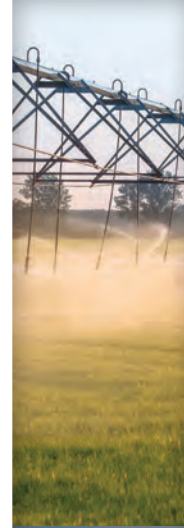


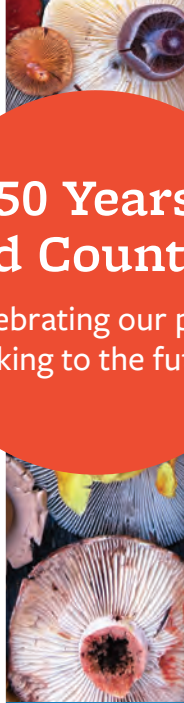
Spring 2024

# BREAKTHROUGHS

Berkeley Rausser  
College of Natural Resources



**50 Years  
and Counting**  
Celebrating our past,  
looking to the future





# Berkeley Rausser

College of Natural Resources

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## LETTER FROM THE DEAN

In the very first course catalog of the College of Natural Resources—published in September 1974—Acting Dean **L.L. Sammett** emphasized the strength and potential created by bringing together the complementary programs of the College of Agricultural Sciences and the School of Forestry and Conservation. The philosophical direction of the new College, he wrote, lay in the belief that “our renewable resources must be used in ways that are at once productive, conservative of those resources, and protective of environmental quality.”

Half a century later, Rausser College of Natural Resources remains grounded in that belief and is a leader in cutting-edge research, exceptional educational opportunities, and creating connections between science and society through outreach, policy, and community engagement. The College is committed to a renewed vision of creating equitable, efficient, and innovative solutions that address the climate crisis, promote ecological and economic sustainability, responsibly steward natural resources, and improve human health and well-being.

In this anniversary issue of *Breakthroughs*, we celebrate the many achievements of the College in the past 50 years and also look ahead. We highlight groundbreaking research, share anecdotes and little-known facts, and spotlight some of our many changemakers and trailblazers. Beyond these pages, we’re publishing more commemorative pieces on our website all year and are excited to present a special anniversary event in the fall semester (see back cover).

I’d like to thank everyone in our community—alumni, students, faculty, staff, researchers, and donors—for your hard work and continued support. We’re grateful for all you have made possible, especially throughout the campuswide Light the Way campaign (see pg. 28).

We also welcome the chance to hear your stories; email your photos or remembrances to [breakthroughs@berkeley.edu](mailto:breakthroughs@berkeley.edu) to help us celebrate our first fifty years and prepare to make the next half century even more impactful than the first.

*David Ackerly*

David D. Ackerly

## FACES ON THE COVER

From top left: Mandi Ujiie, '23 Conservation and Resource Studies (CRS), harvesting kale at the Oxford Tract in 2024 (Photo: Mathew Burciaga). John Battles and then undergrad Rishiraj Das, '99 Resource Management, at Blodgett Forest in the late '90s. Lisa Pagan, '92 CRS, proudly shows off the College t-shirt she won during welcome week in 1991 (Photo: Patricia Remencuis). Master of Nutritional Sciences and Dietetics students Yesim Goktekin, Ajay Shenoy, Caroline Thally, and Claire Larkins at the California State Capitol in 2024. Back cover: Carol B. Williams Jr., who served on the UC Berkeley forestry faculty for many years. Usha Lingappa and Rory Craig, researchers in PMB professor Sabeeha Merchant’s lab (Photo: Anastasiia Sapon).

# BREAKTHROUGHS

SPRING 2024 / CONTENT



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We're sharing stories to commemorate our 50th anniversary all year. Scan the QR code or visit [nature.berkeley.edu/50](https://nature.berkeley.edu/50).



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Annelise Gill-Wiehl (second from left) and her local research partners teach women in rural Tanzania how to use clean-burning liquified petroleum gas stoves, one of the few models that have both health and climate benefits.



# The truth about cookstove carbon credits

The fastest-growing type of offset on the global carbon market subsidizes the distribution of efficient cookstoves in developing countries to reduce greenhouse gas emissions, but a study by UC Berkeley researchers finds that the stoves' carbon-saving credits are vastly overestimated, by a factor of ten.

The overestimation undermines efforts to counteract carbon emissions to slow climate change, since companies

can use offsets to meet climate targets and sell products labeled as “carbon neutral” instead of making real reductions in greenhouse gas emissions.

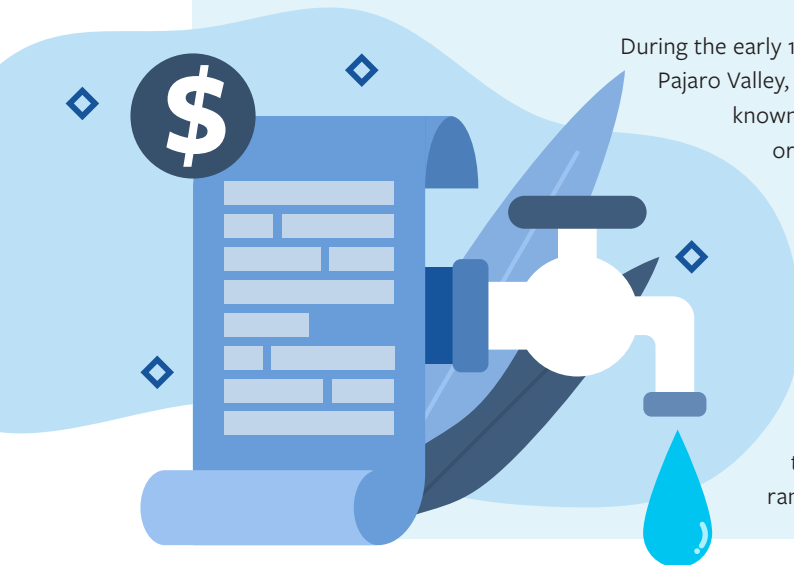
“Estimated correctly, carbon offsets have the potential to support the free or subsidized distribution of efficient stoves that reduce time spent collecting firewood or the cost of purchasing fuel,” said first author **Annelise Gill-Wiehl**, a PhD candidate in the Energy and Resources Group (ERG),

## Want to preserve groundwater? Tax it.

During the early 1980s, farmers in the Pajaro Valley, a California region known for its ample apple orchards and strawberry fields, suffered an agricultural disaster. Years of overpumping groundwater created space for seawater to enter the coastal aquifer that farms and ranches relied on,

devastating crops irrigated with this salty water.

In response, voters agreed to create the Pajaro Valley Water Management Agency to manage local water supplies and prevent future groundwater overdraft. The agency began metering groundwater in 1994 and charging based on usage. To avoid groundwater overdraft near the coast, the agency also began piping in irrigation water to certain areas known as the Delivered Water Zone (DWZ). Beginning in 2010, agricultural customers who received



Annelise Gill-Wiehl (stoves 2x), Adobe Stock (illustration)



A woman in Shirati, Tanzania selling charcoal used for cooking in inefficient cookstoves or in an open pit.



The view looking south from the top of Heart Mountain toward Cody, Wyoming, where the Beyond Yellowstone Program centers its work.

who has conducted extensive household energy fieldwork in East Africa. “What’s more, certain stoves can reduce smoke exposure enough to ultimately save lives.”

Published in *Nature Sustainability* in January, the study was the first comprehensive, quantitative quality assessment of any type of offset project. **Barbara Haya**, PhD ’10 ERG, director of the Berkeley Carbon Trading Project, and **Daniel Kammen**, the James and Katherine Lau Distinguished Professor of Sustainability, are co-authors of the study. The authors also offer a companion website with a summary of findings, background materials, and guidance for cookstove offset project developers and credit buyers who want to trade in quality credits that can substantially improve health and reduce emissions.



Scan for more on cookstove carbon credits

water deliveries were required to pay an additional fee.

Economists like **Ellen Bruno**, a professor of Cooperative Extension in Agricultural and Resource Economics, have long thought that charging for groundwater could incentivize customers to manage their water use more efficiently without mandating specific changes. Although such charges are rarely enacted in California, the Pajaro Valley’s separate charge for service in the DWZ gave Bruno the opportunity to study the effect of what amounts to a tax on groundwater.

After analyzing the five-year periods before and after the implementation

of the DWZ charge, Bruno found that groundwater demand in the Pajaro Valley shrank in response to long-term price increases. Specifically, DWZ customers who faced an average 21 percent increase in the price of groundwater reduced their average annual extraction by 22 percent.

These findings, which were featured in *Bloomberg* and the *New York Times*, could have significant implications for groundwater management in California, especially as local regulators face a 2040 deadline to achieve groundwater sustainability.

## A commitment to conservation

Established last fall with a five-year, \$2.5 million gift from the James M. and Cathleen D. Stone Foundation, the Stone Center for Large Landscape Conservation at UC Berkeley is dedicated to advancing the conservation and restoration of ecologically and culturally important wildlife in the United States through community-engaged research, training, outreach, and policy work. The Center will create several Living Labs in specific landscapes where researchers and local partners collaborate to identify conservation priorities, evaluate solutions, monitor outcomes, and connect with policymakers. The Center’s first Living Lab is the Beyond Yellowstone Program, led by Professor **Arthur Middleton** and colleagues from the University of Wyoming, which focuses on studying and sharing the story of the Yellowstone ecosystem’s wildlife, lands, and people in support of landscape-scale conservation. “The Center will leverage Berkeley’s interdisciplinary research capabilities, leadership in environmental problem-solving, and ability to connect experts to local partners and policymakers, allowing us to increase the pace, scale, equity, and durability of landscape conservation,” said Middleton.



# In their own words



## Did California's overtime law help agricultural workers?

Farmworkers are vital to the success of California's agricultural industry and the broader agrifood system, yet many face economic, social, and health-related challenges. Nearly two-thirds of California crop workers have household incomes below 200 percent of the federal poverty level, more than half self-identify as undocumented, and their jobs are regularly ranked as highly dangerous.

These and other challenges have, in part, been attributed to historical discrimination and the resulting exclusion of farmworkers from federal labor laws, including laws with protections related to youth employment, unionization, minimum wages, and overtime standards. In 2016, California passed legislation to gradually phase in overtime standards beginning in 2019. Since then, four other states—New York, Washington, Oregon, and Colorado—have passed similar legislation.

Overtime regulations aim to improve worker well-being by requiring higher pay for working long hours. However, worker incomes could fall if employers reduce hours to avoid paying overtime rates, making workers who value extra income more than additional leisure time worse off. In this case, employers would also need to hire additional workers, invest in labor-saving technology, or make larger changes like switching to less labor-intensive crops.

My research using the National Agricultural Workers Survey shows that in the two years following the phase-in of California's overtime standards for agricultural workers, the average California crop worker experienced reduced hours and earnings. Fewer workers worked at or just below the prior overtime threshold of 60 hours per week, and more worked at or just below the 2020 threshold of

50 hours per week. Reduction in hours was accompanied with decreases in workers' weekly take-home pay. These changes are consistent with employers cutting individual worker hours to remain under overtime thresholds.

This early evidence suggests that the law may not be benefiting the workers it aims to protect, but additional research is needed. It is possible that despite these outcomes, workers are happy to accept the lower pay in exchange for fewer working hours and more leisure time. Additionally, the law might have led to increased job opportunities in agriculture, improving well-being for previously unemployed or underemployed individuals, or resulted in safer working environments, since research suggests longer hours can increase workplace injuries. On the other hand, workers and their families who were depending on this lost income may now need to seek out additional employment opportunities, negating these other benefits and adding the inconvenience of traveling between jobs. I am currently exploring these and other outcomes using alternative data sources.

**Alexandra Hill** is an assistant professor of Cooperative Extension in the Department of Agricultural and Resource Economics whose research and outreach aims to advance diversity, equity, and inclusion in the agrifood system. A longer version of this article originally appeared in *ARE Update*, published by the Giannini Foundation of Agricultural Economics.



Adobe Stock (farmer); Mathew Burciaga (Hill)



# Not in my backyard?

Wind power is one of the fastest-growing renewable energy sources, but its implementation often faces significant challenges from local communities, partly from resistance to visible wind turbines and the assumed implications for property values.

A study published this March in the *Proceedings of the National Academy of Sciences* shows, however, that the values of houses in the United States within a wind turbine's viewshed drop only slightly and temporarily due to disrupted views. The effect is smaller the farther away the turbines are and fades over time. The research was conducted by **Maximilian Auffhammer**, a professor in the Department of Agricultural and Resource Economics (ARE), **Wei Guo**, PhD '23 ARE, and former ARE postdoctoral researcher **Leonie Wenz**, now at the Potsdam Institute for Climate Impact Research.

After statistically analyzing data from more than 300 million home sales and 60,000 wind turbines from 1997 to 2020, the team found that the impact of wind turbines on house prices is much smaller than generally feared. "In the U.S., it's about one percent for a house that has at least one wind turbine in a 10-kilometer radius," explains Auffhammer. "And surprisingly, the house value bounces back to the original price over time." The study authors also found that there was no longer any effect for wind turbines built after 2017, a phenomenon they suggest could be due to people getting used to these new structures in their environment.

## Hot off the press

### SWEET DEAL, BITTER LANDSCAPE

Gender Politics and Liminality in Tanzania's New Enclosures

Cornell University Press

In the mid-2000s the Tanzanian government struck a deal with a foreign investor to convert more than 20,000 hectares of long-settled coastal land into a sugarcane plantation, but abandoned the plan a decade later. With rich ethnographic detail and visual storytelling, Assistant Professor **Youjin Chung** traces the profound implications the incomplete processes of development and dispossession had for the rural people there.



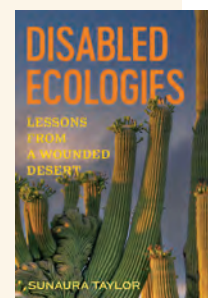
### DISABLED ECOLOGIES

Lessons from a Wounded Desert

University of California Press

Assistant Professor **Sunaura Taylor** tells the story of the contamination of an aquifer in Tucson, Arizona, and its ripple effects through the largely Mexican American community living above.

Drawing on her own complex relationship to this long-ago injured landscape, Taylor offers a powerful analysis and call to action that reveals disability as one of the defining features of environmental devastation and resistance.

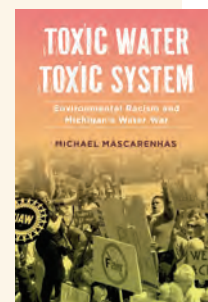


### TOXIC WATER, TOXIC SYSTEM

Environmental Racism and Michigan's Water War

University of California Press

Drawing from three years of ethnographic fieldwork in Detroit and Flint, Michigan, Professor **Michael Mascarenhas** amplifies the voices of marginalized communities, particularly African American women, whose perspectives and labor are consistently overlooked. The book exposes the consequences of a seemingly anonymous authoritarian state willing to maintain white supremacy at any cost—including poisoning an entire city and shutting off water to thousands of people.





# Investigating coral reef viruses

In addition to well-known threats to coral reefs like mass bleaching and ocean acidification, stony coral tissue loss disease (SCTLD) has been decimating coral reef communities at an alarming pace.

Infected colonies exhibit rapidly expanding lesions that consume the coral's living tissue, killing even large corals in mere months. Scientists are working to determine the

cause of SCTLD—which was first observed off the Florida coast in 2014 and has since been reported in 28 Caribbean nations—and to identify treatments that slow its spread.

Filamentous viruses have gained recent attention as a possible contributor to the disease. However, a study co-authored by Environmental Science, Policy, and Management professor **Adrienne Correa** in November shows that filamentous viruses may be globally distributed in corals and are not a component unique to this devastating disease.

Researchers in Correa's previous lab at Rice University identified filamentous virus-like particles (VLPs) in images of healthy and bleached coral samples collected in the waters surrounding the South Pacific island of Mo'orea, even though SCTLD has not been reported in the Pacific Ocean basin. "This tells us that filamentous VLPs are not solely associated with SCTLD and that we need to take a much closer look at what various kinds of viruses are doing," explained **Lauren Howe-Kerr**, who led the research while a postdoctoral researcher at Rice University.

Correa, who has studied coral reef virology for the past 14 years and joined the Berkeley faculty last fall, also stressed the importance of better understanding how viruses and microorganisms affect coral colonies' overall health. To advance that goal, her lab is collaborating with scientists from the Smithsonian and Oregon State University at UC Berkeley's Gump Research Station on Mo'orea to deep sequence corals and other reef organisms—including their resident viruses.

— *Mathew Burciaga*



Lauren Howe-Kerr collects a tissue biopsy of the branching coral, *Acropora hyacinthus*, off the coast of Mo'orea, French Polynesia.

## Beyond tired

When you think about what causes cancer, you might be quick to name chemicals like tobacco or radiation sources like ultraviolet light. But a recent study co-authored by Nutritional Sciences and Toxicology professor **David Moore** identifies

another cause: prolonged shift work, chronic jet lag, and other circadian rhythm dysfunctions. After exposing mice with both human and rodent liver cells to conditions that mimicked the jet lag associated with many weeks of international travel, Moore and co-

authors from the Baylor College of Medicine observed increased rates of cirrhosis, jaundice, and liver cancer compared to mice that were kept in sync with the natural day-and-night cycle. "Our work shows that circadian influences in cancer cannot be underestimated: chronic circadian dysfunction is a human carcinogen," Moore said.





Students in the Master of Nutritional Sciences and Dietetics program pose for a photo with Janet King (center) and former and current faculty during the dietetics program's 50th anniversary celebration.



# Building a healthier future

Rausser College of Natural Resources celebrated the 50th anniversary of its accredited dietetics programs last November, recognizing the faculty, staff, and alums who have shaped nutritional research, policy, and practice at UC Berkeley and beyond. Launched in 1971 as a Coordinated Program in Dietetics by the Department of Nutritional Sciences and continued today as the Master of Nutritional Sciences and Dietetics (MNSD), these programs build on the legacies of faculty like **Agnes Fay Morgan**, **Doris Calloway**, and **Sheldon Margen** to teach students how to promote health and wellness by applying nutritional and dietetic research in clinical and community settings.

Professor Emerit **Janet King**, PhD '72 Nutritional Science, served as the Coordinated Program's inaugural director and helped develop its curriculum, which provided graduates with both theoretical and experiential training. She also established partnerships with local hospitals—relationships the department retains to this day—that provided students with opportunities for clinical rotations and eliminated the need for a separate postgraduate dietetic internship. "We became the national model for establishing similar coordinated programs at other universities," she said. Faculty including **Pat Booth**, **Nancy Hudson**, **Susan Oace**, and **Allison Yates** helped manage the program as it grew.

A Didactic Program in Dietetics replaced the Coordinated Program in 1991. Students in the new program were able to

complete the dietetics curriculum but had to independently apply for a dietetic internship after graduating. An Individualized Supervised Practice Pathway, which serves as an alternative to a traditional internship, was added in 2017 to help students complete their final credentialing steps.



Read more about the program

This year, Rausser College welcomed the first cohort of students enrolled in the MNSD program. Developed to satisfy new graduate-level requirements set by the Accreditation Council for Education in Nutrition and Dietetics, the MNSD merges the department's focus on biological sciences and metabolic biology with the training that students need to become clinicians capable of applying concepts relating to the metabolic regulation of health and disease. "Graduates of our dietetics programs are highly trained in the foundational sciences by leading experts in the field, which sets them down the path to be strong science-minded and evidence-informed dietitians," said Assistant Adjunct Professor **Mikelle McCoin**, who directed the Didactic Program for 12 years and now leads the MNSD.

These graduates of the last five decades have used their comprehensive education and hands-on training to excel as dietitians in hospitals, public schools, community health centers, and other settings; pursue advanced degrees; or conduct nutrition-related policy and advocacy work. "Our nutrition and dietetics program is an important part of the College's mission to serve the people of California, the nation, and the world," said Rausser College Dean **David Ackerly**. "We are incredibly proud of our faculty and alums for making a difference in the lives and communities of the populations they serve."

— *Mathew Burciaga*



*Beginning this fall, UC Berkeley will offer two dietetics programs: the clinically-focused MNSD, and a new MPH program developed by the School of Public Health that focuses on public health nutrition, policy, and food systems and includes a Dietetic Internship.*



The Nutritional Sciences faculty circa 1973. Standing, from left: George Briggs, Sheldon Margen, Robert Stokstad, Janet King, George Chang. Sitting, from left: Doris Calloway, Maynard Joslyn, Barbara Kennedy, Richard Lyman.



# WHAT'S NEXT FOR CAL CONSERV



The Wawona Tunnel Tree was promoted to attract tourists to visit Yosemite National Park.  
Ralph H. Anderson/NPS



Hydraulic gold mining operations like Malakoff Diggins devastated California landscapes. An 1882 court decision limited the practice and is regarded as the state's first major environmental law.  
Bancroft Library



Yosemite Valley from  
the mouth of the  
tunnel on Wawona  
Road in 1936.  
Woodbridge Metcalf

# IFORNIA ATION?

Building on  
successes,  
grappling with  
inequities, and  
advancing a  
collective vision  
to protect nature  
for everyone.

BY MARY ELLEN  
HANNIBAL

At sunset on a clear October day last year, the conference center doors at UC Riverside banged open and a panoply of scientists, policy makers, tribal representatives, and community leaders poured into a courtyard for food and drink. The second annual meetup of California's 30x30 initiative was diverse, festive, joyous. Beaming, the dean of Rausser College of Natural Resources, **David Ackerly**, declared: "This is a new era in conservation!" He was promptly swallowed by the crowd.

Indeed, 30x30 is not our grandparents' conservation. With an ambitious goal of protecting 30% of Earth's lands and waters by 2030, the initiative revises what conservation is, who gets to do it, and what it is for. While more than 190 countries have signed on to the U.N.'s overarching 30x30 initiative, California is far ahead in design and implementation. The world is watching us. For several years now, constant statewide work has hammered out exactly how to identify priorities and objectives for investing more than \$1 billion allocated by Governor Gavin Newsom via Executive Order N-82-20 in 2020. California has adopted an everybody-into-the-pool approach, and regular citizens have joined academics, agency personnel, tribal representatives and more to define a collective vision for protecting our natural resources.

*As part of the College's 50th anniversary, Mary Ellen Hannibal traces the coevolution of California conservation and Berkeley research.*

From the University's beginnings, Berkeley has been central in shaping state conservation and beyond. Today we look at those prior eras with a critical eye. California's 30x30 is defined in large part around rejecting a discriminatory and elitist past, and while UC Berkeley has always sported a populist tone, the University has not been immune from damaging biases. Critically, the conservation of yesterday has not accomplished enough. By some measures it has failed miserably. The dispiriting numbers tell the story: a football field of natural land is developed every 30 seconds in the United States; nearly 3 billion birds have evaporated from the skies since 1970; one-third of American wildlife is stalked by extinction; half of all wetlands in the Lower 48 have been transformed, and not for the better. *Homo sapiens* has violently shape-shifted three-quarters of terrestrial Earth and two-thirds of the oceans. The impacts are equivalent to those measured by past epochal transitions.

We cannot go back in time to the Spanish crown's fateful encounter with indigenous California in the late 1700s and undo the tragic rampages that ensued against people and nature. But we can forge a new vision and follow its path. We can trace three eras of conservation: 1) adoring nature; 2) managing nature; and 3) nature in crisis. Today, as Berkeley researchers participate in 30x30, we are on the cusp of a fourth inclusive engagement: integrating nature.

### NATURE TO ADORE

The University of California arose in its own new era. By the late 1860s, the Gold Rush had brought hordes of newcomers and rampant environmental destruction to California. The flora and fauna were terra incognita to Western science, and a handful of prescient botanists and geologists began in earnest to "discover" them, many of them realizing that its unique species were fast disappearing. Berkeley became one of many land-grant universities established to strengthen the nascent United States by teaching "agriculture and the mechanical arts" in support of American enterprise. Reckoning with the land grant today includes acknowledging theft from and displacement of Native Californians. Countering this extractive history is a critical component in our revisioning today.

Tension between commercial and intellectual objectives can be traced as far back as Berkeley's first president, **Daniel Coit Gilman**. Gilman advocated for original research but was challenged by the California State Grange and other farmers' groups who wanted the university to keep its eyes on the utilitarian prize of market-making. "Who pays?" has long bedeviled conservation. Wildlife support has largely been funded by levies on hunting tags. Affluent citizens have driven the conservation agendas of many land trusts and other NGO models; often, they have saved nature for them-



George Meléndez Wright interviewing Totuya, also known as Maria Lebrado, the last known survivor of the Mariposa Battalion's 1851 expulsion of the Ahwahneechee from Yosemite Valley.

selves. Perhaps the most profound element of 30x30 is the funding it provides from state coffers most Californians have paid into. 30x30 brings us closer to meaningful recognition that the natural world is our commons, for which we all bear responsibility, including financial support.

Early Berkeley professors signed on to John Muir's Sierra Club, pledging to protect California's nature; some of them were racist. Paleontologist **John C. Merriam** was a significant force in developing both national and state parks. Like many, he was appalled at the mowing down of California and wanted to protect places like Yosemite from commercial development. In rocks he read poems. Echoing Darwin, he saw that life forms were related to each other across time. This was heretical to some Berkeley professors who still held the view that life comes instantly into being by divine fiat. Merriam called fossils the "sacred remains" of ongoing generations in which the "germ" of life advanced. Ferns that evolved before the redwoods towering over them created a "moving region of shade that reached back not for epochs simply, but for eons." This is the past worth protecting. But Merriam dabbled in eugenics. This poisonous strain running through much of the conservation of the time makes it clear that we need to re-evaluate and rebuild the project today.

Science at Berkeley was critically supported by **Annie Alexander**, a C&H Sugar heiress who is ripe for a Netflix series. Alexander mounted fossil-finding expeditions to the Pacific Northwest, Alaska, and all over California. She also shot animals, amassing a collection of specimens she sought to order and study. Alexander became concerned that fossil records would lack a connection to present-day vertebrates. To support a demonstrable evolutionary lineage between past and present, Alexander installed **Joseph Grinnell** as director of a new Museum of Vertebrate Zoology in 1906. This became the de facto home of "pure" biological sciences at Berkeley, located today across Strawberry Creek from the "applied" locus of Rausser College of Natural Resources.





Starker Leopold's famous 1963 report helped define the scientific and philosophical purposes of national parks.

Annie Alexander (right) was a lifelong supporter of Berkeley's natural history efforts, enabling the work of researchers and conservationists like Joseph Grinnell and John C. Merriam. She founded both the Museum of Vertebrate Zoology and the Museum of Paleontology.



Grinnell remains an intellectual giant who made foundational contributions to science. He famously surveyed large swaths of California, documenting species and places in fastidious detail and establishing what is still practiced today as the Grinnell Method. Grinnell predicted that the world he portrayed in words and pictures would undergo vast alterations resulting in species loss. He helped to conceptualize the ecological niche, which describes the environment to which a species adapts, including its role in ecosystem interactions. Beginning in 2003, Berkeley faculty, including now retired **Steve Beissinger**, resurveyed Grinnell's original California transects. The work has yielded a substantial body of information about the disruptions Grinnell predicted. Recently, Beissinger and colleagues published a study showing that since Grinnell surveyed them, bird populations have collapsed in the Mojave Desert. The birds have been unable to adapt to increasing heat and decreasing water.

### NATURE TO MANAGE

Grinnell, who saw nature as dynamic, is a bridge figure to a new era of conservation thinking focused on management. He mentored **George Meléndez Wright**, who later became the first Spanish-speaking professional in the National Park Service (NPS). The National Park System was famously fostered at Berkeley by alums **Stephen Mather** and **Horace Albright**; Wright took Grinnell's methods to the national parks, where he instituted biodiversity surveys to track change. He also met with many who lived on and made use of park lands, including ranchers, hunters, and Native Americans. He interviewed Totuya (Maria Lebrado), the last known survivor of the 1851 expulsion of the Ahwahneechee from Yosemite, when she returned in 1929. Recognition that Native Californians are the original natural resource managers here has been a long time in coming. A Tribal Nature-Based Solutions program concurrent with the state's 30x30 initiative focuses on Indigenous cultures. Some of its funding

is being used to repatriate tribal territories. This is a staggering turnabout for a state that sanctioned the genocide of its original inhabitants not much more than a century ago.

Another significant Grinnell acolyte was **Starker Leopold**, son of the patron saint of conservation biology, Aldo Leopold. Aldo counseled Starker to study with Grinnell at Berkeley, which he did. Grinnell died shortly thereafter, but it was as if a baton had been passed to Leopold, who carried it for 32 years as a Berkeley professor, greatly influencing the University's role in both the hands-on world of wildlife management and the national park system.

In a world of endless administrative instructions and verbose reports, none perhaps has been as influential as Leopold's 23-page paper, "Wildlife Management in the National Parks," published in 1963 and known colloquially as the Leopold Report. The NPS had no science-informed guidelines for dealing with wildlife. Leopold counseled that "the key" to sustaining wildlife is to maintain habitat, but habitat is "not a fixed or stable entity that can be set aside and preserved behind a fence." Fire suppression was *de rigueur* in Leopold's time but he presciently supported prescribed burning. He championed predators and strongly recommended that national parks be thought of as "anchors of conservation in a continuum of uses." Leopold didn't know about global change, but the basics he lays out about how nature works amount to a blueprint of much of the eventual 30x30 vision, which advocates for large landscape connectivity across networks of protected areas and increasingly embraces working landscapes to help support biodiversity. Leopold contradicted his own thinking, however, and advocated that national parks "should represent a vignette of primitive America." He omits Native American stewardship and forgets Grinnell's wisdom: nature does not stand still and is embedded in time.

In 2016, **Jonathan Jarvis**, then the director of the NPS, commissioned "Revisiting Leopold: Resource Stewardship in



Starting in the 1980s, the Endangered Species Act was the focus of public, political, and legal controversies surrounding the protection of the northern spotted owl on national forest lands. Many pitched the controversy as a struggle between loggers' jobs and the protection of the owls' forest habitat.

the National Parks,” a report to redress this blinkered perspective in the age of global change. The report, a collaboration among many scientists, is also intentionally 23 pages. Jarvis, who became the inaugural director of Berkeley’s Institute for Parks, People, and Biodiversity in 2017, said “Leopold looked to re-create something, which is tempting, and seems easy. But you can’t go back.” Managing what’s to come also depends on engaging with the actual past. “We know now that systems have been manipulated by the presence and stewardship of Native people,” Jarvis said. “Revisiting Leopold” considers species and humans together, not separately, and fundamentally acknowledges that natural parks and wilderness areas are cultural as well as biological constructs.

### NATURE IN CRISIS

The 1970s ushered in an era of redoubled human destructiveness to natural systems, but with it a fresh energy to tackle our problems. Rachel Carson sounded new alarms, and foundational nature protections like the Endangered Species Act and the Clean Water Act followed. Social upheavals roiled the Berkeley campus. To leverage interdisciplinary impact, the School of Forestry and Conservation merged with the College of Agricultural Sciences, and the College of Natural Resources was born in 1974.

Beginning in the 1970s, and continuing today, the Northern Spotted Owl became a focal species in the ongoing battle between those who would conserve the bird and those who would destroy its old-growth habitat. The conflict pitches economic gain against the health of functioning ecosystems. These seem to be nonequivalent goals, but we are charged with finding some kind of equitable solution among opposing factions. This example highlights a fundamental quality of nature that we have not adequately acknowledged: we depend on harvesting its products, but the collateral damage extends back into the evolutionary history of ecosystems that took millennia to evolve, which in turn jeopardizes our future. One great benefit of this battle royale is the 30-year longitudinal study of this species in its milieu, which has revealed many nuances about how nature operates over longer time scales.

Berkeley welcomed the new mission-driven discipline of conservation biology in the early 1990s. Faculty member **Adina Merenlender** was an eager participant, but she points out that in many ways, conservation biology was another iteration of ivory tower thinking. Many of its early practitioners identified as quantitative ecologists, applying population biology and genetics to conserving species. “These academics approached the wildlife managers as dummies who didn’t know anything,” she says. Real animals as well as real people were often ignored in their calculations. Merenlender points



Armando Quintero (left), Director of California State Parks, and Valentin Lopez, Chairman of the Amah Mutsun Tribal Band, shake hands after signing a memorandum of understanding on collaborative stewardship of Quiroste Valley Cultural Preserve in Pescadero, CA in 2021. The agreement was the first of its kind between state parks and a non-federally recognized tribe.

Dos Rios Ranch, a former farming operation turned California’s newest state park, will replenish underground water storage, provide habitat for wildlife, help California meet its conservation goals, and create access to nature in the San Joaquin Valley, which has the fewest parks of any region in the state. Since 2012, more than 350,000 native trees and vegetation have been planted along the eight miles of the San Joaquin and Tuolumne rivers, which converge at the ranch.





out that social scientists at Berkeley, including **Louise Fortmann, Sally Fairfax, and Nancy Peluso**, pushed for acknowledging how people truly interact with ecosystems. “They were hard on the conservation movement,” Merenlender says, “and critical of all those white guys doing parachute conservation,” collecting specimens in far-off countries and taking them home, “or setting up a park with a government but no participation from the people.” Merenlender is a hands-on practitioner today, and she is also co-author with legendary pure Berkeley ecologist **William Lidicker** and alum **Jodi Hilty** (PhD ’01 Environmental Science, Policy, and Management) of the 2006 book, *Corridor Ecology: The Science and Practice of Linking Landscapes for Biodiversity*, now in its second edition. Over time, the pure and the applied have increasingly made their peace.

### INTEGRATING NATURE

Climate change has done its part in developing academic approaches to natural systems, its pressures hastening the development of Earth System Science, a discipline in the Geography Department at Berkeley. From the early 1990s and onward, the revelations of feedback mechanisms between the Earth’s hydrology, atmosphere, geology, and biology have helped conservation efforts reflect that living things are integrally tied to nonliving systems. Ackerly is co-author of 2009’s “The Velocity of Climate Change,” a foundational paper that tracks elements of Grinnell’s niche concept with projections of future temperature and precipitation under different climate change scenarios. How will species respond as their world changes fast? With alum **Lisa Micheli** (MS ’96 Civil Engineering, PhD ’00 Energy and Resources) in 2011, Ackerly co-helmed the Terrestrial Biodiversity Climate Change Collaborative (TBC3), a collective of scientists from disparate disciplines, agencies, NGOs, and universities. TBC3 has published periodic biophysical data and analysis to help conservation managers in decision-making. In recent years TBC3 has become more focused on the most proximal of concerns for California landscapes: fire.

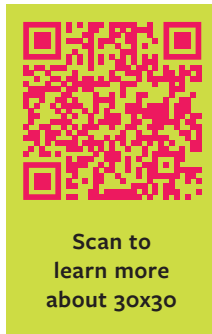
Fire has been a fundamental shape-shifter not only on the landscape but in hearts and minds. For decades, Native leaders have been telling California state agencies that their historical stewardship through cultural burning promoted a productive relationship between abiotic and biotic systems, and they have tirelessly repeated that California’s biodiversity evolved in relationship with humans. Berkeley anthropologist **Kent Lightfoot** is among the first to quantify the assertions of ethnographers and tribal elders that Native Californians burned the landscape

for at least 8,000 years. **Scott Stephens** and colleagues have further quantified the mitigation of destructive wildfire by intentional burning.

We stand chastened by past reluctance and refusal to see the impacts of the history that makes our present lives both possible and imperiled. As the global 30x30 is defined, criticism has been leveled in some nations that Indigenous people are again losing out, forced from their homelands in the name of protecting those places. California is working with a very different model. Today, for example, national parks are increasingly building co-stewardship models with tribes. The Federated Indians of Graton Rancheria recently counseled the NPS at Point Reyes National Seashore to remove elk fencing at Tomales Point, advancing cultural and biological health. 30x30 climate resilience goals are advancing in partnership with many tribes. The Wiyot Tribe land return rematriates 46 acres of ancestral land in service of cultural, ceremonial, and environmental goals.

Today, 30x30 is funding literally hundreds of projects across the state that meet its standards for durable nature protection. Some wish that 30x30 would take a more comprehensive, prescriptive approach, as in Leopold’s elegant, if flawed, guide to managing the national parks. But 30x30 rather brilliantly works around the conundrums inherent in defining what nature is to begin with, much less what it might take to help it persist. For a very long time, the majestic picture of Yosemite, for example, seemed to be an unambiguous symbol of value. But that picture was bereft. It erased people and process. Now we know that nature knits up a bewildering array of interactions over time periods that exceed human life spans. In providing new support for work in many cases already underway before Governor Newsom signed the legislation, 30x30 goes to the heart of the matter in strengthening the bonds between local people and their places.

In the past, conservation asked people to look at, visit, and experience awe in nature. It has wrestled with brokering peaceable arrangements between people and the species we view as pests, those we want to hunt, and those we are driving to extinction. Conservation has labored mightily to quantify insights concerning habitat connectivity, predators, and ecological interactions. Now, conservation asks that people participate directly to redefine our basic relationship with nature. To bring Merriam’s rapture up to date, we are participants in nature’s “epic,” called on to sustain landscapes “where one looks through the veil to meet the realities of nature and unfathomable power behind it.” As it turns out, we are part of that power. **31**





2024 marks 50 years since the College of Natural Resources at UC Berkeley was formed through the merger of the College of Agricultural Sciences and the School of Forestry and Conservation in 1974. Ranging from fun facts to big impacts, this collection of stories celebrates the excellence of the College over the past half century and highlights some of our newest efforts to create a better future for all.

**BY MATHEW BURCIAGA  
AND JULIE GIPPLE**



There's much more to share beyond these pages; scan QR codes for more in-depth stories on our website.

## 01 A “Jurassic” discovery

Michael Crichton drew scientific inspiration for his iconic novel *Jurassic Park* from the real-life research of paleobiologist **George Poinar Jr.**, a professor in the Department of Entomology. In 1982, Poinar and his wife **Roberta Hess**, an electron microscopist, published a *Science* study describing a 40-million-year-old fungus gnat preserved in amber. Given the quality of the preservation, Poinar believed that it could eventually be possible to recover ancient DNA from blood preserved in biting insects trapped in amber. Crichton visited Poinar’s lab after reading the research, and his wildly popular book about resurrecting dinosaurs was adapted into the smash hit movie by Steven Spielberg.



01



02

## 02 Stewarding sequoias

For thousands of years, giant sequoias have towered over the western slopes of the Sierra Nevada. While it may be a blip in their long lifespans, UC Berkeley is proud to have spent over a century stewarding some 250 of these majestic trees at Whitaker’s Forest near Kings Canyon and Sequoia National Parks.

In 1915, Professor **Woodbridge Metcalf** tagged all the trees greater than eight feet in diameter, and Berkeley foresters have tracked them since. “Data has been passed down through a lineage of researchers that I’m honored to be a part of,” said **Robert York**, an assistant professor of Cooperative Extension in forestry.

As climate change-driven drought and fire suppression have made the trees more vulnerable to increasing and extreme wildfires, research at Whitaker’s Forest is crucial for the conservation of giant sequoia ecosystems.

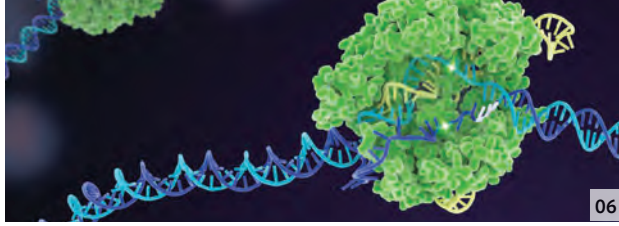
Oregon State University (Poinar); Ken Somer (Sequoias); Harper (Book Cover)

## 03 A new vision of nature

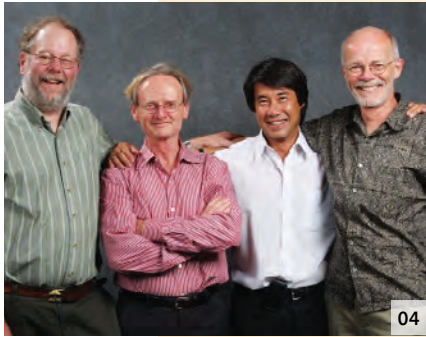
An ecofeminist philosopher and science historian who taught in the College for four decades, Professor Emerit **Carolyn Merchant** is widely known for her foundational book, *The Death of Nature: Women, Ecology, and the Scientific Revolution*. More than forty years after its initial publication in 1980, the text is considered part of the essential canon of ecofeminist literature. Merchant’s genre-shaping body of work—which includes nine books, four edited volumes, and numerous articles—has had outsize influence across the fields of women’s studies, the history of science, ethics, and environmental history.







06



04

## 04 Your daily citation(s)

A 1990 research paper describing polymerase chain reaction (PCR) primers and methods developed by professors **John Taylor** and **Tom Bruns** and PhD alums **Tom White** and **Steven Lee** has been cited four times a day and now totals nearly 50,000, as of April 2024.



05

## 05 A “golden” center

Basketball hall-of-famer **Darrall Imhoff** is known for leading the Golden Bears to victory in the 1959 NCAA championship and winning Olympic gold in 1960, but another of his accomplishments also stands out: finishing his undergraduate degree in forest products 35 years later.

## 06 On the cutting edge

Rausser College scientists affiliated with UC Berkeley’s Innovative Genomics Institute (IGI) use cutting-edge synthetic biology and CRISPR gene editing techniques to help plants resist pathogens, improve crop yields, and even remove carbon from the air. Their work offers promising advances to help slow global warming, supercharge photosynthesis, and alleviate world hunger. Professor **Jill Banfield** leads IGI microbiology research and Professor Emerit **Brian Staskawicz** heads the sustainable agriculture division. Other affiliated faculty include **Krishna Niyogi**, **Peggy Lemaux**, **Ben Williams**, **Patrick Shih**, **Ksenia Krasileva**, and others.

## 07 Nutrition for the nation

Professor Emerit **Janet King** guided the launch of UC Berkeley’s first accredited dietetics program over fifty years ago (see page 7). Later, she helped shape nutrition across the country as chair of a committee appointed by the USDA and the U.S. Department of Health and Human Services that developed the 2005 Dietary Guidelines for Americans.



07

## 08 Tiny garden, big learning

Established in the 1950s by botany professor **Ralph Emerson** and curator **Robert Berman**, the Microgarden houses around 500 different strains of algae and fungi and is a valuable resource for researchers and classes on campus and around the world. Unlike most other culture collections, which store frozen or dried samples, the Microgarden keeps living cultures that require diligent care: specimens are stored at specific temperatures, with constant agitation, or under certain light, as needed.

“They may not know it, but thousands of students use organisms that come from the Microgarden every semester,” said Dr. **Juliana Cho**, who curated the Microgarden for the past decade before passing the reins to **Steven Thomas** in December.



08

## 09 Global impact

For over twenty years, the Beahrs Environmental Leadership Program has educated professionals dedicated to advancing equitable and inclusive environmental climate solutions. Established with funding from alums **Carolyn** and **Richard Beahrs**, the interdisciplinary certificate program features workshops on climate change, environmental policy and economics, energy transitions, business and sustainability, natural resources management, biodiversity, and leadership development. The program has flourished, most recently under the academic leadership of professors **J. Keith Gilles**, **David Zilberman**, and **Maximilian Auffhammer**. Today, 757 alums from over 114 countries continue to create positive impact around the world, including founding wildlife conservation programs in Vietnam, starting elementary school nutrition programs in Belarus, and advancing clean drinking water efforts in Kenya.



09

## 10-16 Stellar seniors

The University Medal has been awarded to Berkeley's most distinguished graduating senior since 1871. Here we recognize medalists who graduated with majors in the College of Natural Resources and offer a glimpse of where they are today.

### 1973

#### Kenneth Stumpf

Forestry, President, Geographic Resource Solutions

### 1979

#### Linda Spangler

Conservation & Natural Resources, Family Medicine Doctor

### 1981

#### Joshua LaBaer

Nutritional Sciences, Professor and Executive Director, Biodesign Institute, Arizona State University

### 1984

#### David Kin Cheung

Nutritional Sciences, Pediatric Hospital Specialist, Kaiser Permanente; Assistant Clinical Professor, UCSF

### 2012

#### Eric Olliff

Conservation and Resource Studies, Chinese Language & Literature, Senior Product Manager of Artificial Intelligence, Google

### 2014

#### Rebecca Peters

Society and Environment, Interdisciplinary Studies, Senior International Water Policy Advisor, U.S. Department of State

### 2022

#### Anjika Pai

Environmental Sciences, Law student, Northeastern University School of Law; Legal intern, Conservation Law Foundation

## 17-18 Firsts for campus leadership

While nutritional science professor **Doris Calloway** (top) is best known for pioneering research on diet and human health, her legacy on campus extends beyond the lab. In 1981, Calloway became the first woman to break into the ranks of UC Berkeley's senior administration when Chancellor **Ira Michael Heyman** appointed her Provost of Professional Schools and Colleges. She oversaw three colleges, nine professional schools, the Energy and Resources Group, and Lawrence Hall of Science. In 1994, the role was consolidated into Executive Vice Chancellor and Provost (EVCP).

Nearly 30 years after Calloway's 1987 retirement, Energy and Resources Group professor **Catherine Koshland** (bottom) made another campus first when she was appointed the inaugural Vice Chancellor for Undergraduate Education. Koshland served in the role for six years, and then served for a year as Interim EVCP before retiring in 2022.



17



18

## 19 Keeping in touch

Before *Breakthroughs* debuted in the fall of 1995, many relied on the *CNR Update* to stay connected to the College. Developed under Dean **Wilford Gardner**, the newsletter featured stories about awards and research, recaps of events and occurrences, and staff highlights.



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The publication also allowed former staff member **David K. Smith** to flex his artistic muscles. Working with writer **Sue Lawson**, Smith was the newsletter's designer and contributed numerous drawings, cartoons, and photographs during its run. Smith also designed one of the first shirts offered by the College of Natural Resources (see cover) and created pointillist art of College landmarks featured on holiday cards (above).



20

## 20 Chew on this

What has removable siding; has been zapped, roasted, and frozen; and was featured on the cover of *Popular Mechanics*? Villa Termiti, of course! In 1993, Professor of Cooperative Extension **Vernard Lewis** (left) and collaborators devised a unique idea to build a 400-square-foot structure designed to be eaten by termites. Their mission: determine which conventional or alternative methods of termite control are most effective at eradicating the six-legged pests. Lewis led research and demonstrations at Villa Termiti until his retirement in 2017. With recent renovations by UC Agriculture and Natural Resources researchers, the structure will continue to be used to demonstrate pest inspection and management practices.







21

## 21 Research in paradise

For nearly four decades, UC Berkeley has hosted researchers and students from campus and around the world at the **Gump South Pacific Research Station** on the north shore of the island of Mo'orea in French Polynesia.

Gifted to the university by businessman Richard Gump in 1985, the 35-acre property provides equipment, housing, and lab space to researchers studying nearby marine, terrestrial, and freshwater ecosystems. The facility has supported

hundreds of research projects, including the Mo'orea Biocode Project, an effort co-led by Facility Director **Neil Davies** and Professor **George Roderick** to catalog all nonmicrobial life on the island that began in 2005 and recently expanded to include coral biodiversity with the involvement of Professor **Adrienne Correa** (see page 6).

UC Berkeley faculty have hosted an immersive, semester-long field research course at the station since 1991. In 2022, the Department of Environmental Science, Policy, and Management (ESPM) launched an additional interdisciplinary program that blends physical, biological, and cultural research with the traditional wisdom of the Polynesian people.

## 22 Pioneering plant science

Though technically a weed, thale cress—known in the scientific community as *Arabidopsis thaliana*—has a special distinction: it is one of plant biology's most closely studied species. **Chris** and **Shauna Somerville**, now professors emerit in the Department of Plant and Microbial Biology (PMB), were early advocates for using *Arabidopsis* as a model organism.

By the 1990s, an international team of researchers including **Athanasios Theologis**, an adjunct professor in PMB, sequenced the plant's chromosomes—the first for any plant. “The work pioneered new methods and still influences how plant science is done today,” says PMB professor and chair **Sheng Luan**. “It resulted in the birth of both functional and comparative genomics and laid the foundation for scientists to manipulate genes and improve crops.”

Today, at least a dozen faculty labs in PMB—and many others in the scientific community—continue to study *Arabidopsis*.



22

## 23 Fighting frost

While growing up on a farm and raising strawberries and boysenberries to finance his undergraduate education, PMB professor **Steve Lindow** spent chilly nights in the fields with makeshift smudge pots to keep crops warm and stave off damaging frost.

Lindow later discovered that certain bacteria catalyze a process known as ice nucleation, which can result in damaging ice formation in plants. Without such bacteria, plants are able to avoid ice formation. Lindow and colleagues used early genetic engineering technologies to identify the gene required for ice catalyzation and developed a modified strain of the *Pseudomonas* bacteria capable of controlling frost on fruits and vegetables. The modified strain of Lindow's bacteria was tested in 1987, marking the first time a genetically modified organism was released into the field. The natural ice nucleation active strain of *Pseudomonas* is also used in making artificial snow.



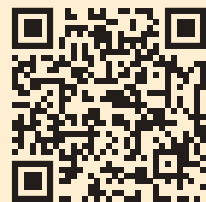
23

## 24 A not-so-tiny pygmy cypress

At the edge of West Circle near Mulford Hall grows a tree planted by renowned soil scientist and Professor Emerit **Hans Jenny** on Arbor Day in 1983. It's a pygmy cypress (*Cupressus pygmaea*, as seen in this drawing by Jenny), but there's nothing dwarf about this tree. In the species' native range in Mendocino and Sonoma Counties, pygmy cypress are spindly and stunted due to the nutrient-poor, highly acidic soil conditions. Under different conditions on campus, the tree has grown over 50 feet tall.



24



Scan for longer stories



25

## 25 Decades of forest resilience

For over two decades, Professor **Scott Stephens** and his colleagues have used prescribed burning and restoration thinning to treat plots of land at UC Berkeley's Blodgett Forest. Their research assessed whether the treatments

could mimic the beneficial impacts of lightning fires and Indigenous burning practices on California's forests, which have become dense and overgrown after a century of logging and fire suppression. At the end of the 20-year period, they found that experimental plots treated with thinning, burning, or both were significantly more resistant and resilient to wildfire than control plots. The team has received funding from the U.S. Joint Fire Science Program to continue the project and is collaborating with the United Auburn Indian Community to reestablish Indigenous cultural burning at Blodgett.



26

## 26 Alumni at work

Plant-based meat developer. Head of Google's global energy markets. Sustainable fashion designer. Brain surgeon. State senator. The career paths of the 27,148 living alumni of Rausser College and its predecessors are varied and diverse.



Scan to see our alumni profile series

## 27-28 Taking the helm

Professor **Barbara Allen-Diaz** (pictured left; BA '75 Anthropology, MS '78 Range Management, PhD '80 Wildland Resource Science) was the first woman appointed to lead UC Agriculture and Natural Resources (ANR) in 2011. With nine research and extension centers and Cooperative Extension offices in almost every California county, the organization connects UC research in agriculture, natural resources, nutrition, and youth development with communities across the state. Allen-Diaz was succeeded in 2015 by current UC Vice President for Agriculture and Natural Resources **Glenda Humiston** (pictured right; PhD '09 ESPM), who previously served in USDA leadership roles. Allen-Diaz and Humiston are just the latest in a long history of UC Berkeley affiliates to oversee the important UC division: others include **J. Earl Coke** (BS 1922 Agricultural Science), Professor **Harry R. Wellman** (MS 1924, PhD 1926 Agricultural Science), **James B. Kendrick, Jr.** (BA '42 Humanities), and faculty members **Daniel G. Aldrich** and **Kenneth Farrell**.



27



28

## 29 Awards and accolades

The achievements and honors garnered by Rausser College's faculty\* are hard to keep up with! The most recent tally includes:

3

faculty affiliated with the 2007 Nobel Peace Prize

3

Wolf Prize winners

7

MacArthur Fellows

20

National Academy of Sciences members

32

American Association for the Advancement of Science Fellows

9

American Academy of Arts and Sciences members

20

California Academy of Arts and Sciences members

3

Volvo Environmental Prize recipients

\*Active faculty and living emeriti

## 30 Moon trees

A group of seeds taken to space in the personal belongings of astronaut Stuart Roosa on Apollo 14 in 1971 were later planted throughout the country. Professor of forest genetics **Bill Libby**, MS '59 Forestry, PhD '61 Genetics, was given a few of the redwood seeds, which he planted in his backyard. Cuttings from those trees now stand tall at UC Berkeley's Russell Research Station.

UCANR (Allen-Diaz, Humiston), College archives (Graduate)





**31 Advancing a sustainable, just future** Another unit on campus celebrating half a century of impact is the internationally renowned **Energy and Resources Group (ERG)**, a groundbreaking interdisciplinary program that admitted its first graduate students in 1975. Students and faculty in the program collaborate as activist-scholars in areas such as decar-

bonization pathways, environmental economics, climate science and ecology, environmental justice, resource conflicts, and water and sanitation. Many College of Natural Resources faculty were affiliated with the graduate group from its inception, and ERG officially joined the College in 2011. Watch for a full story about ERG’s history and impact later this year.



31

**32-35 A toast to plant pathology** The next time you enjoy a bottle of California wine, raise a glass to Berkeley faculty. **Sandy Purcell** is a leading expert on Pierce’s disease (left), a deadly disease affecting grapevines that has been studied at Berkeley since the 1940s. His lab identified the bacterial pathogen that



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grows in the tissues that transport water within a plant and causes this disease, found that freezing temperatures could cure infected grapevines, and showed how insect vectors spread the pathogen. New avenues for disease control continue to be studied, with **Rodrigo Almeida** investigating how to block

the pathogen’s interactions with insect vectors, **Steve Lindow** exploring ways to disrupt the pathogen’s colonization of plants, and **Kent Daane** developing integrated pest management systems for insect vectors of vineyard pathogens.

**36 Innovative partnerships** The 1998 Berkeley-Novartis Agreement augmented UC Berkeley’s public mission by leveraging the agricultural, pharmaceutical, and biotechnology firm’s resources to strengthen Berkeley’s plant and microbial genomics research. Agricultural and Resource Economics professor and then dean of the College **Gordon Rausser** provided intellectual leadership for the agreement, which allowed faculty in the Department of Plant and Microbial Biology to pursue novel research. Considered the most creative public-private research and development agreement of its time, the deal set the path for many beneficial subsequent partnerships at public universities.

One such partnership is the Energy & Biosciences Institute (EBI). Founded in 2007 with funding from BP and directed by Professor **Chris Somerville**, EBI focused on developing biofuels during its early years. Now led by Professor **John Coates** (middle) and sponsored by Shell, the Institute’s scope encompasses clean energy advancements and scalable scientific innovation while balancing economic

growth, environmental protection, and societal impact. EBI also runs educational programs and an entrepreneurial business incubator to help bring innovations to market.



36



37

**37 Closing the climate gap** It’s well documented that the climate crisis disproportionately harms people of color and those in low-income neighborhoods. Established in 2021 under Rausser College leadership, Berkeley’s **Climate Equity and Environmental Justice Roundtable**—a transdisciplinary cohort of campus researchers spanning multiple colleges and schools—advances climate solutions that integrate sustainability and equity goals through community- and policy-engaged work. Projects include creating equitable access to stormwater management in rural South Texas; developing air-quality modeling for polluted U.S. regions; and establishing reliable electrical and Wi-Fi connectivity at health care facilities in Africa.

## 38 Undergraduate majors then and now

### 1974

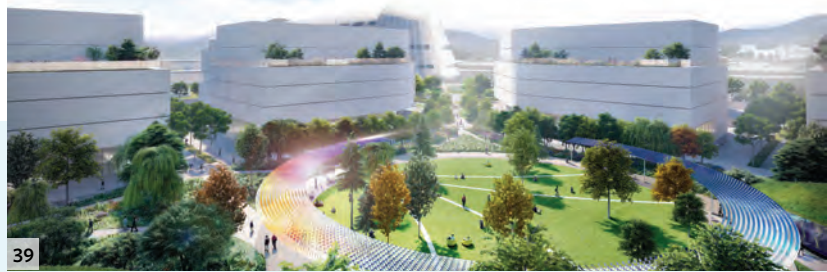
- Biology of Natural Resources (with fields of emphasis in bioenergetics, bioresource sciences, entomology, genetic resources, plant pathology, soil and plant resources)
- Conservation of Natural Resources
- Food, Nutrition, and Dietetics
- Forestry
- Pest Management
- Political Economy of Natural Resources
- Soil Resource Management
- Wood Science and Technology
- Preveterinary program

### 2024

- Genetics and Plant Biology
- Microbial Biology
- Molecular Environmental Biology
- Nutritional Sciences and Toxicology
- Conservation and Resource Studies
- Ecosystem Management and Forestry
- Environmental Sciences
- Environmental Economics and Policy
- Society and Environment

### 39 Beyond Earth

Announced last fall, the Berkeley Space Center will be an innovation hub for research in aviation and space technology at NASA Ames Moffett Field in Mountain View, CA. Professor Emerit and former Dean **Gordon Rausser**, who has published on the accelerating space economy, was



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instrumental in the development of the project. Future Rausser College research at the site could focus on closed agriculture in space, satellite remote sensing, transportation alterna-

tives, and more. Professor **Manuela Giroto** is already collaborating with NASA, using satellite observations to measure how much snow is in mountain environments and how that is changing.

### 40 Did you know?

Which other name for the college was under consideration in the early 1970s? (Answer below)

- The College of Renewable Resource Management
- The College of BioResources
- The College of Forestry and Agricultural Sciences

### 41 Research in the digital age

As technological advances enable research and offer datasets that were unimaginable even a few decades ago, Rausser College faculty are keeping up.

Faculty members including **Iryna Dronova** (pictured below), **Manuela Giroto**, and **Maggi Kelly** build on the College's legacy in the fields of remote sensing and geospatial analysis by merging historical observations with data gathered using drones, lidar, and satellites to inform land management strategies in California and beyond.

Advances in computing power allow professors like **Carl Boettiger**, **Perry de Valpine**, and **Trevor Keenan** to grapple with large volumes of data. These datasets are fed into mathematical and statistical models to better understand changes in global ecosystems.

College faculty are also involved in multidisciplinary research projects at the intersection of data science, biodiversity, and climate resilience. These efforts are led by the **Geospatial Innovation Facility** and the **Eric and Wendy Schmidt Center for Data Science & Environment**, which brings together experts in life and environmental sciences with data scientists, designers, and software engineers to co-create tangible, replicable, and accessible solutions to pressing ecological issues.

41



### 42 A new focus for wood products

Comprising several facilities at the Richmond Field Station, UC Berkeley's Forest Products Lab offered forestry faculty and students a space to explore commercial applications for the state's native hardwoods for more than five decades.

Although operations at the lab wound down in the mid-2000s, the facility's legacy lives on through the subsequent research and outreach efforts focused on woody biomass: the byproducts created during forest, woodland, and rangeland management. **John Shelly**, PhD '88 Wood Science and Technology, shifted the focus

toward processes capable of turning diseased, dying, and small-diameter trees into fuel, wood products, and lumber. Today, Cooperative Extension professors **Paul Mayencourt** (left) and **Daniel Sanchez**, (right; PhD '15 ERG) are reviving the space and exploring methods to engineer low-carbon wood products that can be integrated into California construction and architecture.

42



### 43 One to watch

Society and Environment alum **Kristy Drutman**, BS '17, also known as Browngirl Green, is passionate about working at the intersections between media, diversity, and environmentalism. Her podcast, videos, social media channels, and workshops have educated thousands of people on environmental issues. She is also the co-founder of the Green Jobs Board, a climate tech start-up working to bring more diverse talent into the environmental field. Last fall the EPA appointed Drutman to its Youth Advisory Council.

43



Field Operations and HOK (Space Center); Courtesy (Drutman)

Quiz answer: According to an oral history with former School of Forestry Dean Henry Vaux, College of BioResources was considered as an alternate name.





## 44-47 Keeping the taps on

For decades, experts from the College have provided insights and strategies to the California water managers combating the state's water woes.

A 1985 study by Professor **David Zilberman** demonstrated that drip irrigation could help farmers conserve water and improve crop yields. The technology, which was only used on 5% of California's irrigated land when the study was published, is now used on 48% of California's cropland. Zilberman's work on the economics of water, pest control, and agricultural policy earned him a prestigious Wolf Prize in 2019.

Many of California's water districts and lawmakers have sought guidance from Professor of the Graduate School **David Sunding** about market pricing, resource allocation, and financing. Sunding negotiated 2003 amendments that helped California reduce its overdependence on the Colorado River and has advised three California administrations on the state's development of the California WaterFix, a \$17 billion environmental infrastructure project.

Cooperative Extension professors **Ellen Bruno** and **Kristin Dobbin** help California improve water management. Bruno studies farmers' responses to changes in water prices and how water policy can promote conservation. Dobbin examines how policy and planning can promote equitable access to safe, clean, and affordable drinking water for all. Research and outreach like theirs is increasingly important as California regulators face a looming deadline to create sustainable management of groundwater.

**Ted Grantham**, also a professor of Cooperative Extension, is leading a multimillion-dollar project to develop new data, models, and tools to transform water management in the Sacramento-San Joaquin River system while balancing the water needs of cities, agriculture, and the environment.



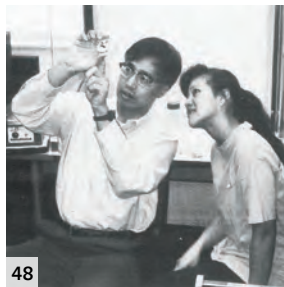
44

## 48 Building a better test

Up until the early 1990s, testing for *E. coli* in drinking water was difficult and imprecise.

Then Nutritional Sciences and Toxicology professor **George Chang** and **Rosalind Tung**, BS '90 Food and Nutritional

Science, developed a method capable of detecting *E. coli* bacteria for half the cost and nearly three times faster than earlier methods. Unlike previous tests, it could also identify bacteria weakened but not killed by water treatments. The Environmental Protection Agency approved the test in 2004, which is still used for testing everything from drinking water and wastewater systems to public pools and beaches.



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## 50 Addressing injustice

In 2021, President Joe Biden appointed Professor **Rachel Morello-Frosch** to the White House Environmental Justice Advisory Council, a group that confronts longstanding environmental justice issues and works to ensure that historically marginalized communities and groups burdened by disproportionately high pollution levels are more involved in federal policies and decisions. An environmental health scientist and epidemiologist, Morello-Frosch is an expert on environmental justice in the context of air pollution, water quality, and climate change, as well as prenatal exposures to environmental chemicals and their effects. ❏



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## 49 Building on a legendary legacy

Very few universities have dedicated wildlife programs, and among those that do, UC Berkeley's history in the field is legendary. Rausser College's Berkeley Wildlife Group, including **Christopher Schell** (pictured), is building on the legacies of wildlife biologists like **Joseph Grinnell** and

**Starker Leopold** by incorporating new and diverse voices, grounding research in real-world policy discussions, and reimagining what wildlife means in an increasingly urban and digitized world.



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## It doesn't stop here.

The stories featured in this collection offer just a glimpse into the College's rich history. Scan the QR code to read more stories of impact and innovation, and share your memories by emailing [breakthroughs@berkeley.edu](mailto:breakthroughs@berkeley.edu).



# Q&A

## Berkeley Food Institute at Ten

INTERVIEW BY AUSTIN PRICE  
PHOTOS BY MATHEW BURCIAGA

Since 2013, the Berkeley Food Institute (BFI) has cultivated a campus community dedicated to bringing together UC Berkeley academic resources in partnerships with communities to shape a just, equitable, and sustainable food system. The Institute represents more than 155 affiliated campus faculty and staff, and it has organized 130 events, awarded almost \$600,000 in grant funds, and published dozens of research reports and policy briefs. BFI's research, policy, education, and community engagement programs are organized into four focus areas that represent a collective vision for a just farm and food system: urban and rural agroecology, fair and healthy jobs, good food access, and racial equity.

We spoke with the Institute's leadership—including its new Executive Director **Jeanne Merrill**—to hear their reflections on BFI's impact and visions for the future.

*These conversations have been edited for length and clarity.*



### Susana Matias

BFI Co-Associate Faculty Director,  
*Assistant Professor of Cooperative Extension, Department of Nutritional Sciences and Toxicology*

#### What inspired you to get involved in BFI?

My training is in epidemiology and public health nutrition, and I examine issues related to nutrition and food access in a way that's heavily informed by the framework of social determinants of health. My work examines the social structures that determine our diet and our overall health.

I connected with BFI staff soon after arriving on campus in 2019. While the Institute's good food access focus resonated with me specifically, I also saw that BFI's work in the other focus areas showed a commitment to looking at the bigger picture to address issues in food systems.

#### What BFI accomplishments stand out for you?

BFI has become a campus hub allowing faculty and students with a shared focus on food systems to connect. Our network of affiliated faculty and staff provides an opportunity for meaningful collaboration.

When I first became an Institute affiliate, I wasn't sure how to collaborate with researchers from disciplines so different from my own. Now, thanks to BFI, I'm working with Professor of City and Regional Planning **Charisma Acey** to



evaluate how environmental justice in city planning can impact community food access. That work revolves around Senate Bill 1000, a California law that requires certain cities and counties with disadvantaged communities to write an environmental justice element into their General Plans to try to undo some of the damage done by discriminatory land use planning, like redlining. We hired **Katie Fallon**, a graduate student in the College of Environmental Design, to help us devise specific indicators to evaluate how well these updated General Plans address food access and equity. The next phase of this project is to see how the law moves the needle on health outcomes.

I'm also proud of BFI's strength working with communities. As part of this SB 1000 project, we recently met with community members in Richmond and Gilroy as case studies for the initial research. That's one area I am excited to expand in BFI's programs: we have built a strong community of researchers on campus. Now, we're taking Berkeley to the community.

#### **What do you hope to focus on in BFI's second decade?**

As we focus on community partnerships, we also want to keep growing our in-house and affiliated research programs. We recently hired BFI's first project scientist, **Francisco Benítez**, on a dual appointment with UC Agriculture and Natural Resources. He's working with farmers around Parlier to understand the transition to sustainable agriculture. Longtime Rausser College of Natural Resources researcher **Federico Castillo** officially joined BFI and is leading the UC-Mexico Farm Labor Research Cluster, an interdisciplinary group of scientists in California and Mexico studying issues that affect the workforce on both sides of the border. Advancing our research supports BFI's goal to inform and influence policy.

## **Timothy Bowles**

BFI Co-Associate Faculty Director, Associate Professor of Agroecology and Sustainable Agricultural Systems, Department of Environmental Science, Policy, and Management

#### **How does your research intersect with BFI?**

As an agroecologist, I research how to use ecological principles to design healthy agricultural systems that benefit the people who work in them, the people who eat food produced by them, and biodiversity as well. Within that, much of my work focuses on understanding soil's role in agricultural systems and how we can manage it to better sequester carbon and improve water quality while allowing farmers to meet production goals. This research is closest to BFI's urban and rural agroecology focus but also touches on the other three focus areas, since we are looking at an integrated food system.

Another component of agroecology is rethinking who the experts are by valuing experiential and traditional knowledge alongside scientific knowledge, weaving together an approach to agriculture that's different from the dominant industrial system. That doesn't mean that the science is not rigorous. It just means that we're transparent about our aims. We recognize a critical need for change in the food system. We can think of agroecology as a framework for transforming agricultural systems beyond just food production.

#### **How does BFI fit into that agroecology framework?**

Agroecology is often conceptualized into three dimensions: science, movements, and practice. BFI plays an



important role at the interface between the science and movement of agroecology. In California, many community-based, grassroots organizations advocate for food justice, food sovereignty, farmworker justice, and sustainable agriculture. **Nathalie Muñoz**, BFI's community engagement program manager, fosters relationships with those groups so that BFI can connect them with the research

## Charisma Acey

BFI Faculty Director,  
Associate Professor of  
City and Regional  
Planning, College of  
Environmental Design

*Bowles (Cont.)*

and information needed to support their movements. While our sister campuses have organizations that focus on connecting the science and practice of agroecology, like UC Santa Cruz's Center for Agroecology, BFI fills this niche between science and community, with a goal of informing policy.

### What has BFI accomplished, and where should it go from here?

In its first decade, BFI has made an invaluable impact by creating a community for researchers, staff, and students working on food systems. This community did not exist on campus before, and students have played a significant role in its expansion. The Food Institute Graduate Council, comprised of graduate students from various fields, organized the fourth annual Food Systems Conference this spring. In 2020, BFI provided the structure and staff support to set up Berkeley Student Farms, which represents a cohesive vision for food systems education that mixes practical horticultural experience on campus gardens with basic needs advocacy. We also recently hired an Agroecology and Wellness Coordinator, **ab banks**, to help students connect the idea of the land as a site for not only research and education but also wellness.

As we move forward, we're looking beyond campus, thinking more about the role between science and movement and how BFI can best support the community-based organizations, advocacy groups, and growers creating the needed systems change.

### What priorities do you bring to BFI as faculty director?

Part of my mission as an urban planner is to see food-growing spaces as essential infrastructure in cities—the same way we see parks and museums. Before taking a leadership role at BFI, I conducted a project partially funded by BFI with **Timothy Bowles**, Professor of Cooperative Extension **Jennifer Sowerwine**, and community partners that emphasized the importance of urban agroecology for addressing food security. Beyond nutrition, there are so many benefits to having these spaces in our cities. They serve as gathering places for community organizing, create educational opportunities, and offer carbon sequestration and other climate benefits. Yet there are systemic challenges—reliance on volunteer labor, insecure land tenure, high cost of water—because urban gardens are not seen as vital city infrastructure.

I'm currently working with **Susana Matias** to evaluate SB 1000, which represents the first time city and county planning offices are proactively addressing past harms in land-use decision making. We're tracking the implementation and progress of this law to see how land-use planning can advance food access and equity.

### What inspired BFI to add racial equity as a fourth focus area?

Inequities impact every aspect of the food system, from issues of access to governance and decision-making. When it comes to land and labor exploitation, a lot of that inequity is



racialized. Equity has always been embedded in BFI's efforts toward agroecology, food access, and fair labor, but calling it out is important.

A few years ago, BFI did an internal assessment of racial equity to examine how we can best advance racial justice both within our institution and in the food system. As a result, we formed the racial equity focus area in 2021 to name equity as fundamental to everything we do to advance a just food system. This focus area has influenced how we approach partnerships and work with communities on the front lines of advancing food justice.

This focus also relates to one of our initial findings in our SB 1000 research. The law allows planners to integrate environmental justice goals throughout a city's General Plan. However, we found that cities that wrote a stand-alone environmental justice element—a single place in the General Plan that lists goals and policies specifically related to equity—often included more





## Jeanne Merrill

BFI Executive Director

**You bring to BFI significant experience in food and agricultural policy. What are some career milestones?**

I started my career working with communities poisoned by agricultural pesticides, mainly methyl bromide fumigations on strawberry fields adjacent to homes and schools. As a community organizer, I worked with people along the California Central Coast, and eventually, that work resulted in the first restrictions on methyl bromide fumigation in the state.

In 2009, I co-founded the California Climate and Agriculture Network, or CalCAN. At that time, the conversations about climate change in Sacramento and Washington, D.C., did not include agriculture and how sustainable, agroecological practices could help reduce greenhouse gas emissions and make farms more resilient. During my 14 years as policy director at CalCAN, we sponsored bills to establish in California what became known as the Climate Smart Agriculture programs, which include the Healthy Soils Program that incentivizes farmers to store carbon and improve soil health.

**How does policy promote just and equitable food systems?**

Policy can be a very powerful tool to advance agroecology, good food access, fair and healthy jobs, and racial equity—the four areas of focus at BFI. But, to achieve transformational change that truly accelerates food justice, policy efforts need to center farmers and communities of color.

They also need to be grounded in the latest research. At CalCAN, we aimed to pass bills that included an honest, science-backed assessment of how agroecological farming could make a difference for climate adaptation and mitigation. We formed a Science and Technical Advisory Council, to call upon researchers to inform legislation, which includes **Timothy Bowles** and other notable ecologists and agricultural scientists like Stephen Wheeler of UC Davis and Ruth Dahlquist-Willard, who is now with the UC Sustainable Agriculture Research and Education Program.

Berkeley Food Institute plays a crucial role here. As we say in our mission statement, we leverage university resources in partnership with communities to inform food systems policy at the state and federal levels.

**What are your goals for BFI going forward?**

BFI has built an impressive foundation of cross-disciplinary research, education programs, and community engagement. We now have the opportunity to scale those efforts. We've brought research from our affiliated faculty to legislators and created opportunities for faculty and students to engage with policy. My vision is to see policymakers come to us so that our research can inform the conversations happening in Sacramento and D.C. I would also like to see our alumni among those policymakers, researchers, and other leaders making a difference to advance equitable and resilient food systems across the world.

*Acey (Cont.)*

effective policies that move the needle on food justice. Centering equity, making it a targeted goal, is key.

**Where do you see BFI going in the next ten years?**

Strong community partnerships are vital so we can better leverage the research and resources of the University for change on the ground. That goes hand in hand with policy work and the experience Jeanne brings as executive director. As we move forward, BFI will continue to do the translational work that turns research into evidence for policymaking. I would also like to see BFI impact international work, since many of our affiliated faculty work on issues around the world. Food systems issues aren't only in the U.S.; they are inherently global.



# Remote Sensing Rockstar

## KASS GREEN, BS '74 FORESTRY

BY KRISTIN BAIRD RATTINI

Throughout her pioneering career, Kass Green has always subscribed to the theory that you can't manage what you can't measure.

Over the past four decades, Green has championed and advanced the application of Geographic Information Systems (GIS) and remote-sensing technologies to identify, quantify, and monitor natural resources so that they can be better managed, especially as the effects of climate change intensify. "These technologies are critical because they allow us to monitor and model change over time and build adaptation strategies," she says.

### A SENSE OF PLACE

Green attended UC Berkeley during a time of change and adaptation as well, graduating just as the College of Natural Resources was created in 1974. She remembers fellow forestry majors grumbling that the new environmental science degree was "forestry light." But she credits her mentor and future PhD advisor, **Henry Vaux**, then dean of the School of Forestry and Conservation, for having the vision to merge the too-small-to-survive schools of forestry and agriculture. "Hank was a strategist, a big thinker, and an inspiring man," she says. "He was shout-out brilliant and had high expectations for the new college."

Following graduation, Green started her career as a lobbyist in Washington, D.C., with the environmental organization Friends of the Earth. "I realized that when we were making policy, the arguments were not about the quantity of resources, which was the focus of economics, but about the location of resources—about place," she says. "It was about the designation of this wilderness area or that scenic river. To study policy, I needed to study place." Green earned a master's degree in Wildland Policy and Economics from the University of Michigan in 1981. She then returned





to Berkeley, completing all the coursework for a PhD in Wildland Resource Policy & Economics, before she was lured away to write a book on using phenoxy herbicides in forest management for the Council on Economic Priorities.

In 1985, while she and her husband, **Eugene Forsburg**, BS '75 Conservation of Natural Resources, were working for a consulting firm, they recognized the great potential of the newly emerging fields of GIS and remote sensing. Green turned to **Russell Congalton**, then an assistant professor at Berkeley and an expert on remote sensing, for the instruction that would change her life.

“The minute I discovered remote sensing, I realized that’s where I belong,” she says. “I’m a spatial thinker. I have an innate ability to see things in imagery and analytically draw more information out.”

### LEADING THE FIELD

In 1988, Green and Forsburg founded Pacific Meridian Resources, one of the industry’s first and most successful geospatial services firms. “No one had ever mapped wildland fuels or entire national forests and parks using data from the Landsat satellite program,” she says. “We were always years ahead of the competition.”

By any measure, Green’s subsequent career and contributions have been extraordinary. With Congalton and Mark Tukman, another expert, Green authored books that are considered foundational in the fields of GIS and remote sensing. She co-founded and chaired the Department of the Interior’s Landsat Advisory Group, which advocated for the continued free public distribution of Landsat imagery. “We now have over 50 years of worldwide Landsat observations,” she says. “It’s incredible; it’s our global standard for monitoring change over time.”

The couple sold the firm in 2000, and Green launched Kass Green & Associates three years later. Since then, her work creating detailed vegetation maps has taken her around the world, from a raft on the Colorado River in the Grand Canyon, to the crater of Haleakalā on Maui, to agricultural fields in Ethiopia, and even to the remote islands of American Samoa.

But she’s especially proud of a project closer to home. Working with Tukman’s firm and several agencies and nonprofits, Green

has built programs that use airborne imagery, lidar (light detection and ranging), and other tools to create fine-scale vegetation and wildfire hazard and risk maps for counties around the Bay Area and central California. Among other results, the research highlighted the need to reduce highly flammable fuels from the landscape, including eucalyptus and other fuels that act as ladders for flames to climb from the ground to the tree canopy.

Green, named a “rock star of remote sensing” by the geospatial magazine *Directions*, won the Lifetime Achievement Award from the American Society of Photogrammetry and Remote Sensing in 2016. In 2020, she earned the NASA and U.S. Geological Survey’s William T. Pecora Award, which recognizes outstanding contributions toward understanding the Earth, informing decision makers, supporting disaster responses, and educating new scientists. “I’m especially honored by the Pecora Award,” she says. “It’s the highest award in my field.”

### GIVING BACK

Remaining active with her alma mater throughout her career, Green was a member of the College’s advisory board for 23 years and served as its first woman chair. She’s been impressed with the school’s evolution and the vision and leadership that have made it “one of the top universities in the world for environmental studies,” she says.

“Gene and I wouldn’t be where we are now without this College. It taught us how to think,” she says. In 2005, they made a gift to launch Berkeley’s Geospatial Innovation Facility, and they have also pledged an estate gift to endow a chair in measuring and monitoring resources. “Remote sensing and GIS are great career paths for future Rauser students,” she says. “The field is always innovating. The jobs are plentiful, and with climate change and population growth, the critical need for better information and imaging of the landscape will continue to expand exponentially.”



From left: Kass Green, graduate student Eric Romero, and Associate Professor Iryna Dronova discuss data maps at UC Berkeley’s Geospatial Innovation Facility.

# Radiant Results

## SHINING A LIGHT ON YOUR TREMENDOUS SUPPORT FOR RAUSSER COLLEGE DURING THE LIGHT THE WAY CAMPAIGN

In February 2020, UC Berkeley launched the public phase of Light the Way, a historic effort to raise \$6 billion. Two weeks later, COVID-19 shuttered the world—but not your generosity. The ten-year, campus-wide campaign officially closed last December, and we're delighted to report that with gifts from 5,608 donors, Rausser College of Natural Resources exceeded our original goal of \$125 million by \$63.2 million. We ended the campaign with total funds raised at \$188,210,049—50% over our original target!



Our priorities for the campaign included bolstering graduate student funding; creating more opportunities for undergraduate research and discovery; advancing diversity, equity, inclusion, belonging, and justice (DEIBJ) activities; and supporting faculty and innovative research programs.

Here, we share campaign highlights and extend our deepest gratitude to all of you who, by making a gift of any size to any Rausser College fund during the campaign, fueled the education, research, and outreach that will make Rausser College's next fifty years even more impactful than our first.

# \$188,210,049

raised for Rausser College between January 2014–December 2024

## 20,697

gifts and pledges

from

## 5,608

donors

# \$50 Million

The landmark commitment from Professor Emerit and former Dean Gordon Rausser

The largest proportion of endowment payout is being allocated to support key priorities including graduate students, DEIBJ programs, and undergraduate research and discovery experiences.



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**3,497**

alumni

**784**

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**1,061**

faculty, staff, and non-alum friends

**86**

foundations

**180**

corporations

**+33%**

increase in donor count during the campaign

## We raised over...

**\$5M**

for the Berkeley Fund for Natural Resources

**\$10M**

for graduate student fellowships

**\$4M**

for undergraduate scholarships and programs

**\$17.3M**

for faculty support



**LIGHT THE WAY**

THE CAMPAIGN FOR BERKELEY

Philanthropic funding is a vital catalyst for Rausser College's financial sustainability, academic excellence, and societal impact. Your support fosters innovation, enables student scholarship and experiences, and furthers cutting-edge research initiatives for the public good.

**Thank you!**

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# 50 YEARS

Berkeley Rausser  
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## Save the Date

Join us this fall for a 50th anniversary celebration and special Albright Lecture featuring Jill Tiefenthaler, CEO of the National Geographic Society.

**Tuesday, October 29, 2024**

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