful and tenured, you can really visualize yourself there," says **Kathleen Ryan**, an assistant professor in plant and microbial biology. Those same female role models, however, sometimes scare women away from following in their footsteps. "Some see how hard we work—every weekend and every night—and they don't want our life," Fortmann says.

That may help explain why only 29 percent of CNR faculty are women. Though that's a slightly higher proportion than at the university as a whole (23 percent) it's clear that somewhere between starting graduate school and getting jobs, women are falling off of the academic career track.

"A major leak in the pipeline occurs for women just after they get their Ph.D., because it's a time when they have to consider family formation as well as career," says **Mary Ann Mason**, a professor of social welfare, former dean of Berkeley's Graduate Division, and author of *Do Babies Matter?* and *Mothers on the Fast Track*. Mason points out that a survey of all ten University of California campuses found that when women in the sciences have babies, the percentage of those who desire to continue in the academic world plummets from 50 percent to 11 percent.

—CLAIRE CAIN MILLER

### CLIPPINGS

We don't know why or when students leading campus tours started crediting "CNR scientists" with the invention of the Tater Tot, but it just isn't so. (Those guilty pleasures were developed by the Ore-Ida company to utilize leftover potato slivers.) Today's tour guides only tout CNR's many true accomplishments—but in some circles the 'tater myth' keeps tottering along.

# Ending African

# Blindness River

BY KATHLEEN M. WONG • PHOTOS BY VINCENT RESH

From among the stacks of papers covering his desk, Vincent Resh pulls a small memento from his years of work in West Africa. It's a simple metal statue of two human figures, each clutching one end of a long stick. The one to the rear is tall and slender; the one in front smaller, with child-like proportions. It looks like an ordinary piece of folk art until Resh, a professor of organisms and the environment, explains what it represents: a blind man being led by a child—two of the hundreds of thousands of victims of a disease known as African river blindness.

Decades ago, says Resh, the statue's scene was common in Ivory Coast, Ghana, Guinea-Bissau, and more than a dozen other countries in the tropical belt just south of the Sahara Desert. "In Africa, when I first began my work, I would sometimes see 20 adults, each being led like this," Resh says. "By the time they were 40—sometimes even by the time they were 20—they were blind."

In some areas, as many as three in ten adults lost their sight and were unable to support their families, while children were pulled out of school to guide elders from place to place. “People who were blind had a much shorter life expectancy, because their families couldn’t afford to feed them,” says Dr. David Molyneux, an expert in onchocerciasis treatment at the Liverpool School of Tropical Medicine and Hygiene. To compound the problem, healthcare workers and teachers were reluctant to work in infected rural areas for fear of contracting the disease. Reoccurring in one village after another, in country after country, the disease drained the medical, economic, and educational resources of the entire region.

Resh, a UC Berkeley professor of entomology, spent 15 years working on a massive international program to control river blindness in 11 West African countries. During that

**“We would spread grease like Vaseline over ourselves. And if you missed anyplace the flies would find you, go straight in through your sleeves. It was just awful.”**

time, he traveled throughout the shelf of countries facing the Gulf of Guinea, from the verdant forests of Guinea-Bissau and Senegal to the west, to the ancient trading crossroads of Benin to the east; meeting people, sharing their food, hearing their stories, and growing ever more determined to halt the transmission of the disease.

African river blindness, also known as onchocerciasis, is caused by the nematode roundworm *Onchocerca volvulus*. The worm’s larvae lurk within another regional scourge—the biting black flies that swarm over rivers and streams and

draw blood from those who venture near in broad daylight. With every bite, infected flies inject a few larval worms into the wound. Once inside a human body, the parasites proliferate by the hundreds of thousands, causing unsightly skin discolorations, continual itching and lesions, and eventually obliterating sight. Flies that bite an infected person pick up larval worms, completing the cycle of transmission.

River blindness has historically plagued the fertile valleys of West Africa, but it was the arrival of Europeans that unleashed the full force of the disease upon the region’s inhabitants. Traditional taboos had kept people from settling along riverbanks or visiting streams in broad daylight, when black flies are most active. White colonists, however, insisted on re-creating the riverside towns they remembered from home. By removing longstanding cultural prohibitions, they made onchocerciasis more prevalent than ever before. By the 1970s, several hundred thousand people were blinded by the disease. Perhaps more tragically for the region, the most fertile farmland—an area roughly the size of Michigan—was abandoned due to the risk of contracting the disease.

The Onchocerciasis Control Programme (OCP) in West Africa was begun in 1974 by a coalition of the World Health Organization, the World Bank, the United Nations, and 20 donor countries and agencies. The \$500 million campaign had three primary components. One contingent treated infected residents with doses of the anti-parasitic drug ivermectin, which averted blindness and removed the human reservoir of the disease. A second contingent aimed to break the cycle of transmission from human to fly by using widespread, long-term insecticide applications to control black fly populations. The third contingent monitored river organisms to ensure that the biodiversity of the rivers—a major source of food—remained intact.

An expert in aquatic insects with a strong record of working on sprawling, multinational river projects, Resh served as an international science advisor for the program. He teamed up with local colleagues and science experts in participating countries to plan and implement the spraying and

environmental sampling. He got the job done in classic Resh style—a foundation of sound science administered with get-your-feet-wet-and-hands-dirty diplomacy. An easygoing man with a smile never far from his broad face, it’s easy to see why he made such strong connections with scientists, drivers, translators, and guides from a dozen different cultures and countries.

While growing up in New York, Resh never dreamed he might become a regular traveler to Africa. For vacations, his parents took the family to locales such as New Jersey and Pennsylvania. Once on his own, he filled his passport pages quickly, researching and teaching in Belize, Guatemala, and then working on a large project in France, studying the ecology of the Rhone River.

In Africa, Resh’s primary goal was to kill the black fly larvae maturing in river waters. He supervised the spraying of insecticides on 30,000 miles of rivers every week to interrupt transmission of the disease. It was a narrow path to walk. “Most of the populations living along the riverbanks also used the water for drinking,” says Albert Akpoboua, a Togan who worked closely with Resh on both vector control and monitoring programs on behalf of the World Health Organization. “We had to make sure the insecticide dosages were safe for people.” At the same time, they had to ensure that insects, fish, and other creatures would recolonize the waterways. “The biggest fear is that we would get rid of the disease and suddenly lose the protein source—the fish,” Resh says. “Ecological integrity was the key.” Meanwhile, the threat of insecticide resistance continued to loom large; efforts to eliminate malaria in Africa by spraying with the insecticide DDT had failed by 1969 because mosquitoes had developed immunity to the chemical.

To address all three needs—disease control, vector control, and wildlife preservation—the OCP rotated among seven different larvicides. During the wet season, when rivers ran high, the scientists applied harsher organophosphates, pyrethroids, and carbamate insecticides; during low flows, they applied the more benign, biodegradable agent Bti, which is widely used in environmentally sensitive habitats in California. “This avoided too much selective pressure from one larvicide on the



MANY OF THE VILLAGERS ALONG THE NIGER RIVER IN MALI HAVE BEEN BLINDED BY ONCHOCERCIASIS.

target organisms, and reduced the chance of resistance,” Akpoboua says.

To keep his finger on the pulse of aquatic life, Resh directed a vast aquatic biomonitoring

operation in treated rivers. He helped train teams of local workers to sample the prevalence of fish and benthic macroinvertebrates, such as mayfly nymphs, shrimp, shellfish, and other species. Feedback from the monitoring helped modulate the spraying schedule, with drops in certain species or a resurgence of the biting flies prompting shifts in insecticide selection.

The project kept Resh on the road and in the rivers for weeks at a time to visit sampling sites, organize personnel, and train local contacts. Of course, being on the water exposed Resh to both biting flies and infection. "We would spread grease, like Vaseline, over ourselves. And if you missed any place, the flies would find you and go straight in through your sleeves. It was just awful." Even so, he says, his suffering was minor compared to those of residents, who might sustain 10,000 black fly bites a year, each bite threatening to infect or to aggravate existing disease.

Resh witnessed many of the devastating and unexpected effects of the disease. On a visit to one village, he began chatting with a half-dozen children who had collected on the riverbank. "I said to my translator, these kids are very, very friendly. And he replied, 'they're not kids, they're adults.' The parasite load on their bodies was so high that their growth was stunted." A photo of the scene shows that the tallest man stands well below the shoulder of Resh's sturdy five-foot-eight frame.

Resh's journeys through the region gave him an unforgettable view of West Africa's rich quilt of cultures, customs, and landscapes. He was invited to a wedding in Burkina Faso where the main course was camel, the preferred beverage millet beer, and the drinking lasted for three days. He visited such marvels as an elaborate replica of St. Peter's Cathedral in Ivory Coast, accompanied by both his Muslim driver and guide, each fearful of divine retribution. Resh witnessed an uglier side of life in Africa, too, when he was caught in the midst of a revolution wherein he was "surrounded by 15-year-old Angolan soldiers twirling Kalashnikovs on their fingers." He often flew with pilots who were afraid to land because of gunfire.

"I came to know a fascinating group of people on a very intimate basis because we shared everything. It became clear to me early on that we were all deeply committed to the importance of this project and were willing to make personal sacrifices," Resh says. Resh made a similar impact on his African colleagues. "Dr. Resh was very meticulous with his work and all of his problem solving approaches," says Akpoboua, who worked and traveled with Resh on OCP business from 1995 onward. "He would always have time to listen to the technicians and advise them, and he was a very friendly and

**"I look on the work I did in Africa as the defining point in my life. You get caught in these movements where you see the potential to do good, so three million kids don't go blind."**



## On the Cusp of Change: The Dammed Mekong

Vince Resh's work in West Africa was an ideal training ground for his next major project: monitoring the health of Asia's Mekong River.

From its headwaters in Tibet, the Mekong tumbles south through the peaks of the Himalaya, through China and Laos, and slows into wide, muddy meanders as it snakes past Thailand, Cambodia, and finally empties into the South China Sea at the southern tip of Vietnam. Its floodwaters inundate more than 54,000 square miles of rice paddies and farm fields. Its reaches include the world's most important freshwater fishery, Cambodia's Tonlé Sap Lake. Fish caught here during the Mekong's annual floods are dried or smoked, then shipped throughout Southeast Asia. Altogether, some 90 million people rely on the river for food, water and transportation—more than any other river on the planet.

This ancient cycle of flooding and planting, fishing and farming is now on the verge of major change. As China continues its headlong rush into the global economy, its thirst for electricity has grown apace. To power its factories and light its brimming cities, China is building a series of eight dams on the main stem of the Mekong.

China's neighbors fear the dams could cause a catastrophe downstream. If operated to produce a consistent level of power, the dams will even out the river's seasonal surges. Stemming wet season floods and increasing dry season releases will disrupt conditions for reproduction of river fauna and flora, not to mention regional farming capacity.

Four downstream states—Cambodia, Laos, Thailand, and Vietnam—want to be able to detect any changes to the river's biology after the dams are built. Through an intergovernmental alliance known as the Mekong Commission, they asked Resh in 2001 to build a monitoring system on the Mekong.

One month a year for the following seven years, Resh traveled throughout the Mekong with national experts to identify sampling sites, set up a survey program, and trained national collaborators. The sites ranged from virtually wild reaches of river, to sections downstream from farms, below tributary dams, and next to cities. By comparing tributaries that have been dammed against reaches that have not been affected, Resh says, "we can see what's affected and make predictions about what we should be looking for," Resh says.

On the Mekong, Resh found many parallels with his work in Africa. "In both cases, we were working on huge systems that we knew nothing about. In Africa we knew nothing about the fish and the other animals. Virtually the same thing was true in Southeast Asia."

The team had to develop its own identification guides to river species such as crabs and diatoms, insects and algae, all of which have different responses to water conditions and pollution. "You have some that are absolutely clean water species, and you've got others that are found only in the worst conditions." The types of species found and their fluctuations in certain water conditions produce a reliable measure of river health.

Strangely enough, science hasn't been Resh's sole focus in the Mekong. "A lot of what we were doing was trying to bring these national experts together, getting them to talk to each other civilly, and, for example, not have the Cambodians nicking at the Vietnamese because they invaded their country." To encourage cross-cultural exchange, the data analysis is divided along national lines: the Thais are performing the diatom identifications, while the Laos have taken invertebrates, and the Vietnamese zooplankton. The distribution forces each country to cooperate to produce a meaningful picture of the health of the waterway.

Baseline data from the program will be compared against future conditions to detect any shifts in the river's ecology. Evidence of any problems can then be presented to China to lobby for changes. Already the program has produced a "report card" showing the health of the river in different areas, starting literally a mile below the China border. "Compared to other international rivers, the Mekong is in great shape. Even the sewage doesn't go into the river, because they back it up into marshlands, so that they can use it for fertilizer and agriculture."

In 2008 Resh and his Australian colleague will turn the program over to the Mekong countries to run on their own. "It's going to become a completely Asian program. It's like with your kids: you want to help them become their own person; you want them to become independent."



personable man with a sense of humor. You could get to like him very easily.”

Resh has paid a steep price for his African travels. In the 1990s he acquired a lung parasite that made him so ill for 3 years that he nearly retired. “I’d be sick from the last time I was there, and I’d be going back,” he says. The malaria Resh caught there still haunts him with occasional bouts of fever and chills. Despite these drawbacks, Resh’s experiences with the program have moved him deeply. “The work I did in Africa was the defining point in my life. You get caught in these movements where you see the potential to do good, so 3 million kids don’t go blind,” he says. “A day doesn’t go by that I don’t think about these things.”

As planned, in 2002 Resh turned the program over to the Africans he had helped to train. When it was time to say farewell, he walked away content. His efforts reopened to farming 60 million acres of land once abandoned to the disease, and protected the sight of an estimated 30 million people at risk for blindness. “You control the disease, you grow food for 17 million more people, and you still have the fish,” he says.

By all accounts, the OCP has made a tremendous difference in the everyday lives of rural residents. “In Burkina Faso, I see the change in the situation from what it was before the program and now,” Akpoboua says. “All of the clinical manifestations of the disease used to be very common around the Volta River: young children leading the blind, the whole area without schools or health facilities. Today, schools have been built in these areas, they have health clinics, new houses are being constructed. The changes are very visible.”

The OCP was so successful that in 1996, the Programme for Onchocerciasis Control, a campaign to distribute ivermectin, was launched in the 19 remaining African countries infested with the disease.

Today, life-sized versions of Resh’s small river-blindness statue stand at the headquarters of the World Health Organization, the World Bank, and Merck & Co. (the pharmaceutical company that donated the ivermectin used to treat the disease), as symbols of the program’s phenomenal success. For those who toil to rid the globe of malaria, tuberculosis, HIV, and infant diarrhea, the statue is a reminder of the human suffering they aspire to relieve.

Reflecting on his work, Resh says he was lucky to have been part of such an important environmental program. “It was a very humanizing experience. When I was really sick with lung problems, I wondered whether what I had done was worth it. But you learn that there are things that are bigger than yourself—that 30 million is better than one.” 



TO BRING RIVER BLINDNESS UNDER CONTROL IN WEST AFRICA, **VINCENT RESH** AND HIS COLLEAGUES WAGED A DECADES-LONG CAMPAIGN AGAINST THE DISEASE-BEARING BLACK FLIES ALONG 30,000 MILES OF RIVERS, WHILE CONSTANTLY MONITORING THE HEALTH OF THE BROADER ECOSYSTEM.

# PUTTING AGRICULTURE BACK ON THE MAP

BY CELIA W. DUGGER



## World Bank Report focuses on agricultural development in Africa

For the first time in a quarter century, the World Bank's flagship annual report on development put agriculture and the productivity of small farmers at the heart of a global agenda to reduce poverty. Three-quarters of the world's poor still live in the countryside.

The World Development Report, released last fall and co-authored by **Alain de Janvry**, professor of agriculture and resource economics for 40 years and one of the world's authorities on developing economies, is the first on agriculture since 1982. De Janvry, along with Australian economist Derek Byerlee, co-directed the 18-member core team that prepared this year's report on agriculture. **Elisabeth Sadoulet**, another professor of agricultural and resource economics at Berkeley, is also one of the report's authors.

Peeter Viisimaa, iStockphoto



# GLOBAL POVERTY

New minor provides opportunities to work toward solutions

In the fall of 2007 the Blum Center for Developing Economies introduced a unique new minor designed to teach undergraduates about global poverty and provide them with meaningful opportunities to work toward solutions. Open to all undergraduates, the minor in Global Poverty and Practice draws a broad cross-section of students, including English, engineering, and environmental economics and policy majors.

The minor, which examines theoretical and ethical debates around poverty and development, is housed in the International and Area Studies teaching program. However, its education program committee draws upon faculty from across campus, including **Alain de Janvry**, professor of agricultural and resource economics.

The minor is unique, with its thematic focus, orientation toward undergraduates, and—most significantly—its requirement for a hands-on practice or research experience. Students pursuing the minor seem particularly excited about the opportunity to work shoulder-to-shoulder with organizations and individuals who confront global poverty head-on.

**Jenn Jehnson**, an environmental science major who is minoring in global poverty and practice, plans to travel to Honduras with Global Medical Brigades and to work on clean-water access in rural villages. “This minor coincides so well with my goals,” she says. “I want to combat global poverty by fighting environmental injustices around the world.”

—PHILLIP DENNY

Just a week before the report was published, an internal evaluation unit chided the bank for its neglect of agriculture in Africa and its plummeting financial support for that sector over the past 15 years—support that did not begin to grow significantly until 2006.

More broadly, the report crystallizes an emerging consensus among wealthy countries, philanthropists, and African governments: Increased public investment in scientific research, rural roads, irrigation, credit, fertilizer, and seeds—the basics of an agricultural economy—is crucial to helping Africa’s poor farmers grow more sorghum, corn, millet, cassava, and rice on their miniature plots.

“What we’re hoping to do with this report is put agriculture back on the map,” says de Janvry. “The agricultural sector in developing nations has been underfunded for the past two decades. The Millennium Development Goal of cutting poverty and hunger in developing nations by half by 2015 is not going to be achieved unless more attention is paid to where the world’s poor are and what they do.”

According to the report, the world’s demand for agricultural crops—for food, feed and biofuels—is expected to double within the next 50 years. At the same time, the natural resources that sustain agriculture will become increasingly scarce and degraded with overuse and the effects of climate change. The report concludes that greater investment in agriculture is needed to trigger economic growth, and that economic growth originating in agriculture will benefit the income of the poor 2 to 3 times more than growth from the non-agricultural sector. The power of agricultural growth in releasing large numbers of people from poverty has been amply demonstrated by recent successes in China and Vietnam, according to the report’s authors.

“We are proposing that the shares of public investment and foreign aid to agriculture be increased from 4 to 10 percent in sub-Saharan Africa,” says de Janvry. “This is akin to the investment of resources in successful countries such as India and China.”

Foreign aid for agriculture has plunged as support for global health and primary education has surged. The fight against AIDS and other diseases is keeping millions of people alive, and rising elementary school attendance is lifting literacy rates. But most poor Africans make their living in agriculture and need to grow more crops to feed themselves and earn their way out of destitution, many analysts say.

“We’re not saying health and education aren’t important,” says de Janvry. “But if you look at Africa, there’s no alternative to agriculture as a source of growth.”

The World Bank is not the first to reach this conclusion. At a 2003 African Union summit, African governments promised to more than double their own very low public spending on agriculture. In 2005 the United Nations Millennium Project, led by Columbia University economist Jeffrey D. Sachs, advocated major investments to increase the productivity of poor farmers in Africa. Last year, the Bill and Melinda Gates

Foundation joined the Rockefeller Foundation to help bring a green revolution to Africa. The Gates Foundation, known for its work on global health, was motivated in part by an awareness that extreme poverty and malnutrition were underlying causes of much of the sickness and premature death plaguing Africa.

But the bank—the world’s leading development institution and financier of antipoverty programs—plays a unique role in advising poor countries, and its return to agriculture is likely to influence practical policies across sub-Saharan Africa and South Asia, where hundreds of millions of farmers and landless laborers are still mired in poverty.

The 365-page report was conceived before the arrival of the bank’s new president, Robert B. Zoellick, but Zoellick embraced its themes while acknowledging the recent critical evaluation of the bank’s own performance. “To make this successful, we’re going to need to increase investment,” he said at a forum that was shown live on the Web.

Robert S. McNamara, an earlier World Bank president, initiated the last period of ambitious investment in African agriculture, in the 1970s. Internal evaluations found that many of those projects and subsequent ones failed for a variety of reasons. The projects were often complex, devised and run by outside professionals and not adopted wholeheartedly by poor countries that had little capacity to implement them independently, and sometimes had little commitment to poor farmers.

In the 1980s, in the era of Ronald Reagan and Margaret Thatcher, the World Bank increasingly withdrew its support from agriculture and expected private markets to spur growth through competition. Bank officials even thought profit-seeking companies would build toll roads in remote parts of Africa. But, as the recent internal evaluation found, private markets often failed to deliver the range of goods and services farmers needed, including improved seeds, fertilizer, and credit.

In India’s green revolution, which began in the 1960s with the introduction of new high-yielding varieties of rice and wheat, the World Bank, the Rockefeller Foundation, and the United States encouraged the Indian government to play a pivotal role in the provision of seeds, fertilizer, and credit, says Uma Lele, an agricultural economist who worked at the bank for 35 years and evaluated many of its agricultural programs before retiring. The Indian state also set floor prices for wheat and rice to ensure farmers a return on their investments.

In the effort to bring an agrarian revolution to Africa, much of the debate will now focus on the role that African governments should play in spurring farm productivity. Economists who have read the World Development Report say there was clearly still a great deal of ferment and disagreement within

the bank about many of the particulars. For example, should African governments give farmers subsidies to buy fertilizer, and under what conditions?

“The world’s demand for agricultural crops is expected to double within the next 50 years, but the natural resources that sustain them will become increasingly scarce and degraded.”

The report notes that agricultural subsidies have a way of becoming deeply entrenched politically long after their original purpose has been served. The report found, for example, that if European countries, the United States, and other wealthy nations removed all tariffs and subsidies for cotton, soybeans, and other oilseeds—practices



World Bank

ALAIN DE JANVRY

that reduce the world price of those commodities and make it harder for unsubsidized farmers in poor countries to compete—developing countries’ share of world trade in cotton and oilseeds would be more than 80 percent in 2015 instead of only about half.

The report was not meant to settle the complicated and difficult policy questions, says de Janvry. Rather, he hopes, the work will help “to change the conversation.”

This article originally appeared, in slightly different form, in *The New York Times*. Reprinted with permission. Additional reporting by Sarah Yang, UC Berkeley Public Affairs.

# SPOTLIGHT ON

## Bodhi Garrett

### ENVIRONMENTAL SCIENCE '00

When the great Indian Ocean tsunami of 2004 hit Thailand, Bodhi Garrett was luckier than most of his friends; he was spending the Christmas holiday with family in the United States. But Garrett returned home almost immediately to Thailand's remote North Andaman region to help sort out the nightmare of missing persons. The rogue wave had destroyed his home, erased his job at a local eco-tourism resort, and taken the lives of many of his neighbors. And yet, he says, "I was inspired by those around me who had lost everything, and still dared to dream of a better future."

There was no shortage of volunteers during those first few weeks. Locals worked tirelessly to find survivors, to begin rebuilding, and to just get by. Messages poured in from people around the world asking how they could help. "In one of those emails someone asked where they could donate," Garrett says. "I had to pause because I had no idea. It made me think that there might be a good way to get something bigger started." And so North Andaman Tsunami Relief was born.

The nonprofit Garrett launched was vastly different from mega-charities like the Red Cross, which also descended upon the scene. Such large organizations provided critical resources; however, Garrett realized that they didn't have the capacity to address the devastated communities' long-term needs. "I wanted to build a relief organization that was sustainable," says Garrett. "A model of grassroots, need-based aid. I thought this might be a more successful model than the traditional, more external approach." Garrett's model required intense focus on what the locals truly needed, as well as their participation. His main goal was to develop a model that would eventually be run entirely by local villagers.

"A lot of companies and foundations gave us money for different projects," says Roma Pakdee, a villager from Ban Talae Nok. "In the beginning things were okay. But over time they were not stable." North Andaman Tsunami Relief was different, she says. "They always followed up with us. They're different from other organizations that just give money and then leave."

Belief in the power of sustainable community development was a product of Garrett's education. During his senior year at Berkeley in 2000, with support from a CNR grant, Garrett conducted research in a Himalayan national park, examining the links between eco-tourism, firewood use, and deforestation. He credits this experience as giving him his "first taste of international work and the confidence to continue." Though he had never faced anything like the devastation wreaked by the tsunami, this background provided him with the perspective and skills that shaped his fledgling relief organization.

Garrett launched his project with the help of "an all-star revolving cast of characters" that included friends from Berkeley, other international volunteers, and most importantly, tsunami survivors. "Tapping into local knowledge was an instrumental part of this project. Instead of imposing what I had learned onto the situation, I took the time to learn what the local needs truly were," Garrett says. "Then we were able to develop the capacity to meet those needs—not by importing ideas from the outside, but by supporting local creativity and capacity."

Over two years, Garrett and his collaborators completed over 150 tsunami relief and community development projects, starting with emergency needs and moving on to education, livelihood development, and conservation. One key idea was tourism. Traditional livelihoods like fishing had nearly vanished, but locals felt that tourism could support them. They wanted to be sure that it could be done in a way that would preserve their land and benefit their community. So Garrett and the villagers launched Andaman Discoveries. "Tourism can be used not only for economic benefit, but also as a tool for community development," Garrett says. "So for us that means allowing people to come in and participate in the mangrove reforestation efforts, it means helping to replant orchids in the forest and working with the handicraft programs."

Today, Andaman Discoveries runs community-based eco-tours, cultural tours, and a volunteer placement program that was named one of the top 50 "Trips of a Lifetime" by National Geographic. North Andaman Tsunami Relief's other projects, including environmental education, vocational training, a handicraft cooperative, and a community center have also taken off. Garrett predicts that soon the programs will be entirely self-sustaining, thereby working him out of a job. To him that will be the truest measure of success.

For more information on Andaman Discoveries or to get in touch with Bodhi Garrett, visit [www.andamandiscoveries.com](http://www.andamandiscoveries.com).

## After the Wave

To view a video documentary on Bodhi Garrett's relief work in North Andaman, visit <http://nature.berkeley.edu/breakthroughs>.



Chris Dunbar

By Aimee Kelley

'00

# SPOTLIGHT ON *Claude Wagner*



Larry Wagner

By Aimee Kelley

## FORESTRY '33

At 97 years old, Claude Wagner still sings the forestry summer-camp song from memory: “A doc or law I’m not going to be, I’m going to study forestry.” A 1933 graduate of the School of Forestry, Wagner stuck to the song’s promise and joined the Forest Service—about what you’d expect from someone whose favorite course was silviculture (the art and practice of forestry management).

Wagner remembers his time at Berkeley as his “golden years.” Born and raised in San Francisco, he didn’t have to travel far to find academic bliss. Tuition was \$25 a semester, and in exchange for meals he

“I just wanted to be in the woods.”

worked at a fraternity serving dinner. He spent his summers at forestry camp, a rite of passage for generations of Cal Foresters that came after him. He and 25 other students—young men only, naturally—lived in a handful of platform tents and learned to cruise timber. Saturday nights, they’d go into the nearby town of Quincy for the weekly dance.

After his education at Cal, Wagner spent the next eight years in the U.S. Forest Service. “I was appointed as a junior park naturalist at Yosemite National Park,” Wagner recounts. While there, he made the acquaintance of photographer Ansel Adams, who was living in the park and shooting some of America’s most famous landscape photos. From there, Wagner went on to the Grand Canyon, where he worked on vegetative type mapping, plotting “what was growing where” on the south and north rims of the canyon. It was during this project, in 1935, that Wagner made what he calls the most exciting discovery of his career.

Out in the field, while scanning canyon walls near Point Sublime, Wagner noticed something strange through his binoculars. Just under the rim of the canyon, a series of square cuts stood out on the canyon wall. Baffled by what he saw, Wagner recalls thinking,

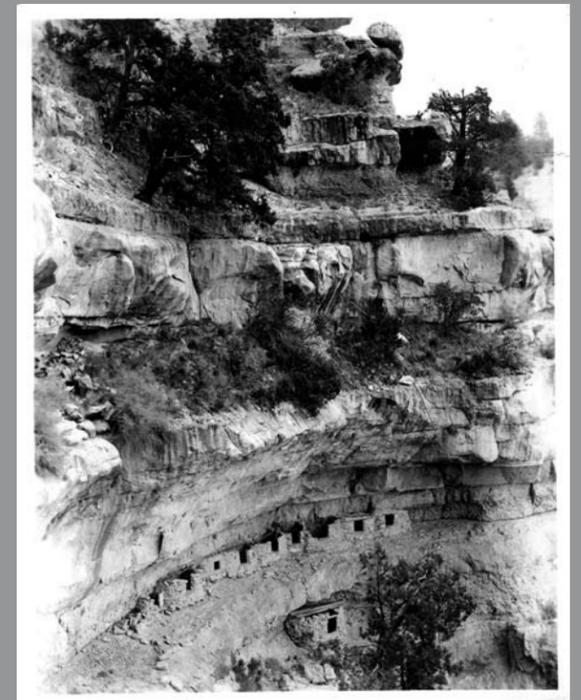


WHILE WORKING AT THE GRAND CANYON IN 1935, WAGNER (LEFT) DISCOVERED SEVERAL EXTRAORDINARY ANCIENT ANASAZI RUINS (BELOW). PHOTOS COURTESY OF LARRY WAGNER.

“God doesn’t make square holes.” After scaling the canyon wall and scrambling up a tree, he found himself standing in an ancient Anasazi ruin—the square holes he’d spotted were granaries once used for storing corn and pine nuts; the ruin dated to 1200 A.D. In his journal, Wagner recorded the day’s unusual events with a touch of humor: “We claimed the pictographs said ‘Jr. Chamber of Commerce and Lion’s Club Meet Wednesdays at 11 a.m.’”

When the type mapping was finished, Wagner moved on to other forestry work. In 1942, married and raising a family, he returned to California, expecting to join the armed forces fighting World War II. Shortly after arriving in his home state, however, Wagner contracted polio and was unable to enlist. He had taken a job at Norris Industries and remained there, earning his engineering degree through night school at Cal Tech. Weekends and vacations were spent outdoors, fishing with the kids or packing in to the wilderness of the high Sierra. In 1971, after a long career at Norris, Wagner retired as Chief Engineer and spent his newfound free time back in the forest.

“I just wanted to be in the woods,” he shrugs. Spoken like a true forester.



# SPOTLIGHT ON

*Michael Rodriguez, M.D.*



Tom Sanders

By Aimee Kelley

# '84

## NUTRITION '84

When Michael Rodriguez replied to an ad for undergraduate research subjects, he had no idea it would be the beginning of his career as a medical researcher and physician. His intent had been to be a guinea pig, but Sharon Fleming, professor of nutritional sciences and toxicology, suggested he come aboard as a researcher instead. Rodriguez agreed to the higher-paying gig and went to work studying the effects of fiber on the digestive system. He ended up as a co-author on the resulting research paper. "I probably wouldn't be here without her," Rodriguez says.

**"In the work that I do, I try to see how members of these underserved communities define these problems and what solutions they see."**

"Here" is the UCLA Medical School's Department of Family Medicine, where Rodriguez now serves as professor and vice chair of research. After finishing his undergraduate work in nutrition in 1984, Rodriguez went on to medical school at UCLA and then to Johns Hopkins for his Masters in Public Health. He returned to California for a fellowship at Stanford, where he made his first foray into community health issues for minority populations.

The son of immigrants from Latin America, Rodriguez was born and raised in San Francisco's Mission district. Some of his family was actively involved in groups like United Farm Workers; that context, he says, "gave me a sense of consciousness that it's important to work for things that affect the larger community." As a teen, Rodriguez would accompany his mother to her doctor appointments in order to translate. As Rodriguez points out, 70 percent of diagnoses are based on patient history; you can't get the history if you aren't speaking the same language.

"I always dreamed of going back to help the community I came from, but I had no idea I would end up in academic medicine," Rodriguez says. "I wanted to go to school and be a doctor in the community. But as I got my education, I started to turn on to the potential of not only helping individuals but also helping populations."

Experiencing first-hand some of the barriers faced by minority communities in accessing health care services, Rodriguez gravitated toward this field. Much of his research has focused on quality of services to these communities; for instance, one study he's currently leading looks at the impact domestic violence has on pregnant Latinas. Another examines doctor and patient perspectives on the role of health care systems in addressing elder abuse and neglect in ethnically diverse populations.

This spring Rodriguez and a colleague launched UCLA's Network for Multicultural Research on Health and Healthcare (NMRHH). The network provides a new framework for addressing inequalities in health care service to minority populations. Numerous organizations and agencies have conducted studies on this issue, but the data isn't really being utilized, Rodriguez says. By culling data from these various sources, NMRHH aims to create a comprehensive picture of health care disparities and then to devise ways to overcome these deeply seated problems.

Rodriguez points out that despite increased attention to the issue of health care disparities, the problem is persistent. "Most of this research is conducted in universities, not at the places where care is actually being provided," he says. "In the work that I do, I try to see how members of these underserved communities define these problems and what solutions they see. Because real solutions are going to be the ones that resonate in the clinics and the communities, that are economically sustainable as well as culturally appropriate."



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# CLASS NOTES

**'38** **ANDREW R. SCHMIDT**, Forestry '38, died on October 15, 2007. He was 92. Best known as "Andy" to his friends and family, he is remembered for his sense of humor and kindness to others. Born on a ranch in the Bitterwater Valley, near King City, Calif., his green thumb was apparent from a young age as he was able to coax a variety of plants from the dry alkaline soil of the Bitterwater ranch. Experience with the CCC led him to UC Berkeley. After he graduated with honors he joined the U.S. Forest Service, and at the beginning of WWII he joined the Navy and served most of his tour in the South Pacific. He is noted for his Forest Service work acquiring the Sylvania Track in Wisconsin and leading the planning team that worked with the Tahoe Regional Planning Agency. He retired as the first supervisor of the Lake Tahoe Basin Management Unit in 1973. He was an enthusiastic golfer, a prolific gardener, and an avid 49ers and Giants fan. He leaves behind his wife of 66 years, Barbara; two sons and a daughter; 13 grandchildren; 19 great-grandchildren; and many nieces, nephews, and friends.

**'52** **BRUCE KILGORE**, Wildlife Conservation '52, is still giving occasional fire ecology and management talks at conferences. He published an origin and history of the National Park Service fire use program in *George Wright Forum* 24(3) in 2007. He spends most of his time in Idaho, but also returns regularly to Walnut Creek, California.

**'66** **STEVE BECK**, Forest Management '66, reports that "Retirement is good!" He continues to be involved in economic development in agrarian communities in Kenya; to feed hungry people in his community; to transport people unable to drive or use regular public transit; to encourage neighboring land owners in Plumas County to make their shared young-growth forest fire-safe; to sing in his church choir and lead its personnel committee; to work for his Rotary Club; and to support development of interpretive opportunities in Death Valley National Park. In his free time, he and his wife Terry regularly travel overseas and to Mexico.



**'70** **JIM SMITH**, Conservation of Natural Resources '70, is "presently a practicing chiropractor living in middle Georgia, y'all."

**'72** **KATHRYN SUCHER**, Food and Nutrition Science '72 and MS Nutrition Science '73, has been professor of food and nutrition science at San Jose State University for the last 25 years. She has co-authored two textbooks, *Food and Culture* and *Nutrition Therapy and Pathophysiology*. She lives in San Jose with her husband Peter, and her son attends UC Berkeley—"Go Bears!"

**'73** **PAUL HOOBYAR**, Soil Science '73, has been involved in fisheries and habitat restoration issues in the Pacific Northwest for a number of years. Paul received a master's degree from the University of Oregon in 1989, and for the past 12 years has been the owner and principal consultant of Watershed Initiatives ([www.watersheds.com](http://www.watersheds.com)), which provides organizational, technical and procedural support to agencies, science teams, local governments, and stakeholder groups working on watershed restoration and species habitat recovery and planning efforts. Paul still finds time to fly fish on many of the Northwest's great trout and steelhead streams.

**'77** **STEPHEN CUNHA**, Conservation of Natural Resources '77, is a professor of geography at Humboldt State University and director of the California Geographic Alliance. He received the California State University Wang Family Excellence Award as the Outstanding Faculty in Social and Behavioral Sciences and Public Service for 2007. Earlier that year, the California Council for Social Studies honored Cunha with the Hilda Taba Award for Outstanding and Enduring Contributions to Social Science Education in California.

**'77** **MARY HATZENBEHLER**, Forestry '77, reports that the Forestry class of 1977 (summer camp of 1975) had a reunion in the summer of 2007 and that "a lot of us are out there making a difference for resource conservation. As for me, I am now working with the Office of Special Counsel in Oakland. Please visit our website at [www.osc.gov](http://www.osc.gov) to see what we do. I like the email lists at <http://www.naturealum.berkeley.edu> and the Cal Cafe for alum hangouts."

**'78** **SHARON MARIE PARIS**, Conservation of Natural Resources '78, has worked for the federal government for the past 29 years—in three land management agencies and in four states. Starting as a park ranger on Alcatraz Island in 1979, she transferred to Carlsbad Caverns National Park in 1982 and then to Valley Forge National Historical Park in 1985. After seven years with the park service, she became a Bureau of Land Management ranger in Needles, Calif., then a natural resource specialist in Barstow, Calif. In 1992 she transferred to the Forest Service at Boise National Forest as a NEPA/

litigation specialist. In 1999 she transferred back to BLM where she is now the Natural Resource Specialist overseeing the post-fire recovery program. She looks forward to retiring in a couple years to do volunteer work and travel.

**'78** **RICHARD WALTON**, Forestry '78, currently works in Chico, Calif., and is deciding what to do next.

**'79** **VINCENT BERG**, M.S. Range Management '79, worked for PG&E in a variety of roles over 18 years following graduation. For the past 9 years, he has worked in the telecommunications department at Charles Schwab and Co. in San Francisco, in performance and capacity planning for the company's data network.

**'80** **MICHELLE LEONARD**, Conservation of Natural Resources and Environmental Studies '80, lives in Pasadena, Calif. She is a vice president of SCS Engineers, a national environmental consulting firm. She specializes in the design and implementation of solid waste management plans and recycling programs.

**'81** **GREG SYREN**, Conservation of Natural Resources '81, has worked in the urban environment since 1985, representing criminal defendants for Alameda County—"Not exactly the 'environmental' legal job I imagined," he says. "Nevertheless, I still consider issues of the environment the most important in our society."

**'81** **VALERIE YERGER**, Conservation of Natural Resources '81, is a licensed naturopathic doctor with a special interest in cleansing the body of environmental toxins. Several

years ago she joined the faculty at the University of California, San Francisco, where her research focuses on tobacco-related health disparities. Dr. Yerger initiated the investigation of melanin's potential role in nicotine addiction. Her research has appeared in a number of peer-reviewed journals. She is also the mother of four children: Shannon, Ainye, Craig, and Justin.



**'82** **JULIAN HENKIN**, Forestry '82, has "made a grand loop, now ending up in New York as a principal in the hedge fund firm Green Ventures International, trading emission reduction credits."

**'83** **THOMAS FITCH**, Forestry '83, lives in Tracy, Calif., and has worked at Lawrence Livermore National Laboratory since 2000 as a chemist. He and his wife, a teacher in Stockton, have been married for 17 years and have an 8-year-old daughter in the 3<sup>rd</sup> grade. They plan to vacation in Boston and New York this summer.

**'84** **MICHAEL GREEN**, Conservation and Resource Studies '84, lives in Albany and works in Oakland, Calif. He is executive director of the Center for Environmental Health ([www.cehca.org](http://www.cehca.org)).

**'84** **ANN MAYO HOBBS**, Conservation of Natural Resources '84, is currently employed with the Placer County Air Pollution Control District in California. This year marks her 21<sup>st</sup> year of working in the air quality field. She finds that her conservation background has aided her work with smoke management, especially in the Lake Tahoe Basin. She and her husband Doug (Forestry Camp '84) live in Nevada City in the Sierra Nevada foothills with two children, Colt, 14, and Blaire, 11.

**'85** **KEN RAUST**, M.S. Forestry '85, sends greetings from Colorado. "I have lived here 22 years now and have been enjoying the great outdoors." He is a partner in an architectural and engineering firm, CLC Associates, that works in retail all over the Western United States. His mountain condominium allows him "to do plenty of skiing in the winter and hiking in the summer," and he is looking forward to traveling more and seeing friends and colleagues in Berkeley in the near future.



**'86** **CYRIL JUNGKOO AN**, Political Economy of Natural Resources '86, has returned to Korea and is running an automotive components manufacturing business in Korea, China and Japan. "I miss the CNR life during the '80s and want to keep in touch with '86 classmates," he says.

**'87** **HELENE METAIS-ROBIEUX**, Political Economy of Natural Resources '87, followed her husband Jean-Luc to France in 1990. She is responsible for market studies at Euro Disney, but is currently on parental leave caring for her four daughters, Estelle, 12, Stéphanie, 10, Juliette, 4, and Diane, 1.

**'92** **JOLIE KAYTES**, Conservation and Resource Studies '92, is a faculty member in the Department of Horticulture and Landscape Architecture at Washington State University, and was recently promoted to associate professor.

**'93** DAN IRELAN, Conservation and Resource Studies '93, recently moved to Alaska to take a one-year position as an interpretive ranger at Denali National Park. For the previous three years, he was the director of the Pigeon Point Environmental Education Program in Pescadero, Calif., where he taught coastal, marine, and redwood ecology to public school students. He says, "When I was not taking students to meet tide pool animals and northern elephant seals, I was spending summers as a park ranger in Denali and Sequoia National Parks."

**'93** JOHN STEVENS, Conservation and Resource Studies and Geography '93, moved to Boise, Idaho in 2002. He is a partner with Thornton Oliver Keller Commercial Real Estate, specializing in investment real estate sales. He has been married nearly 10 years and has a 6-year-old boy and a 3-year-old girl.

**'94** AMIT BATASYAL, Ph.D. Agricultural and Resource Economics '94, recently published his fifth book, *Dynamic and Stochastic Approaches to the Environment and Economic Development*.

**'94** TED RAAB, Ph.D. Agricultural Chemistry '94, is a senior scientist at Stanford University, working on tropical forest processes, especially ferns in Hawaii and Suriname. He and his wife Dominique will find time to travel to Canada, New Zealand, and Tanzania later this year.



**'95** TOSHIFUMI SERIZAWA, M.S. '95 and Ph.D. Wildland Resource Science '00, spent three years in Zimbabwe as a World Bank natural resource management specialist. Toshifumi is now back in Tokyo working as a public expenditure management/rural development consultant and director of Asia Dept. at IC Net Ltd., a company providing consulting services to strengthen the social and institutional aspects of assistance to developing countries.

**'98** JOSHUA POLSTON, Political Economy of Natural Resources '91, recently took a position with the Port of Oakland as the aviation project manager conducting development feasibility work with Oakland International Airport. He says he "had to get back into aviation somehow after his wife forbade him from flying private planes" after their third child, Jorja, was born. He continues to teach macroeconomics in the Peralta Community Colleges and generally tries to shake things up.

**'99** CAMELLA (MIA) POTTER, Nutritional Science-Dietetics '99, now lives in Portland, Ore., and works on quality-of-life research focusing on breast cancer survivors and men with prostate cancer. This fall she will start a doctorate in naturopathic medicine.

**'00** AMY TANG COLITZ, Conservation and Resource Studies '00, finished her master's degree in education and her multiple subject teaching credential at UCSC in 2006. She is now finishing her second year as a bilingual 7<sup>th</sup> grade math and science teacher at a dual-immersion Spanish and English charter school in Watsonville, Calif. She says: "I love this community and feel that my work helps empower students, particularly students of color, to be proud of their cultural heritage, to value education, and to continue to make positive contributions to society."

**'00** SARA GALLEGOS, Environmental Economics and Policy '00, lives in Napa, Calif. She married soon after graduating, and worked for Vallejo Garbage Service as recycling manager for five years. She now works for the City of Napa as a materials diversion analyst (recycling coordinator).

**'01** ELIZA BARCLAY, Conservation and Resource Studies '01, is a freelance journalist based in Washington, DC, covering international environmental, health and business issues with a focus on East Africa and Latin America.

**'02** TRACY HELD, Conservation and Resource Studies '02, recently left her role as outreach director at *Bay Nature* magazine to pursue other interests, including acting, playwriting, and acupressure massage. She also studies aikido and works as a martial arts instructor. Her first children's play was performed in April at Laney College in Oakland, and she is getting married this summer.

**'03** MARY SORENSEN, Molecular Environmental Biology '03, received her Ph.D. from UC Riverside in 2007 and is currently a postdoctoral researcher in insect ecology.

**'04** SIMONE CIFUENTES, Environmental Economics and Policy '04, moved to New Orleans after Hurricane Katrina to help rebuild. "Soon after, I bought a house where I live with other Young Urban Rebuilding Professionals (YURPs) sharing the rising cost of living. I am currently applying to law school to pursue environmental law."

**'05** MICHAEL COLVIN, Environmental Economics '05 and M.S., Public Policy '07, recently began working as a policy analyst at the California Public Utilities Commission. He reports: "I am on the greenhouse gas team and loving all that I am doing!"

**'05** JASON DELBORNE, Ph.D. Environmental Science, Policy and Management '05, is finishing a postdoctoral fellowship at the University of Wisconsin-Madison and preparing to begin a faculty position at the Colorado School of Mines. He will be an assistant professor of science, technology, society, and policy in the division of Liberal Arts and International Studies.

**'05** MELISSA IP, Nutritional Sciences-Dietetics '05, is "teaching kids to stay healthy in the greater Philadelphia area and loving it!" She is also completing an internship to become a registered dietitian. "I try to stay true to CNR by modeling and promoting a sustainable lifestyle as much as I can," she says.

**'06** ASMERET ASEFAW BERHE, Ph.D. Environmental Science, Policy, and Management '06, is currently a President's Postdoctoral Fellow in UC Berkeley's department of Earth and Planetary Sciences. Asmeret's work focuses on the role of soil erosion in terrestrial carbon sequestration, and mechanisms of organic matter stabilization in soils.

**'06** CHRIS BUSCH, Ph.D. Agricultural and Resource Economics '06, is currently an economist in the Union of Concerned Scientists' Climate Program, based in Berkeley.

**'06** BRENDAN COX, Environmental Economics and Policy '06, is a certification coordinator for Scientific Certification Systems in Emeryville. He specifically works with Forest Stewardship Council certification, a market-based program promoting responsible forestry. He says it's nice to be working in a field related to his major, and with people who care about environmental issues. A volunteer guide for the restored 1914-era Sturgeon's Sawmill located in western Sonoma County, he is working to expand the site's historical interpretive message to include an explanation of how contemporary forest management differs from 40 years ago and why there is still a need to harvest commodity resources.

**'06** JOSEPH SPAGNA, Ph.D. Environmental Science, Policy, and Management '06, will be starting a position as assistant professor of biology at William Paterson University this summer.

**'07** ALI ANSARY, Nutritional Sciences-Physiology and Metabolism '07, has been working with adolescent and young adult cancer patients while applying to graduate schools, and is running the National Melanoma Awareness Project, a community based program that educates young adults about melanoma and skin safety. Ali also chairs the Young Adult Leadership Council for the "I'm Too Young For This!" Young Adult Cancer Foundation, which addresses the psychosocial issues that face young adults with cancer; co-authored the AYA Cancer Patient's Bill of Rights; and is involved in an epidemiological research program called the Kids, Adolescent and Young Adult Cancer (KAYAC) Research Program. "I hope to be able to eventually foster change beyond the doctor's office," Ali says.

**'07** LAUREN AU, Nutritional Sciences-Dietetics '07, is pursuing an M.S. in Nutrition & Public Health and Dietetic Internship at Teachers College, Columbia University. She is on the school's triathlon and water polo teams and plans to complete her first Olympic triathlon in September.

**'07** VERENA HUI, Nutritional Sciences-Dietetics '07, recently completed a part-time pastry-baking course in San Francisco. She's now looking forward to a bit of traveling in the U.S. before returning to her home in Hong Kong in the summer.

**'07** ASHLEY TERRELL, Nutritional Science and Toxicology '07, has enrolled in the UCLA molecular toxicology Ph.D. program.

**'07** HENDRIK WOLFF, Ph.D. Agricultural and Resource Economics '07, is an assistant professor of economics at the University of Washington.

**'07** SIMON WONG, Environmental Sciences and Molecular Environmental Biology '07, has been working as a pharmacy technician and "taking some time to take care of stuff" before heading to pharmacy school in August.



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James Block

## Leading the Way

*Ag consultant aims to build stronger alumni community*

Despite the demands of running an independent consulting business, **John Casazza**, Soil Science & Plant Nutrition '77, has stepped forward to serve as the first president of the College of Natural Resources' Alumni Association Board.

"It's really impressive to see what our fellow alumni have done to improve the world using their education and creativity," says Casazza, explaining his motivation to help CNR alumni connect with one another.

Casazza says that at first he wasn't sure if becoming involved in the new alumni association was a good fit for him. "But my friends and family encouraged me to get involved, because of the opportunity to get closer to the university and to be a part of CNR's role in improving the world." He says another consideration was his own experience as a student in CNR. "I realized that students can achieve their career goals if they have opportunities to work and study and get involved beyond the classroom, with help from those of us who have passed through the same corridors before them."

In the end, says Casazza, students and alumni are looking for many of the same things: "We all benefit from connecting to one another and to the faculty in ways that will enhance our lives and careers."

## JUST LAUNCHED...

The CNR Alumni Blog is a new way to keep in touch with classmates and learn about what your fellow alums are doing with their lives and careers. It's also a great place to inspire and advise today's students.

Whether you've blogged before or the concept is new to you, this is a great new way to share your stories and perspective. You can:

- Include your story when you submit your Class Notes at <http://nature.berkeley.edu/notes/>
- Write a guest column on a topic important to you—email [breakthroughs@nature.berkeley.edu](mailto:breakthroughs@nature.berkeley.edu).
- Become a featured blogger and contribute on an ongoing basis. Email [breakthroughs@nature.berkeley.edu](mailto:breakthroughs@nature.berkeley.edu) for more information.



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Check out the blog at <http://nature.berkeley.edu/blogs/alumni>



**MATT STRAUSSER**, AN UNDERGRADUATE IN FORESTRY AND INTEGRATIVE BIOLOGY, HAS STUDIED AT THE UNIVERSITY'S FIELD STATION ON MOOREA, FRENCH POLYNESIA AND IN THE SIERRA NEVADA. HE SAYS HE HOPES HIS PHOTOS FROM THE FIELD "SERVE AS WITNESS TO THE BEAUTY AND WONDER OF NATURE SO OTHERS CAN JOIN MY EFFORTS TO PROTECT IT." VIEW MORE OF HIS IMAGES AT [HTTP://NATURE.BERKELEY.EDU/BREAKTHROUGHS](http://nature.berkeley.edu/breakthroughs)