

environment YALE

BIOENERGY

The Cure for Our Oil Addiction?

By Richard Conniff

Plans to Cap CO₂
Target Fossil Fuels
at Their Source

By Steve Kemper

page 12

letters

To the Editor:

I read your cover story on water, and could not agree more (“The Coming Water Crisis,” Spring 2007). A very obvious solution is displayed on a number of farms around the country, where the manure pile is tapped for gases, then those gases are used for powering a number of farm functions. I have pointed out to President Levin that the sewage lines of New Haven contain a considerable amount of fuel, liquid, solid and gases. They also contain a huge volume of water that, after being purged of the fuel elements, would be fit to return to the reservoirs. This, of course, would appear to be a monstrous and hugely expensive process, but what are the alternatives? Can we afford to waste all that energy? Where is there an adequate resupply of drinking water for

New Haven and for every other city in the country? This is a huge and complex problem, and if it is not solved, how long can we continue to waste our resources and pollute our water, rivers and ocean shores? It is my hope that the various engineering, scientific, legal and business departments at Yale would come together with funding from a number of foundations to spearhead this effort to save our civilization. It seems to me that the sooner this starts, the better!

JOHN CALHOUN JR. '52
PETERBOROUGH, N.H.

To the Editor:

I was astonished to note that in the summary of “shared concerns” (Dean’s Message, “Protecting Creation a Moral Duty,” Spring 2007), there was no mention of population pressure. It can be argued, and has been before with ease, that this area of concern is at the root of much of the current environmental situation. To act as though the force of numbers is trivial is an exercise in futility. Population study should be part of environmental investigation and action.

W.R. HENSON '48, PH.D. '50
WINNIPEG, MANITOBA



Having Fun While Building a Community

On a blue-chip August morning last summer, a day of cloudless skies and soft air, the sun-dappled road into Great Mountain Forest in Norfolk, Conn., was dotted with people, heads down, muttering under their breath.

The 31 men and women were pacing, single file on the dirt road and stopping every few feet to scribble something on a piece of paper. The uninitiated might have taken the scene for a poetry workshop or a therapy session. But alumni of F&ES would instantly recognize that the students were calibrating their pace – that is, measuring their stride in meters to train the body to establish distance over a landscape, regardless of the terrain.

Since its inception, F&ES has used a camping experience to provide incoming students with a foretaste of their life in the master’s program. During weeklong sessions at Great Mountain, Yale-Myers Forest and Beaver Ponds Park in New Haven, 97 students from 20 countries and ranging in age from 22 to 61 followed in the footsteps of their predecessors, engaging in rugged outdoor activities worthy of inclusion in an episode of the reality TV series *Survivor*, as part of the Training Modules in Technical Skills, more popularly known as “Mods.”

During Mods, students studied urban ecology and terrestrial and aquatic ecosystem measurement, all the while having fun, bonding and engaging, rather than competing with, each other – an approach, they discovered, that is at once eminently practical and deeply rooted in the school’s culture. Rhea Hirshman, Stacey Stowe and Cathy Shufro spent a day with the students at each site to capture the fun and learning. You can read their accounts on the school’s website at <http://environment.yale.edu>.



Clockwise from top left: Sarah Enders and Brian Milakovsky clear brush at Beaver Ponds Park in New Haven. At Yale-Myers Forest, Neelesh Man Shrestha measures standing dead trees to estimate the size and abundance of snags that wildlife depend on for food and shelter, and Mark Ashton shows how to determine the age of wild sarsaparilla (*Aralia nudicaulis*), an herbaceous understory plant, and its use as an indicator of soil productivity.

Matthew Garrett

Harold Shapiro (2)



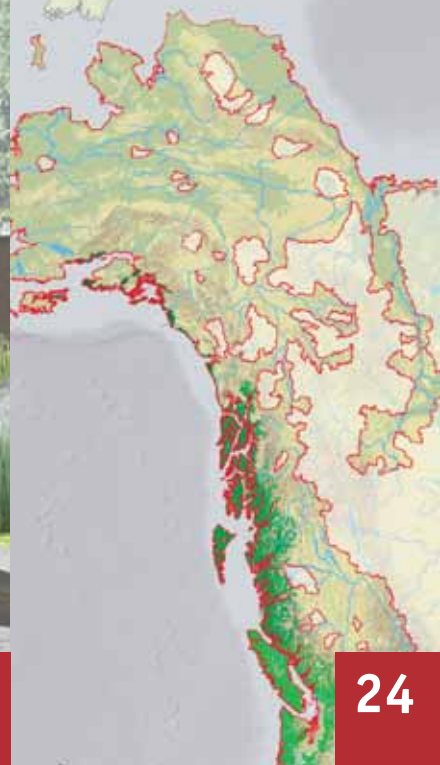
12



17



19



24

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CONTENTS

2
Dean's Message
F&ES is increasingly in the business of designing the future.

4
Bioenergy: The Cure for Our Oil Addiction?
In the current rush to bioenergy as a remedy for global warming, hints of magic and madness are everywhere.

12
Plans to Cap Greenhouse Gases Target Fossil Fuel at Their Source
Support is coalescing around a cap-and-trade system that requires raw-fuel suppliers to obtain permits to emit carbon dioxide.

Cover photo by Bob Handelman.
All photos in bioenergy article by Getty Images except page 4 by Corbis.

17
Bookshelf

19
Kroon's Rainwater Harvesting System to Save Half-Million Gallons a Year
A \$1.5 million gift from the Mars family will enable Kroon Hall to reuse and recycle water.

21
At the School

24
Combining Community Development and Indigenous Culture to Promote a Conservation Economy
The groundwork is being laid for an Ecotrust Australia that will take Ecotrust global.

Special Insert
Honor Roll of Donors

29
Class Notes

53
Obituaries

56
Commentary: The Emerging Alliance of Religion and Ecology
The world's religions have a vital role to play in the development of a more comprehensive environmental ethics.

dean's message



Dean James Gustave Speth

Green by Design

All of us concerned about the environment's future have known for a long time that we should be doing more in the area of designing positive solutions. Stopping destructive projects requires lawyers and lobbyists and, most of all, irate citizens. But designing the elements of a sustainable future requires, among others, chemists, engineers, planners and, most of all, visionaries. Both are important, but we American environmentalists have done much more on the negative front than the positive.

One of my great pleasures as dean has been to help rectify this situation through the steady strengthening of the school's capacities in the emerging field of sustainable design. From the green chemist's design of new molecules to replace the toxic ones of yesterday, to the design of new transportation and water systems for great cities, F&ES is increasingly in the business of designing the future we want to see. That requires creativity and inventiveness, backed by hard science and engineering and by an awareness of economic constraints. The good news is that the school is building enormous faculty strength – top people who can bring all these considerations together. I hope our school will gain increasing recognition as a major center for designing a sustainable future. Let me relate to you why I believe we are on our way to that goal.



Paul Anastas



Julie Zimmerman



Thomas Graedel

photos by Harold Shapiro

Here are some of the exciting fields now developing at F&ES. One of our newest faculty members, Paul Anastas, is recognized globally as a founder of the new field of green chemistry. As Paul is working on the design of new, safer molecules and chemical processes, Julie Zimmerman, who is also on our faculty, is working on the design of new green products. Julie is a pioneer in the new field of green engineering, and has a joint appointment with Yale's engineering school.

Moving up to a larger scale, industrial ecology founder Thomas Graedel focuses on the design of industrial processes, while his colleague Marian Chertow is researching the ways in which industrial facilities can

be designed to interact symbiotically with one another. And moving out onto the landscape, Gaboury Benoit has focused on how large-scale development projects can be designed to integrate successfully with the environment, while Stephen Kellert has pioneered efforts to bring environmental sensibility to the design of the built environment and to show how architecture can capture what he calls biophilic design. Finally, on a still-larger scale, Ellen Brennan-Galvin is studying innovative design in urban transportation and other aspects of cities.

Here then, in a nutshell, are a few of the ways that F&ES faculty are helping to design positive, sustainable solutions to our environmental challenges. The very able writer Heather Millar has interviewed each of these faculty members and helped me bring a little objectivity to descriptions of these remarkable people.

For Paul Anastas, professor in the practice of green chemistry, a green future starts with the most basic building blocks – green molecules. Anastas spent 16 years at the U.S. Environmental Protection Agency (EPA) and the White House before coming to New Haven in January to direct the new Center for Green Chemistry and Green Engineering at Yale.

"In the same way that we can design a material so that it's red or it's blue or it's rubbery or brittle, we can design it so that it's toxic or not toxic. This is the design framework for the center," he says.

The center has started a large initiative to design safer chemicals and compounds that don't persist for long periods or, for instance, that avoid disrupting the human endocrine system. Building on his Twelve Principles of Green Chemistry, Anastas says, "We'd like to come up with a green framework of design – a toolbox that could be used for whatever you're trying to make, whether it's a dye or an adhesive or a flame retardant."

The center has reached out to industry, showing business leaders how green chemistry can benefit them, and is spreading the word through conferences to partners in South Africa and China, as well as through a Pan-Africa Green Chemistry Network, to promote the field on the African continent. The center also is launching an interactive website, where researchers can exchange ideas about green chemistry.

Julie Zimmerman, assistant professor of chemical engineering and of green engineering and product design and the assistant director for research at the Center for Green Chemistry and Green Engineering, specializes in making things that don't pollute. For her doctoral dissertation at the University of Michigan, she developed vegetable oil-based metalworking fluids that were recyclable, long-lasting and decreased occupational

health concerns for the workers. While at the Office of Research and Development at the EPA, she developed an analog to Anastas' green chemistry commandments – Twelve Principles of Green Engineering – which include proactive steps such as “preventing rather than treating” (avoiding pollution rather than cleaning it up) and “designing for separation” (to ease reuse and recycling).

The Army has asked Zimmerman's team to investigate ways to build environmental considerations into the design and engineering of processes like cleaning, painting, transportation and manufacturing munitions. “Our recommendations will be written into the Army's specs,” Zimmerman explains.

Through the Center for Industrial Ecology, F&ES has taken the lead in an emerging field that examines the environmental impacts of industrial production and consumer economies. Industrial ecologists go beyond the usual bromides, such as “waste less, consume less,” and try to attach numbers and strategies to those notions. The tools of the trade include materials flow analysis, an examination of how resources like copper and oil move through the global economy; life cycle assessment, an evaluation of the full environmental impact of how products are created and eventually discarded; and industrial symbiosis analysis, an examination of how one business' waste might become another's feedstock. Industrial ecologists look at the global picture, and take the long view, perhaps 50 years into the future, rather than the 5- or 10-year planning horizon common in traditional business.

Leading the effort is Thomas Graedel, Clifton R. Musser Professor of Industrial Ecology. “I look at a sustainable future from the perspective of materials,” says Graedel, who co-authored the field's first textbook, *Industrial Ecology*. “We are trying to understand in detail how we, as a planetary society, use metals. How much of them are getting lost? What's the potential for recycling, the potential for damage to the environment? We're researching and constructing complete life cycles.”

Graedel's team has mapped the flow of many metals, including zinc, iron and nickel, and he has developed an environmental assessment matrix, now a standard tool used by companies trying to gauge the environmental impact of their products. As consultants, he and some of his students recently tracked the complete industrial life cycle of every helicopter made by Sikorsky, the Connecticut manufacturer.

“We try to look at the long-term fate of a product,” says Graedel. “A couple of things come out of looking at things that way: first, you're proactive, and second, you begin to think of what you would do with a product

if you got it back. How would you give that material a second chance? That really revises and transforms the design process.”

Marian Chertow, associate professor of industrial environmental management, studies how businesses cluster together in places as varied as Hawaii, Puerto Rico and mainland China. She has recently proposed a new approach to encouraging corporate greening: Map the symbioses – the waste, water, and power exchanges and other beneficial relationships – that exist among businesses. Show companies that they have already begun to build industrial ecosystems. Then help them to do more of the same. “Business people just want to know the rules of the game so that they can go out and play hard,” said Chertow. “If we have green rules, then they can go play the green game hard.”

While researching the Campbell Industrial Park near Honolulu, Chertow's team found that eight companies were trading seven different kinds of materials among themselves. Yet companies remained oblivious to the big picture: they weren't aware of what their neighbors were doing or how they might benefit even more from sharing resources. She found similar exchanges taking place in a very different context, a large industrial complex in China, and now leads Yale's new Program on Industrial Ecology in Developing Countries.

Chertow's team is researching the social norms and networks that create and facilitate environmentally beneficial trading. Who knows whom? What are the ties between the executives of various firms? How do business leaders identify the needs of their companies and use relationships to help meet those needs? Could this process be more efficient? “Analyzing industrial ecosystems as social networks reveals why they are difficult to plan but can still be highly effective in creating environmental benefits along with the economic ones.”

Gaboury Benoit, associate dean for research and co-director of the Hixon Center for Urban Ecology, has tried to lay out a framework that would allow businesses to thrive in a landscape that better integrates human development with nature. “Land development is exploding. The number of people is growing, and the amount of space each person uses is also growing,” Benoit explains. “A lot of people want to develop land in environmentally appropriate ways, but they don't know exactly what that means. They don't know what steps to take. We've outlined a very straightforward, step-by-step way to do it. We try to get down to brass tacks.”

With Diana Balmori, a landscape architect who teaches at the Yale School of Architecture, Benoit co-authored

continued on page 56



Marian Chertow



Gaboury Benoit



Stephen Kellert



Ellen Brennan Galvin

BIOENERGY

The Cure for Our Oil Addiction?

By Richard Conniff

In the current rush to bioenergy as a remedy for global warming, hints of magic and madness are everywhere.

Consider two instances:

Case One: In Arlington, Ariz., early this year, an electric power company and a bio-fuel startup captured carbon dioxide (CO₂) exhaust from the stack of a power plant and piped it to a greenhouse, where it bubbled up through clear plastic bladders of water gone murky with algae. The algae used ordinary photosynthesis to convert the CO₂ into more algae. And this crop got converted in turn into the elixir of our day, transportation-grade biodiesel and ethanol.

A number of attractive traits made algae, otherwise known as pond scum, suddenly look like green gold: It tolerates wastewater or brackish water. It can flourish in places, like the deserts of the American Southwest, where it doesn't compete with food production. And it grows relentlessly, with little regard for season. Massachusetts-based GreenFuel Technologies was





predicting that its annual output would be on the order of 5,000 gallons of biofuel per acre – versus 360 gallons of ethanol (and perhaps as little as 60 gallons net, after accounting for fossil fuels used to produce it) from an acre of corn.

A company spokesperson conceded that the process faces hurdles. On the carbon accounting side, no one has yet addressed the extent to which algae from a coal-fired power plant qualifies as a biofuel. On the economic side, it would require 4,000 acres of greenhouses and other algae-farming infrastructure to handle the CO₂ from a single 1,000-megawatt coal power plant. But the company figures that there are 1,700 such plants in the United States with that kind of acreage nearby. That sounded promising enough that venture capitalists have recently bet about \$40 million, according to New Energy Finance, a British research firm, on a dozen startups racing to bring algae biofuels to market.

Case Two: In January 2007, Indonesia signed agreements worth \$12.4 billion to supply biofuel to international partners.

On the face of it, these deals sounded good too: over its entire life cycle, by one calculation, biodiesel from oil palm trees generates less than half the carbon dioxide produced by conventional gasoline, and it's renewable. But to make room for new biofuel plantations, Indonesia committed itself to opening up 2.5 million acres of land this year alone, with more than 16 million acres – roughly five times the area of Connecticut – in biofuel production by 2010.

Most of it will come from cutting and clearing rainforests in a nation that already leads the world in deforestation, according to Lisa Curran, professor of tropical resources and the John Musser director of the Tropical Resources Institute at F&ES. Despite its undeveloped economy, Indonesia also ranks third in the world, behind China and the United States, as a source of greenhouse gas emissions – almost all from the burning of rainforests and the deep underlying deposits of peat that get exposed and dried out when the forest is stripped away. A consultant for Wetlands International

calculated that, when you factor in the loss of peat, which is a fossil fuel, greenhouse gas emissions from oil palm biodiesel are “up to eight times worse” than those from coal or oil.

And the story only gets worse from there. The same day that Indonesia was announcing its biofuel deal, a United Nations report, “The Last Stand of the Orangutan,” estimated that 98 percent of forests in Malaysia and Indonesia will be destroyed over the next 15 years because of logging and oil palm plantations. One of the most diverse habitats on Earth is being replaced, said a Conservation International biologist, “with a West African palm and a few commensal species of birds and rats” living in an “ecological desert.”

continued on page 6

Ethanol is the most widely used biofuel. It is produced by the fermentation of sugars derived from various crops, including corn, cereal grains, sugar cane and sugar beet. In 2006, the United States surpassed Brazil as the major producer of ethanol, producing 5 billion gallons.



But what might have been the coup de grâce came from the Australian Orangutan Project, an environmental group, which charged that the pursuit of ostensibly greener fuels was a direct cause of death of endangered apes. It said that 5,000 orangutans were already being killed annually – many of them on oil palm plantations, where managers pay a \$20-a-head bounty to eliminate them as a nuisance. Malaysian Deputy Prime Minister Najib Tun Razak dismissed the orangutan accusation as an attempt “to hurt the interest of the oil palm industry,” which Malaysian companies largely control. In Europe, where oil palm biodiesel is part of an ambitious plan to cut dependence on fossil fuels, outraged environmentalists pushed for a ban on tainted imports.

Until recently, there were only two kinds of ethanol that were well-known: ethanol made from sugar cane, which accounts for approximately 40 percent of Brazil’s nondiesel automotive fuel, and corn ethanol, which, at nearly 4 billion gallons annually and used mainly as an additive, accounts for between 2 and 3 percent of America’s automotive fuel. Below, a sugar cane crop is loaded onto a semi truck in Fiji.

Bioenergy is widely regarded as the only sustainable alternative to fossil fuels. (A note about usage: Though the term biofuel is more familiar, it usually refers only to renewable fuels for transport. The broader term bioenergy adds in fuels for heating, cooling and power generation. Both come from biomass, meaning trees, agricultural crops, manures, landfill methane and some household and manufacturing waste.) Conventional thinking says that if we can figure out how to get enough energy from the products of the living world, then we can bring our energy consumption back into the natural cycle, with carbon being continuously released and recaptured by current plant growth. That would avoid the main problem with fossil fuels, which overwhelm the Earth’s capacity for recapture by releasing in a single year the carbon stored away by hundreds of thousands of years of crops. The new “bioeconomy” could also create jobs and profits from forest, farm and manufacturing byproducts. With careful planning, some researchers suggest, it could even benefit wildlife, by encouraging landowners to plant and

manage marginal farmland, forests and other habitat for both biodiversity and bioenergy.

But it has also become evident that there are more ways to do bioenergy badly than most people ever imagined, with consequences that include destruction of rainforests, loss of wildlife, devastation of local communities and painful increases in worldwide food prices. That became clear early this year, when tens of thousands of demonstrators took to the streets of Mexico City to protest rising prices for corn tortillas, a staple food. (The price increase was generally attributed to competition for the crop from the ethanol market, but some critics also charged tortilla manufacturers with price gouging to exploit the shifting market.) The food-fuel trade-off is also causing “agflation” in the United States, where 40 percent of the corn crop is expected to go to the ethanol market over the next few years, up from 20 percent now. American farmers have planted about 90 million acres of corn this year, more than in any year since World War II. But some observers, including the chief executive of agribusiness giant Cargill, have





"If we used 100 percent of U.S. corn, it would still replace only 7 percent of total petroleum use."

David Pimental

warned of further food price shocks and even shortages. So much agricultural land has been shifted to corn that even the breadbasket state of Iowa is increasingly dependent on food imports.

These rapid changes have raised troubling questions about the sustainability of the bioenergy movement. "There is a major role for biofuel to play," said John Sheehan of the National Renewable Energy Laboratory. "But when people get the idea that it's a panacea, they are sadly mistaken." Getting it right depends on crucial nuances. But the nuances often seem to get trampled underfoot in what some observers have described as a "gold rush," a "bubble," a "boondoggle" and even a "swindle."

Two assumptions have been feeding the infectious zeal for bioenergy, appealing simultaneously to both ends of the political spectrum. The first is that we can stop or slow global warming – and still drive our cars – if we just switch from fossil fuels to green fuels. The second is that bioenergy can free us from dependence on costly fossil fuels controlled by profit-hungry multinational companies and foreign cartels.

Most researchers regard both assumptions as seriously flawed. "If we used 100 percent of U.S. corn, it would still replace only 7 percent of total petroleum use," said David Pimental, a Cornell University entomologist who is a longtime bioenergy critic. Sheehan added: "Nobody is in a position to say they can unilaterally do what we do with petroleum." Pretending

that bioenergy alone is the key "is hurting the public debate and keeping people from coming to a real understanding."

Even so, these assumptions, and the generous government subsidies that go with them, are tantalizing for entrepreneurs, who suddenly see new sources of bioenergy everywhere. It isn't just the obvious stuff like corn or restaurant cooking oil: proponents are busy trying to get bioenergy from turkey manure in Minnesota, from brewery wastewater in Australia, from substandard coffee beans in Brazil and from coconuts on the island of Bougainville in Papua New Guinea. At times, this enthusiasm brings to mind the scientist in *Gulliver's Travels*, who "had been eight Years upon a Project for extracting Sun-Beams out of Cucumbers, which were to be put into Vials hermetically sealed, and let out to warm the Air in raw inclement Summers." But the bioenergy boom is different from Swift's satire in at least one crucial respect: nobody wants to spend that much time on research. With the lure of "energy independence" in mind, President Bush set a national goal of producing 35 billion gallons of biofuel annually by 2017, a target Sheehan described as "frighteningly aggressive." Aiming to reduce greenhouse gas emissions, the European Union announced a plan to meet 10 percent of its road transport needs with biofuel by 2020, up from 1 percent today.

Biomass is of course the oldest human energy source, in the form of fires fueled by wood. But researchers have been pointing out for decades that no product is automatically greener just because the raw material comes from nature and the process is ancient. It depends on which plants you grow, how you grow them and whether you give them a chance to grow back, among other variables.

For the past five years, for instance, Robert Bailis, assistant professor of environmental social science at F&ES, has

studied the charcoal trade around the town of Narok in southwestern Kenya. Communal land there is now being privatized and converted to commercial farming, between the Mau Mountains and the Masai Mara Game Reserve, one of the most important wildlife areas in the world. It's a dry landscape, dusty savanna with open-canopy woodlands. "The first thing you need to do for agriculture is clear off the trees," said Bailis, who studies the human dimension of energy use in developing countries. But clear-cutting with machinery requires capital. So the new landowners typically invite the charcoal cutters to do the work and, in exchange, let them use the wood as feedstock for their trade.

Charcoal has become the chief object of a complex biofuel subeconomy, connecting Narok to Nairobi. After being cut, according to Bailis, the wood gets stacked in chest-high mounds for burning down into charcoal. (People in the city prefer charcoal to wood as a household fuel, because it's more compact and less smoky.) Then it gets packed into 80-pound seed bags and trucked to the city, where large retailers buy it for sale directly to the public or through middlemen on bicycles or donkey carts who buy a bag or two and break it down into small pails, called *debe*. Some poor urban families can afford to buy only enough charcoal for a meal or two. So retailers break it down yet again into containers the size of a margarine tub, called *nkebe*.

The bulk of the profit goes not to the people who actually conduct the trade, said Bailis, but to officials who take bribes to look the other way. This is a little baffling: Regulation of the charcoal trade was intended not for Narok but for the Mau Mountains, where the upland forests are essential for holding onto rainfall and preventing erosion. But the Mau forest continues to be stripped away by charcoal poachers and by agricultural settlements opened up as political favors. Meanwhile,

the perfectly legal charcoal merchants in Narok pay their bribes. The trade is doubly baffling, according to Bailis, because converting such marginal land to wheat farming is likely to yield only a modest profit at best, and none at all during the frequent droughts. The charcoal cutters and farmers are displacing the wildlife that makes the Masai Mara Kenya's top tourist attraction. And tourism is the country's leading source of hard currency.

Bailis hopes next to launch a pilot project to see if the charcoal trade, Kenya's top energy source ahead of oil and coal, can be conducted on a sustainable basis. The woodlands around Narok are resilient and might be economically viable with a combination of selective cutting and live-stock grazing. Kenya also has other biofuel options, including a large sugar cane industry, with the potential for exploiting waste products to make ethanol. But a previous stab at the busi-

Federal policy and business investment alike have "been in this rush to biofuels, as if all biofuels were created equal."

Daniel Kammen

ness in the 1980s failed, said Bailis, largely for political reasons.

The incipient *Jatropha* industry, based on an oil-rich shrub from India, also seems promising. It's a good source of biodiesel, grows on marginal land with minimal rainfall and requires relatively little care. Like coffee, it's also suitable for cultivation by smallholders. And those qualities encourage people "to put more and more expectations on it – the potential of *Jatropha*

for poverty alleviation, the potential of *Jatropha* for empowerment of women," said Bailis. "There's a lot of pressure on this little plant."

But the likelihood is that *Jatropha* will prove more economical in large-scale production. "That's not to say the smallholder model, with poverty alleviation, wouldn't work. It's just that other models might work better," said Bailis. So unless regulations are in place and enforced, *Jatropha* is liable to cause social disruption in Kenya. It won't lead to the sort of large-scale land conversion now occurring in Indonesia, according to Bailis. But *Jatropha* could take over productive farmland, putting competitive pressure on Kenya's food supply and thus aggravating poverty instead of alleviating it.

Baffling is also the word that comes to mind to describe the indiscriminate enthusiasm for bioenergy in the United States, which now has the largest biofuel program in the world. Federal policy and business investment alike have "been in this rush to biofuels, as if all biofuels were created equal," said Daniel Kammen, a public policy professor at the University of California at Berkeley. Kammen co-authored a 2006 paper in *Science* comparing greenhouse gas emissions for different forms of bioenergy, which showed, he said, "that they are dramatically not equal. You could make ethanol from corn in a plant operated by coal, and that fuel is actually worse for the environment than gasoline. But if you make ethanol from cellulosic municipal waste in a plant run by natural gas or, even better, wind power, that's orders of magnitude better than gasoline. But federal policy doesn't distinguish along those lines. So it's sending industry the wrong signals. It's saying, 'Invest quickly in biofuels to get in on the game. We don't really care which biofuels. In fact we're biased toward corn because of

the incredible subsidies.'" One result is that new corn ethanol refineries tend to rely on coal, because natural gas and other clean power sources are more expensive.

The first official effort to take account of the real differences among biofuels became law in California in January 2007. Rather than blindly embracing the biofuel label, the state's Low Carbon Fuel Standard requires that the total carbon content per gallon of fuel, regardless of type, must decline by 10 percent by 2020. "This low-carbon metric says we're going to judge all fuels based on their merit, and that message needs to escalate up to the federal level pretty fast," said Kammen. (Presidential candidates Barack Obama and John McCain have already endorsed similar plans.) An international panel, the Roundtable on Sustainable Biofuels, organized by Switzerland's École Polytechnique Fédérale de Lausanne Energy Center, is also developing standards for environmentally and socially sustainable biofuels, with a first draft due in 2008.

Without such standards, critics say the pursuit of ostensibly "greener" fuels may just aggravate existing environmental problems. This year alone, U.S. farmers planted an additional 9 million acres of corn to meet demand from the ethanol market. But "corn causes more soil erosion than any other crop in the United States," said Cornell's Pimental. "Corn production uses more nitrogen fertilizer than any other crop, and the leachings go down the Mississippi and cause the dead zone in the Gulf of Mexico. Corn also uses more insecticides and herbicides than any other crop in the United States." Some of this year's extra acreage came from growing corn on the same land two years in a row, skipping the normal rotation to soybeans. But soybeans fix nitrogen from the atmosphere, and corn doesn't. So without that boost, farmers will need to use even more nitrogen fertilizer next year.

Pimental also sees danger in the effort



Jatropha, an oil-rich shrub from India, is a good source of biodiesel, grows on marginal land with minimal rainfall and requires relatively little care. Swazi workers cultivate jatropha in the impoverished country of Mbabane, which is staking the revival of its economy on the environmentally friendly oil.

will require vast acreage and supply only a portion of likely energy demand. For instance, a 2004 Natural Resources Defense Council (NRDC) report, "Growing Energy: How Biofuels Can Help End America's Oil Dependence," said it could take 114 million acres of switchgrass to produce about 56 percent of the projected fuel demand for cars and trucks in the United States in 2050. A study from the University of Tennessee said the United States will need 50 to 100 million acres of "dedicated energy crops like switchgrass" to supply 25 percent of the nation's total energy use by 2025. Either way, these are big numbers; the United States currently has only about 800 million acres available for cultivation for food and all other nonforest purposes.

Thus researchers routinely note that bioenergy makes sense only as part of a broader attack on the causes of global warming. In its "Growing Energy" report, for instance, the NRDC argued that the remedies must include "smart growth" provisions to avoid the sort of sprawling development that wastes energy, and a dramatic improvement in vehicle efficiency, to an average of 50 miles per gallon. Together, those two measures could reduce the likely U.S. demand for gasoline in 2050 from 290 billion gallons a year, with business as usual, to just 108 billion gallons. Combining those measures with use of cellulosic biofuel could bring gasoline demand down even further, to about 6 billion gallons a year. This fits with a widespread sense that supply-side remedies, like bioenergy, can provide about a third of the solution in the transport sector. But another two-thirds of the solution still

to shift from the cob to the stalk as the raw material for ethanol production. At least in theory, using the stover – the dried stalks and leaves of a cereal crop – would reduce pressure on the food supply and extract more product from the same inputs. But much of that "waste" material now gets chopped up and plowed back into the soil. Losing it would be "a disaster for agriculture," said Pimental. "We're already losing soil at 10 times the sustainability rate on agricultural land generally."

Ethanol from stover is an example of cellulosic bioenergy, which many analysts now regard as the best hope for sustainably replacing fossil fuels. Cellulosic biofuels come from the tough, fibrous material that makes up 75 to 85 percent of most plants – not just corn, but also nonfood plants. The likely sources include wood chips, for instance, and the sludge from paper manufacturing, which now goes to landfills at a cost of \$80 a ton. Thus cellulosic biomass has the potential to provide energy without driving up food prices. It could even help feed Third World farm families, Berkeley's Kammen suggested, by providing a market for waste material from the sweet sorghum that is widely grown as a staple food in Africa, Asia and Latin America. In the United States, some cellulosic bioenergy crops, particularly native perennials like switchgrass, can grow well on marginal

land, without pesticides or fertilizers, and also provide habitat for wildlife.

Iogen, a Canadian company, has built a cellulosic ethanol plant for wheat, oat and barley straw in Ottawa, Ontario. Colorado-based Range Fuels is building a plant in Georgia, using wood chips as a feedstock. But the technology is still experimental. Whereas corn kernels contain simple sugars that are easily fermented, it's harder to break down the complex carbohydrates in cellulose and hemicellulose. Some researchers expect that it will be years before cellulosic ethanol can compete economically with gasoline or corn ethanol. Others say the potential payoff could make that happen much sooner: The real attraction of cellulosic bioenergy is that it produces just 20 percent of the total amount of greenhouse gases emitted from gasoline, while corn ethanol produces, at best, 70 percent of greenhouse gases. That's partly because the manufacturing process uses lignin, the woody material in the plant, instead of coal or oil, to provide heat for fermentation.

But even if cellulosic bioenergy becomes a practical reality, it will still run up against a fundamental barrier: there simply isn't enough land – or sea – to grow our way out of the global warming crisis. Most studies, while endorsing the importance of bioenergy, project that it

needs to come from the demand side, through conservation and efficiency improvements. The second part of the equation tends to get forgotten amid the bioenergy hoopla.

“Two really important messages are getting lost in the rush to sexy and seemingly simple solutions like biofuels,” said Nathanael Greene, principal author of the NRDC report. “The first is the paramount importance of improving our energy efficiency as much as possible. The second is that biofuels, while seemingly simple, are incredibly hard to do right. And how we do them makes all the difference in whether they are good for the environment or bad for the environment.”

Few people see the consequences of that as clearly as Lisa Curran.

Since the 1980s, her research has repeatedly taken her to the area around Gunung Palung National Park in the West Kalimantan province of Borneo. She has seen most of the buffer zone around the park, and some of the park itself, cut down by loggers over the past two decades. But the development of oil palm plantations, first for edible oil, and recently for biodiesel, has proved more devastating.

“I thought logging was bad,” Curran said last spring in New Haven, between visits to Borneo. “But it was nothing like this. It’s a moonscape. They’re clearing and burning and putting in an exotic plant, and not even leaving patches of forest. I had a student come in, and she said, ‘I came to Borneo and I didn’t see an animal or a tree the whole summer. Just a sea of oil palm.’”

Curran is studying the effects of this dramatic change on global warming and on local environmental justice across 60 affected villages. In the rush to biodiesel from palm oil, said Curran, the bulldozers often simply show up, and small communities or even individual smallholders find themselves negotiating one-on-one with

multinational corporations. “Each time I go back, there are three more companies clearing and bulldozing and negotiating.” Local people often want palm oil to come to their village because the plantations hold out the promise of income. But “the vulnerability and risk to these communities are enormous,” said Curran. “Prices shift or companies decide that this isn’t as profitable as they thought. ...” Even when things go well, the locals often end up as “indentured servants” or worse on what used to be their own land. On a recent visit, Curran suddenly realized that many of the field workers had been shipped in from mainland China, depriving the locals of even the \$2.50 daily wage for plantation work.

Accurately quantifying the global-warming effects of the rush to biodiesel is difficult, according to Curran, even with the help of satellite imagery, detailed measurements of the carbon in peat and other data. The numbers depend on whether a particular plantation is producing edible oil or biodiesel, obviously, but also on whether the planting takes place on degraded land or on freshly cleared forest. Where there’s peat, the question becomes “Was the land cleared and burned? Or was it cleared and burned and drained?” Extrapolating samples across broad areas can be tricky, because there are so many variables.

“Everybody in the environmental community says oil palm is bad, but it’s a little more complicated than that,” said Curran. From an agricultural perspective, this West African palm can be a “miracle” plant, with “huge yields,” a broad range of uses in foods and a high efficiency rate for conversion into biodiesel. But as with

In the United States, some cellulosic bioenergy crops, particularly native perennials like switchgrass, can grow well on marginal land, without pesticides or fertilizers, and also provide habitat for wildlife.

every other form of bioenergy, it depends on where and how you grow the stuff. Curran’s research has demonstrated that about 60 percent of the new plantations are on freshly cleared forestland. Setting aside the environmental issues, the decision to exploit forested land could ultimately jeopardize the agricultural investment – and the displaced villagers – as potential customers in Europe and elsewhere begin to look more carefully at whether a particular biofuel is part of the solution or just another cause of the problem.

About 20 percent of the greenhouse gas emissions produced worldwide by human activity now comes from the clearing and burning of tropical forests, according to an article co-authored by Curran in a recent issue of *Science*. If unchecked, this practice will release about 100 billion tons of such emissions during the rest of this century, equivalent to about 10 years of fossil fuel greenhouse gas emissions. Borneo is already a disproportionately large part of the problem because





of its vast peat deposits. “Peat matters,” said Curran. “Forest type matters. Burning one hectare of peat can be 20 times worse in terms of greenhouse gas emissions than a hectare of Amazonian rainforest.”

In their *Science* article, Curran and her co-authors calculated that one of the least expensive ways to address global warming would be to slow the worldwide rate of deforestation. The article didn’t analyze how costly or effective this would be compared with bioenergy development. But it was hard to avoid the conclusion that attempting to fix global warming by cutting down rainforests to make room for bioenergy plantations is a form of lunacy. According to Curran and her co-authors, slowing the rate of deforestation by half, between now and 2050, would avoid the equivalent of six years of fossil fuel emissions, and it would provide up to 12 percent of the total greenhouse gas reductions needed to stabilize atmospheric carbon dioxide concentrations. Those numbers suggest that bioenergy development and reduced deforestation need to happen at the same time.

And that means that some form of compensation needs to be in place, so that a piece of intact forest has a cash value at least equal to what it would be worth if cleared and converted into a bioenergy plantation. A variety of complications caused nations that signed the Kyoto Protocol not to use payments for “avoided deforestation” as a way to offset fossil fuel emissions. But at the instigation of some developing nations, the United Nations Framework Convention on Climate Change is now considering a change in that policy. Technological developments have also made it more practical to keep track of land changes in remote tropical forests and to accurately calculate how they affect the carbon balance.

So it’s rapidly become worthwhile for wealthier nations, businesses or even individuals to pay landowners who maintain their forests an annual “rent” for the carbon

thereby kept out of the atmosphere. Political and economic questions still need to be resolved – particularly how to apportion rent between governments of forest-rich nations and the local populations responsible for maintaining a particular forest.

It’s also not clear, at least in the current market, that the “rent-a-rainforest” idea can compete with bioenergy. It depends, among other factors, on the price of carbon

Slowing the rate of deforestation by half, between now and 2050, would avoid the equivalent of six years of fossil fuel emissions.

and the type of forest, according to Brent Sohngen ’96, an agriculture professor at Ohio State University. He included the rental approach as one of the most cost-effective ways to address global warming in an analysis written with Robert Mendelsohn, Ph.D. ’78, Edwin Weyerhaeuser Davis Professor of Forest Policy at F&ES, titled “A Sensitivity Analysis of Forest Carbon Sequestration,” delivered at a 2004 energy modeling forum. Prices in the European emissions trading market are highly volatile. But if carbon were trading at, say, \$20 a ton, Sohngen figures the annual emissions trading value of keeping a hectare of South American rainforest intact would justify a rent of about \$120 a year. That might not be good enough, given that growing soybeans on the same land could yield \$150 to \$200 a year.

On the other hand, paying rent to keep a forest in Borneo intact could make immediate sense, on both sides of the transaction. Oil palm can be even more

lucrative than soybeans. But the enormous quantity of carbon stored in the peat could justify a much higher global warming rent.

The idea of renting a rainforest may seem far-fetched. But in the 1990s a “payment for environmental services” program succeeded in stopping deforestation in Costa Rica. A similar program also exists in the United States, where farmers receive annual payments through the USDA Conservation Reserve Program for setting aside sensitive or degraded lands. The program covers 36 million acres at an annual cost of \$1.8 billion, and produces an estimated \$500 million a year in benefits from reduced erosion and \$737 million from wildlife viewing and hunting. No one has yet calculated the value of the carbon being sequestered or the biofuel being produced by keeping that land out of annual crop production.

Ideally, that kind of program could adjust to accommodate bioenergy demand, according to John Sheehan, of the National Renewable Energy Laboratory. Farmers could plant native grasses to harvest for cellulosic ethanol, and still receive a reduced rent from the Conservation Reserve Program for erosion control and biodiversity benefits.

Unfortunately, nothing that rational seems likely to happen anytime soon. In the heedless rush to produce bioenergy, from Iowa to Kenya to Borneo, hardly anyone is ready to stop just yet and ask, “Is this really good for the environment?” Or even, “Is it a bubble?” In a year or two, the whole thing could come crashing down in dust. But for now, farmers with dollar signs in their eyes are beginning to pull their land out of the Conservation Reserve Program – and plant it in corn for ethanol. ■

Plans to Cap Greenhouse Gases Target Fossil Fuels at Their Source

By Steve Kemper

It's rare when scientists, economists, policy wonks, environmentalists, corporate CEOs, the American public and members of Congress from both parties all want to paddle the ship of state in the same general direction. Just such a blue-moon consensus has formed around the issue of global climate change. With one key exception – President George W. Bush – parties on all sides, including a number of energy companies, agree that the United States must regulate greenhouse gases, especially the carbon dioxide (CO₂) that accounts for about 85 percent of such emissions each year.

Among the many proposals for controlling CO₂, the favorites are various versions of a cap-and-trade system combined with a so-called upstream scheme. Cap-and-trade sets a limit – a cap – on total emissions for a certain period. Then the government issues emissions permits that give companies the right to release a certain amount of CO₂. Depending on whether they use more or less energy than their permits allow, companies can buy or sell these permits on a carbon trade market – hence the name cap-and-trade.

Upstream schemes target raw fuels – coal, crude oil and natural gas – at their sources, before they enter the energy grid.

In an upstream system of regulation, suppliers of raw fuels would need permits for the CO₂ that their fuels would release somewhere downstream. By contrast, midstream schemes focus on the points where fuels are transported, refined or distributed, while downstream schemes attempt to regulate the points – the many millions of points – where combusted fuels release their gases through tailpipes, chimneys and smokestacks. Hybrid systems target sources both up and down the carbon stream. A few economists favor a straight tax on CO₂ – a long shot, since politicians are disinclined to support anything with the T-word attached.

Upstream proposals are getting the most attention for many reasons, according to Robert Repetto, professor in the practice of economics and sustainable development at F&ES. He makes a strong case for them in a paper titled “National Climate Policy: Choosing the Right Architecture,” published in June for the Presidential Climate Action Project. Upstream schemes are more effective than other systems, he writes, because they account for almost 100 percent of all fuels by measuring them at their sources. Midstream schemes, on the other hand, detect less than half of CO₂ emissions. Upstream systems are also easier to monitor and enforce, because only about 2,000

first-sellers of raw fuels do business in the United States. Putting the control gate farther downstream multiplies the emissions sources that must be tracked and, hence, the regulatory and bureaucratic headaches.

“Some people want to have mileage standards for cars, efficiency standards for household products, mandates and so on down the line,” says Repetto. “Their mindset is to identify all emission sources and design some particular regulation for each of them. A lot of these people,” he adds dryly, “are lawyers.”

Repetto also thinks upstream schemes are more fair than the alternatives, because the price increase at the source will be felt by everyone based on consumption. “If you're using a ton of energy and putting out a disproportionate share of emissions,” he says, “you'll pay a disproportionate share in terms of energy costs. Some uses will go on because they're essential. If you're running a semiconductor plant and have to maintain temperatures at a certain level, you're going to go on doing it. But if you're running a big-box warehouse and can save energy by keeping the huge doors on the loading dock closed, you might do that. If you have a Sunglass Hut and are leaving your door open to the pedestrian mall so that you're air conditioning the sidewalk, you might close your door.”

Everyone from the permit holders at the source to the end-users downstream will be motivated to use less fuel. This will have the dual benefit of tempering the price increases and spurring innovation in energy-efficient technologies.

Advocates of an upstream system agree on these advantages, but part ways on two important variations of it. The first: should the government give away some or all of the carbon permits – that is, the right to emit a set amount of CO₂ – to energy suppliers to compensate them for rising fuel costs? Or should the permits be auctioned to raise revenue? And if some or all of the permits are auctioned, how should the money be used?

The second issue is thornier. Some economists favor a policy that puts a hard cap – an absolute limit – on CO₂ emissions for a set period, and then lets the price of carbon permits fluctuate on an open market. Other economists want a policy that sets an upper limit on the price of permits and thus protects the economy against exorbitant increases in energy costs. In this model, if the permit price reaches the established ceiling, the government relieves the upward pressure on costs by issuing more permits, which causes the price to drop. Economists call this provision a “safety valve,” because it keeps permit prices from getting out of control and playing havoc with the economy. But those extra permits would also result in more emissions, which would puncture the CO₂ cap. For that reason, most environmentalists and some economists, including Repetto, dislike safety valves. The upshot is that one side wants a hard cap on carbon emissions, while the other side wants a hard cap on permit prices.

Let’s start with the issue of permits (sometimes called allowances or allocations). Because the number of permits will be limited, they will be valuable. If the government gives them free to energy companies, critics say, the companies

could make windfall, or excessive, profits. As proof, they point to the European Union (EU). In 2005, the EU began the first phase of its commitment to cut carbon emissions under the Kyoto Protocol. Most analysts now agree that the EU’s system has several gaping flaws, starting with its midstream control gate, which leaves out more than half of all carbon emissions. In hindsight, it’s also clear that the EU program blundered in its allocation of carbon permits. It not only gave all the permits free to power companies, oil refineries and energy-intensive industries, it also issued far too many after intensive lobbying by industry. These businesses reaped a double bonanza. Since the permits could be traded, companies could sell their surplus carbon credits to other energy users. And since the permits carried a monetary value, many companies also treated them as a cost on their books that could be passed on to consumers. The result was windfall profits. A study by the British government found that power companies in that country made about \$1 billion from free allowances in 2005. The same happened throughout

the EU. In June, the EU’s environmental commissioner announced that when the program’s next phase begins in 2012, most, if not all, of the permits will be auctioned – that is, businesses and industries will bid for the permits and market forces will set the price, with the revenues going to an EU carbon authority.

U.S. analysts and politicians took notice of the EU’s experience. In 2004, for instance, the National Commission on Energy Policy, a bipartisan group of 20 energy experts from industry, government, labor, academia and environmental groups that supports an upstream policy, recommended giving away 90 percent of the allowances; in April 2007, citing the EU’s experience, the commission changed its recommendation to half free, half auctioned.

Robert Stavins, Albert Pratt Professor of Business and Government at Harvard’s John F. Kennedy School of Government, has altered his views on allowances for the same reason. In a proposal that he’s developing for the Hamilton Project at the Brookings Institution, he will recommend an even split between free and auctioned



Illustration by James Yang

permits, with the free ones phased out over 25 years. He thinks that any CO₂ legislation will have to include free permits to be politically feasible. Most of the bills now floating around Congress call for some percentage of free allowances to industry, but none call for 100 percent, and most call for a phaseout of free permits.

On the other hand, auctioning the permits would generate huge revenues for the government. Estimates range from \$50 billion to \$300 billion annually. That makes Robert Mendelsohn, Ph.D. '78, Edwin Weyerhaeuser Davis Professor of Forest Policy and a professor of economics at the Yale School of Management, nervous. "If Congress would use the money to eliminate the Social Security tax, that would be fine," he says, "but I strongly suspect that they will use it wastefully on pet projects." For that reason, he would give away 90 percent of the allowances.

Repetto, on the other hand, would award only "a small fraction" of free allowances to a few energy companies to compensate them for the loss in sales caused by a CO₂ program. The rest would be auctioned, with the money used in any number of socially beneficial ways: to cut the program's costs through tax cuts or tax credits, encourage innovation in new technology or soften the program's impact on vulnerable households and businesses.

Richard Morgenstern, a senior fellow at Resources for the Future (RFF), a Washington, D.C., think tank that focuses on the economics of environmental and energy issues, agrees with Repetto about the auction percentage: "The more the better." But his thinking also has changed. In 2002, he wrote a paper in support of the "Sky Trust" variation on upstream schemes. Under Sky Trust, CO₂ allowances would be auctioned and most of the money – Morgenstern suggested 75 percent – would be shared equally by all households in the form of a check. The other 25 percent would go to the states for distribution to

affected parties. The idea was to galvanize public support for CO₂ regulation, and the plan was praised by, among others, the Congressional Budget Office. But critics pointed out that it wouldn't change people's energy habits, because it wouldn't reward conservation; it wouldn't be fair – "Warren Buffett would get the same check as everybody else," notes Repetto; and it would create another bureaucracy. Sky Trust fell off the radar.

Morgenstern doesn't lament that, since he now would cut the "money pie" differently, spreading it to industries and small towns hurt by higher energy costs and to programs that encourage new energy technologies. "Designing a program that addresses multiple objectives is where the game is now," he says.

No matter how these disagreements about allowances play out, the targets chosen for reducing CO₂ would stay the same. That might not be true if the policy contains a safety valve, a more divisive issue. "The price cap or safety valve has emerged as perhaps the single most contentious element of the Commission's 2004 proposal," said a 2007 report by the National Commission on Energy Policy. "More than two years later, we continue to believe that the cost certainty provided by this mechanism is critical to forging the political consensus needed to move forward without further delay."

Repetto understands the economic and political reasoning behind this position, but counters with economic and political arguments of his own. On the political side, he suspects that if a CO₂ bill includes a safety valve that puts a ceiling on the price of carbon permits, the energy industry will lobby successfully to keep that ceiling as low as possible, because when permits reach the safety-valve price, the government issues more permits at that price. If this

"trigger" price is low, companies spend less for the right to emit more CO₂. "And then businesses won't have to change anything," says Repetto. "They'll treat the cost as a price of doing business and pass it along," with scant benefit to the environment.

His political argument leads into his economic one: a low trigger price would mean more permits, more CO₂ emissions and a busted carbon cap. "If you think that the economic damages from climate change can mount very heavily if we don't limit emissions," he says, "then we need insurance against that happening – which means a stricter cap, not one that can be obliterated by a safety valve."

The main argument for a safety valve is economic uncertainty. CO₂ regulation would raise the price of energy, which would affect every level of society, from steel producers to retailers, suburban commuters and retirees in condos. It would cost more to make products, heat buildings, transport goods and drive to work. No one knows what sort of economic chain reactions might be put in motion as the effects of higher energy costs ricochet among industry, business, markets and consumers.

"There's legitimate uncertainty about the future," says RFF's Morgenstern. "We could have a failure of some technology or another, or we could have unusual weather patterns, which could lead to a dramatic run-up in permit prices. A safety valve is designed to deal with that. It's like an insurance policy." For instance, if a nuclear plant had to be shut down or if power supplies were strained by a long stretch of extremely hot weather, the demand for energy from fossil fuels would spike. But before they could sell the extra fuel, suppliers would need to buy more carbon permits. The demand would drive up the price of permits, and those costs would be passed down through the entire economy.

As a cautionary example, Morgenstern points to RECLAIM, Southern California's cap-and-trade program to reduce nitrogen oxide emissions. The program didn't have a safety valve, and when an electric energy crunch hit in 2000 and 2001, the price of permits followed the law of supply and demand, spiking to 20 times their usual cost, causing an uproar. "The state responded by suspending the entire program for a while," says Morgenstern, "which certainly didn't do the environment any good."

But neither would extra CO₂ emissions, says Nathaniel Keohane. Now on leave from the Yale School of Management, where he is an associate professor of economics, Keohane is spending the year as senior economist on climate change policy at Environmental Defense. Like other environmental advocacy groups, Environmental Defense vehemently opposes a safety valve – a position shared, Keohane points out, with Shell, DuPont, GE, GM and other large corporations that are part of the United States Climate Action Partnership, a coalition of environmental groups and companies that supports valveless upstream regulation. Keohane agrees that the economic effects of CO₂ regulation are uncertain, but echoes Repetto's point that so are the economic effects of climate change, if greenhouse gases continue to accumulate.

"We know catastrophic damages are possible, but we don't know how likely those are," he says. "So do you protect the economy and gamble on the climate, or do you protect the climate and gamble that innovation will get us to where we want to go? We trust that if the market is given a hard cap and the right incentives, it will

turn out the innovations we need to get to these emissions targets."

Keohane adds that any CO₂ legislation will need the support of the environmental community. "And that means no safety valve."

"I know that environmental advocates are drawing a line in the sand and saying, 'No safety valves,'" says Harvard's Stavins, "but they need to recognize that what's going to happen is that trading will be suspended, the system will be suspended and carbon emissions will not be constrained. That's what happened in Southern California, and that's what will happen in

the United States, because no one is going to tolerate dramatically high prices. The virtue of the safety valve is that it manages price volatility and eliminates this upside uncertainty."

Morgenstern thinks that a safety valve can help create public support for CO₂ regulation and also counteract the energy industry's inevitable scare tactics. "Back in the Kyoto days," he says, "the industry ran very effective ads showing a couple sitting around their kitchen saying, 'Gee, I want to do the right thing, but I don't want to lose my job and bankrupt society.' There will be ads like that again. The safety valve cuts the legs out of that entirely, because it sets in place a method that protects society and prevents things from getting uncontrolled. So you can do the right thing and you can get started on this process and ramp it up over time."

Mendelsohn points out that a safety valve also reassures business and industry that prices won't get out of hand before there's time to adjust. "The price cap for carbon permits should rise over time," says Mendelsohn, "because we think the

problem is going to get more serious over time. That's a good message to give to firms, because they know not only what they're going to face immediately, but what they need to plan for in the future so they can make adaptations."

Repetto counters that other mechanisms can moderate permit prices without sacrificing the carbon cap. For instance, he proposes letting firms "bank and borrow" CO₂ credits across five-year periods. For instance, a firm that quickly implemented ways to conserve fuel and didn't use all of its permits during one period could "bank" the surplus and use it in the future to expand operations. Likewise, if a company faced unexpected energy needs during one cycle, it could "borrow" credits against the next cycle and repay them then. This would give firms flexibility, time to plan and the means to ride out unexpected price increases – and the total CO₂ emissions over 10 years would not change, so the carbon cap would be preserved.

A safety valve also would make trading difficult on the developing international carbon market, where price caps don't exist. If the international price were lower than the U.S. trigger price, U.S. firms would buy permits abroad. If the domestic cap was lower than the international price, firms would buy permits to sell abroad. In both cases, more CO₂ would be emitted. Far better, says Repetto, to have one global market for carbon.

If upstream legislation does include a price cap for permits, where should the cap be set? Again, opinions vary widely, though everyone agrees that the price should rise over time. Mendelsohn suggests starting at \$2 to \$10 per ton of CO₂. The National Commission on Energy Policy recommends \$10. Morgenstern proposes \$12 to \$15, which sounds reasonable to Stavins. To Repetto, these figures sound too low to send an economic signal strong enough to alter behavior and stimulate innovation. Pushed to name a number he

"If the market is given a hard cap and the right incentives, it will turn out the innovations we need..."

could live with, he suggests \$30. “There’s nothing intrinsically wrong with a price cap,” he adds, “if it were high enough so that it really was an insurance policy that guarded against improbable but catastrophic events.”

Repetto points out that a system without a safety valve would have another wonderful side-effect: the virtual elimination of our Byzantine system of energy subsidies, which distort the market and probably raise prices. Subsidies encourage increased production of energy by making it profitable for companies to extract fossil fuels in ways and places that otherwise wouldn’t be cost-effective. But an upstream system with no safety valve puts a hard cap on how much fossil fuel can be produced and consumed. Since a subsidy would be worthless without a permit and since permits would be limited, many subsidies would go unused.

In addition – and this clearly delights Repetto as an economist – if the permits are auctioned, energy companies end up paying for their subsidies. Repetto explains: “Think about an oil producer who has a subsidy, so he has oil that would be profitable to produce, but he can’t without a permit. So what is he going to try to do? Buy a permit. When he does that, he’s going to end up bidding up the price. So if the government auctions the permits, it gets the subsidy back, essentially by making the energy companies pay for their subsidies through higher permit prices. And here’s the kicker: since renewable-energy producers don’t need permits, they get to keep their subsidies. So in one fell swoop, you get rid of the fossil fuel subsidies and keep all the renewable-energy subsidies. It’s one of the neatest things about the system.”

Though allowances and safety valves are the most divisive issues at the moment, any upstream regulation of CO₂ will have to consider several other sticky matters. Some businesses claim that CO₂ regulation will put them at a competitive disadvantage. “It’s a ridiculous argument,” says Repetto,

who demolishes it in the paper for the Presidential Climate Action Project in June. He notes that industry always makes these dire predictions, “despite very little empirical support,” whenever environmental legislation is pending. He points out that most of our main trading partners (for example, Japan, Canada and the EU countries) have already enacted CO₂ regulations, yet businesses from those countries are not moving here to escape their supposed competitive disadvantage. “And second, most of the sectors that would be hardest hit are nontradeables internationally” – commodities such as electricity, transportation, real estate and government services. The exceptions are energy-intensive industries such as chemicals, metals and cement, which could make a case for protection against imports from countries without CO₂ regulations.

Countries without such regulations, which currently include the United States, are the biggest international issue. Everyone agrees that action on CO₂ by the United States ultimately will be irrelevant unless big up-and-coming polluters such as China and India follow suit and pass their own strict regulations.

According to the National Commission on Energy Policy, China is opening a new coal-burning power plant every seven to 10 days. The International Energy Agency estimates that in 2009 – a decade ahead of previous estimates – China will surpass the United States as the world’s biggest emitter of CO₂. India expects its coal consumption to triple over the next 30 to 40 years, says Repetto, who has started studying the issue. But neither China nor India is likely to do anything about CO₂ unless the United States, which is responsible for the

lion’s share of the accumulated greenhouse gases caused by fossil fuels, acts first.

The time seems ripe. Every important constituency, except the White House, wants federal action. This general consensus comes with a few downsides. Everyone involved wants to leave their fingerprints on the regulations. “Most legislation is narrowly focused,” says Morgenstern, “but this will be a complicated piece of legislation, because it affects just about everybody in society, and many interest groups are energized by it. It’s hard for our political process to cut all the deals necessary to craft that kind of legislation. It’s probably fair to say that you need presidential leadership.”

In his paper, Repetto warns that the initial architecture of the legislation is crucial. If the wrong system is chosen or if political expediency prevails, the cost over a decade could be an extra \$1.75 trillion, plus further damages to the environment. Bad policies are also hard to correct later because of “policy lock-in,” meaning that a new policy requires large investments of money, time and learning, investments that policy makers are reluctant to replace later on for an

expensive new model. Similarly, bureaucracies and interest groups accumulate around the new policy and become its defenders against major change. That’s why it’s important to get the policy right the first time.

“I’m hopeful that what will come out of the legislative process is a good solid architecture that is both effective and cost-effective,” says Repetto. After that, he adds, comes the other big question: how ambitious will the government be in its CO₂ targets and timetables? ■

Everyone agrees that action on CO₂ by the United States will be irrelevant unless China and India pass their own strict regulations.



Doing Time in the Garden: Life Lessons Through Prison Horticulture

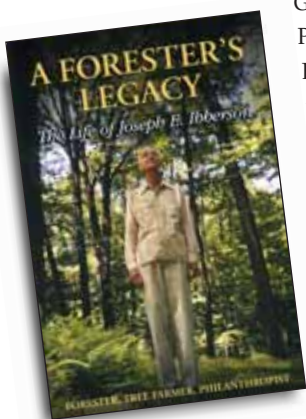
In *Doing Time in the Garden: Life Lessons Through Prison Horticulture*, James Jiler '95 details the development of an effort to break the cycle of recidivism for 65 percent of former inmates of Rikers Island, which is the largest prison in the United States with 130,000 inmates. The program Jiler helped to create focuses on gardening, horticultural and landscape design skills, as well as the science and ecology of gardening. He emphasizes the importance of providing ex-offenders with jobs that keep them productive and learning as they face the difficult task of reintegrating into society. He also describes how the program can be developed and adapted to other jails and prisons with different populations and individual challenges. In describing the transformation

of a prison landscape and the work of ex-offender "interns" in greening city blocks, he declares that "people are nature too," and that they respond – just as other parts of nature do – to the quality of care they receive. The book is published by New Village Press. To purchase a copy, visit www.newvillagepress.net or www.amazon.com.

A Forester's Legacy: The Life of Joseph E. Ibberson

In *A Forester's Legacy: The Life of Joseph E. Ibberson*, Henry Gerhold '56, Ph.D. '59, writes of Joseph Ibberson '48 as having been born into humble circumstances, but lacking nothing when it came to vision and drive. From an early age, Ibberson worked and saved for the time when he could pursue a professional education in forestry. His journey led him to Pennsylvania's Bureau of Forestry, where he earned both renown and respect as an innovator and conservationist. He also acquired great wealth in the stock market, which he later donated in the form of real estate for conservation and endowed chairs in forestry at Penn State. Alongside the personal history,

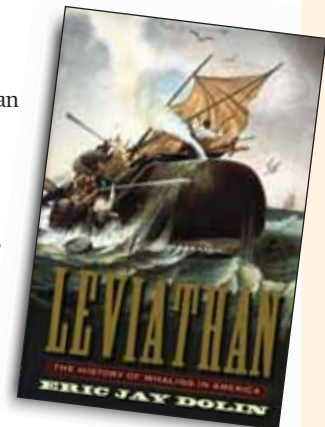
Gerhold tells the saga of the Pennsylvania Bureau of Forestry, filled with Ibberson's recollections, photographs and archival materials. The book is published by the Pennsylvania Forestry Association in association with Stackpole Books. To purchase a copy, visit www.amazon.com.



Leviathan: The History of Whaling in America

The 300-year story of the American whaling industry, chronicled in *Leviathan: The History of Whaling in America*, has long captured the imagination of historians, politicians, artists and storytellers. Eric Jay Dolin '88 chronicles an industry that was notably wasteful, exploitative and often treacherous, but presents a broad range of material coherently and without sensationalism.

Dolin begins his narrative with Captain John Smith's failed whaling expedition to the New World in 1614 and carries it through to the beginning of the 20th century, when the industry died. While the industry grew and the whaling fleet expanded, the myth of the whaler grew as well. By the time crude oil had carved the heart out of whaling prosperity, the tales of adventure, fortune and loss had been etched into American culture. Dolin's story offers contemporary readers a powerful illustration of the dangers related to neglecting the stewardship of resources, one that is likely to resonate today. The book is published by W.W. Norton. To purchase a copy, visit www.amazon.com.





Peace Parks: Conservation and Conflict Resolution

Peace Parks, edited by Saleem Ali '96, is a collection of 17 essays that explore the connection between ecology and peace. For many years, the World Conservation Union (IUCN) has promoted transboundary protected areas, which are the subject of this book. The authors make the case that inextricable links exist between the environment, sustainable development, peace and security. Further, a growing body of evidence indicates that transboundary protected areas can play a role in conflict resolution and, in the aftermath of conflict, can contribute to building bridges between nations and people. Essays in the volume range from hard statistical analyses to theoretical considerations, as well as proposals for peace parks in specific geopolitical locations. Ali frames the collection with an introduction on the natural connection between ecology and peace and a conclusion that focuses on implementing the vision of peace parks. The book is published by MIT Press. To purchase a copy, visit www.mitpress.mit.edu or www.amazon.com.

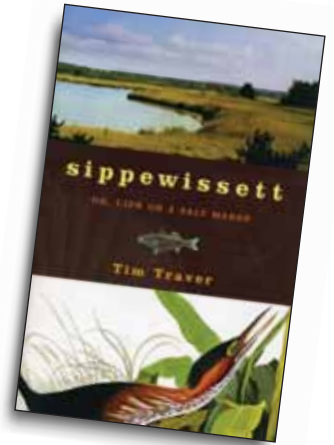


Wild New England: A Celebration of Our Region's Natural Beauty

In *Wild New England: A Celebration of Our Region's Natural Beauty*, Stephen Gorman '88, a writer, photographer and wilderness traveler, draws not only on his own observations but also on the thoughts and expressions of such pioneers in conservation as Henry David Thoreau and Percival Baxter. The book includes stunning photographs that transport the reader through the four seasons, to the northernmost coast of Maine, through forestland, along the Appalachian Trail, to rivers and lakes, onto mountaintops and beside the "Great Beach" of Cape Cod National Seashore. The book is published by Voyageur Press. To purchase a copy, visit www.voyageurpress.com or www.amazon.com.

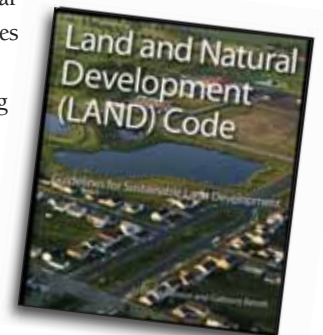
Sippewissett: Or, Life on a Salt Marsh

In *Sippewissett: Or, Life on a Salt Marsh*, Tim Traver '87 provides a seamless blend of history, science and memoir relating to the many convergences that make up the ecological reality of a remarkable stretch of land cozying up to Buzzards Bay on the coast of Massachusetts. From start to finish, he makes a strong case for the place of science in finding, understanding and acting on one's deepest values. The book is published by Chelsea Green Publishing. To purchase a copy, visit www.chelseagreen.com or www.amazon.com.



Land and Natural Development (LAND) Code: Guidelines for Sustainable Land Development

In *Land and Natural Development (LAND) Code: Guidelines for Sustainable Land Development*, co-authors Gaboury Benoit, professor of environmental chemistry and of environmental engineering at F&ES, and Diana Balmori, a landscape architect and lecturer in landscape and urban history at Yale, have created a rating system to encourage ecologically sound land development. The book provides architects, engineers, landscape architects, developers and city officials with a science-based rating system that awards either a silver, gold or platinum designation based on how well a parcel of land is developed in harmony with the natural environment. It also includes easy-to-read chapters on water, soil, air, energy, living resources and materials, and contains examples of projects that have been sustainably developed. To purchase a copy, visit www.wiley.com.





Olin Partnership

Aquatic plants in the pond, above, will play a crucial role in cleansing stormwater, which will be used for landscape irrigation and toilets.

Kroon Hall's Rainwater Harvesting System to Save Half-Million Gallons a Year

By Alan Bisbort

When ground was broken on May 3 for Kroon Hall, Edward Bass – a major donor whose generosity helped make the school's landmark building a reality – pointed skyward and said, “We can only go up from here.”

Bass' enthusiasm notwithstanding, the architects and engineers had other ideas. Indeed, in order to meet the specifications for a Leadership in Energy and Environmental Design (LEED)-certified platinum building, the construction team had to go down from there – as in underground.

To qualify for a platinum rating – the highest set by the U.S. Green Building Council – Kroon Hall must produce nearly as much energy as it consumes through features such as solar panels, solar water heaters, natural light and ventilation. Of the underground features, the most exciting may be a rainwater harvesting system that will provide water for flushing toilets, as well as for irrigating the native fauna in the two courtyards on the 3.5-acre site. And, thanks to a recent \$1.5 million donation from the Mars family, this feature will be made possible.

“The rainwater harvesting system will conserve water, contribute to better water quality and control the rate of runoff during a storm by detaining and slowly releasing excess stormwater,” said Nicole Holmes, the project manager for Boston-based Nitsch Engineering. “That will be beneficial to the city and the environment, because the school will be drawing less water from the city's aquifer and not be using any drinking water for irrigation or toilets.”

The rainwater harvesting system, collaboratively designed by Nitsch Engineering, Philadelphia-based Olin Partnership and Arup, an engineering firm with offices in the United States and Europe, will allow all rainwater that falls on Kroon Hall's roof and grounds to enter into a 24-hour-a-day recycling process that will take place in a pond and subterranean tanks. Together, Nitsch and Olin transformed the current patchwork of above-ground service roads into “watering holes,” figuratively and literally – gathering places for students, as well as for the reuse of harvested rainwater.

The rainwater harvesting system is expected to save approximately 500,000

gallons of potable water annually, and will satisfy at least six LEED credits, including two points for stormwater management and four points for water efficiency. LEED platinum buildings must achieve 52 to 69 credit points.

“This system will pay for itself, with savings from the potable water that would have been used, within 10 years or so.”

Nicole Holmes

“The biggest challenge was the steep terrain of the site, with its 20-foot slope from north to south,” said Holmes. “We had to look to the lower [south] end of the site for the treatment aspect of the rainwater collection system. However, the south side of the site sits just above an underground service node. For treating

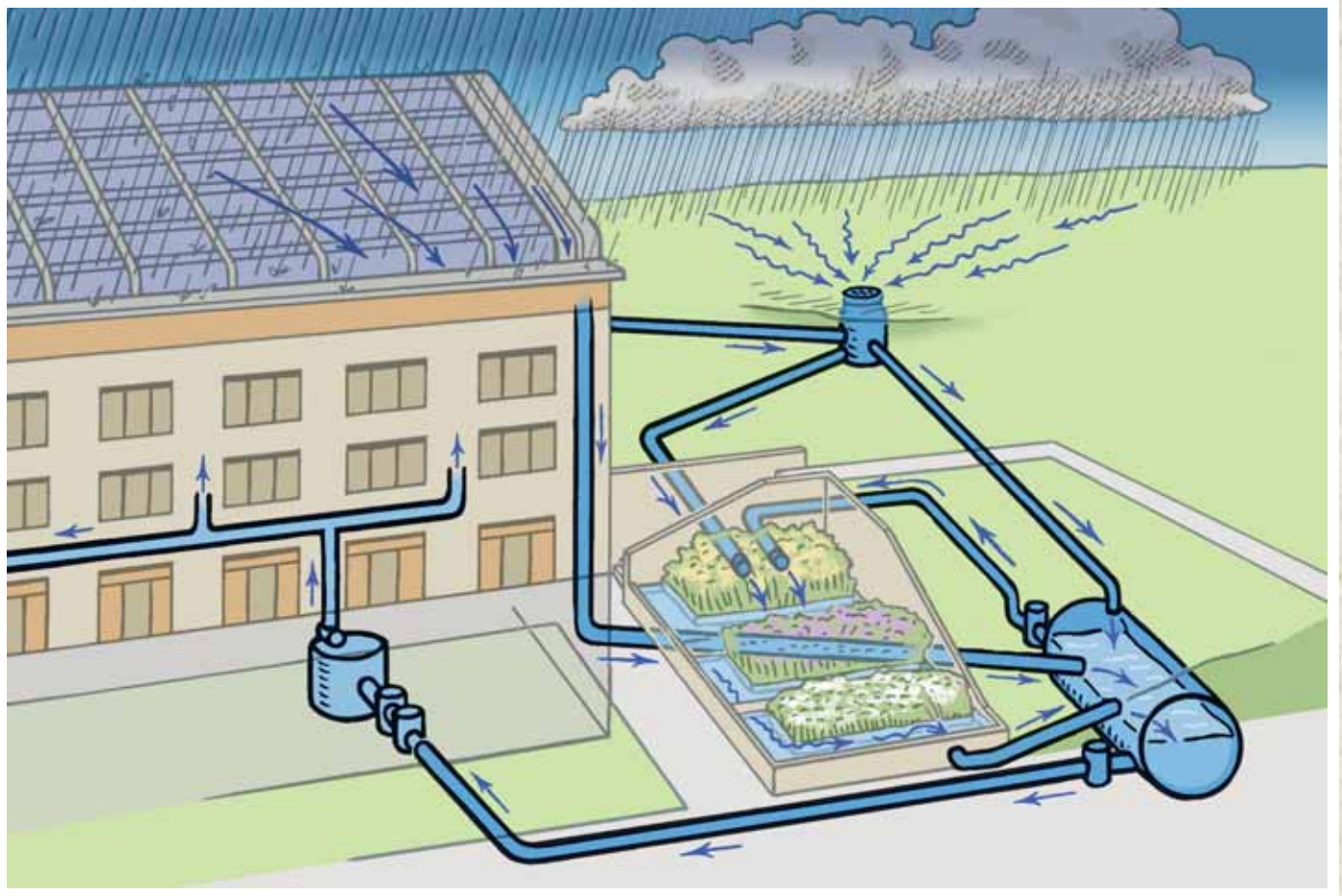


Illustration by Gregory Nemeo

water, this allows very little ground space within which to work.”

Holmes said the goal will be to get the dirty water treated quickly. “The dirtiest portion of storm-generated water is the first inch that runs off of impervious surfaces. To catch this, we had to have a diversion structure upstream, at the north end. All of the water that falls on the northern part of the site and through the rooftop drainage system goes through this diversion system.”

The diversion system will consist of an underground manhole-type structure that will pipe the first inch of stormwater to a pond created by Olin that will feature specially selected aquatic plants, such as iris, cattails, arrowheads and lotuses, serving as biofilters to clean the water.

“We first thought that the best way to clean the water was to pull it through

soil,” said Cricket Brien, an Olin associate. “But we had only one foot of space above the service node to work with. We had to think of another way. We consulted pond scientists who had devised rafts of plants specifically designed to clean water. We discovered that mats of trailing roots in a pond are more effective at cleaning runoff water than soil. They not only take the nitrogen and phosphates out of the water, they trap fine particles, too.”

Any flows greater than an inch will be carried by a separate pipe to a 20,000-gallon fiberglass-reinforced underground harvesting tank, which will also collect overflow from the pond and rainwater from the Kroon Hall roof. That mix will then be circulated through the pond for additional cleansing. The water stored in the harvesting tank will also be used for landscape irrigation and be diverted to a

The first inch of stormwater from the north side of Kroon Hall’s roof and the ground that collects in the tank at upper right will empty into the pond, where it will be cleansed and diverted into the larger harvesting tank. The water in the harvesting tank will be pumped to another tank for use inside Kroon Hall and back into the pond for additional cleansing.

separate 940-gallon “day” tank located in Kroon Hall’s basement, where it will be filtered and disinfected for use in toilets. A hookup to a city line will provide water for drinking and washing.

“Part of what is unique about this project is that Yale, as an institution, has looked at the long-range impact,” said Holmes. “This system will pay for itself, with savings from the potable water that would have been used, within 10 years or so.” ■

Yale to Launch Online Environmental Magazine

Yale University and F&ES are launching an online magazine that aims to become one of the world's leading sites for authoritative, cutting-edge opinion, commentary and in-depth reporting on the major environmental issues of the day.

The Web publication, YaleEnvironment Online, will be edited by Roger Cohn, the award-winning former editor of *Mother Jones* and *Audubon* magazines. In announcing Cohn's appointment, Yale President Richard Levin said, "The time is right for a global publication that will serve as a forum for provocative writing and think-

ing on ways to tackle urgent environmental challenges."

F&ES Dean Gus Speth noted that the magazine, which will begin publication this spring, is coming

online at a moment of unprecedented concern about environmental issues, sparked in large measure by growing evidence of the effects of global warming. That intensifying interest, coupled with the virtual nature of YaleEnvironment Online, has created an opportunity to publish a journal that will appeal to an international audience of policy makers, scientists, journalists, environmental activists and general readers.



Roger Cohn

Richard Shock

Speth said the online magazine will welcome op-ed-type articles from a wide variety of sources and will publish opinion and reported pieces written by some of the world's leading scientists and researchers, environmental journalists and writers. Taking advantage of the online format, the site will present multimedia content, including video and audio that will feature reports from the field and interviews, as well as panel discussions, blogs by guest writers and interactive graphics. YaleEnvironment Online also will highlight noteworthy articles and documents from outside sources and will provide comprehensive background summaries of pressing environmental topics.

"We believe that there is a need for a dynamic Web publication, international in its reach, that will provide authoritative journalism, sound science and informed opinion and analysis on the environment," said Speth. "YaleEnvironment Online will deliver first-rate reporting and commentary and will help make the science of environmental issues understandable and accessible to a worldwide audience."

The site will provide an important connection between the academic community and other communities working on environmental issues, but it will be written for a general audience. Using the F&ES as a springboard, YaleEnvironment Online will establish contacts with academics and environmental experts at universities and organizations around the world and will invite them to contribute

to the site. The magazine also will seek contributions from leading thinkers in foreign affairs, international development, "green" business and the environmental movement.

Launching a global, online environmental magazine is in keeping with two major goals of Yale and President Levin: making the university an increasingly international institution and intensifying its focus on environmental issues. YaleEnvironment Online is being funded in part by grants from the William and Flora Hewlett Foundation and from the John D. and Catherine T. MacArthur Foundation.

"Yale is working on many fronts to be one of the world's leading green universities," Levin said. "With YaleEnvironment Online, it will move to the forefront of reporting on and finding solutions to the most pressing environmental issues of our time."

Cohn comes to YaleEnvironment Online from a distinguished career in magazine and newspaper journalism, much of it focused on the environment. During his tenure as editor-in-chief at *Mother Jones*, from 1999 to 2005, he revitalized the magazine, focusing on in-depth investigative reporting and top-quality writing. In 2001, *Mother Jones* won the prestigious National Magazine Award for General Excellence. Under his editorship, *Mother Jones*' circulation rose to an all-time high, and the magazine frequently broke stories that received national attention, including an



award-winning series on the Bush administration's environmental record.

Prior to that, Cohn was executive editor of *Audubon* from 1991 to 1998, helping lead the magazine during a period when it became nationally known for its cutting-edge environmental reporting. He had previously been a staff writer at *The Philadelphia Inquirer*, where he served as one of the nation's first environmental reporters.

Cohn, Yale College Class of 1973, has written widely for numerous publications, including *The New York Times Magazine*, *The Washington Post Magazine* and *Outside* magazine. He has also been a visiting professor at the Graduate School of Journalism at the University of California at Berkeley.

Poll: Majority of Americans Want Local Action on Global Warming

Nearly three in four Americans would pay more to their own city or local government to reduce the heat-trapping gases that cause global warming, according to a telephone survey conducted in September.

"City and local leaders are critical players in the effort to reduce global warming, and it's clear that their constituents want action," said Anthony Leiserowitz, director of the Yale Project on Climate Change. "The public is on board and willing to help foot the bill. All that's left to do now is act."

The GfK Roper/Yale Survey on Environmental Issues is the first of its kind to measure public opinion of local government-led green initiatives. The survey was conducted by GfK Roper Public Affairs and Media, a division of GfK Custom Research North America, and F&ES. The results are available at <http://environment.yale.edu/news/5323/>.

According to the survey, 74 percent of Americans would support local regulations requiring all newly constructed homes to be more energy-efficient, even if it would increase the initial cost of a new home by roughly \$7,500.

Saving energy and money on utility bills is also what motivated 72 percent of Americans to say they support local subsidies to encourage homeowners to install electricity-generating solar panels on existing homes, even if it would cost households an extra \$5 per month in property taxes.

The survey also found that:

- 71 percent would pay \$5 a month more in property taxes to support a local subsidy to encourage homeowners to replace old furnaces, water heaters, air conditioners, light bulbs and insulation.
- 69 percent would pay \$8.50 more a month for local regulations requiring electric utilities to produce at least 20 percent of their electricity from wind, solar and other renewable energy sources.
- 68 percent would support changing their city/town's zoning rules to decrease suburban sprawl

and concentrate new development near the city/town center.

- 65 percent would support changing their city/town's zoning rules to require neighborhoods to have a mix of housing, offices, industry, schools and stores close together.
- 53 percent would back city or local fees added to electricity bills to encourage people to use less electricity.

Fifty-seven percent of Americans, however, oppose changing city zoning rules to promote construction of apartments rather than single-family homes, and 64 percent oppose a 10-cent city or local fee on each gallon of gas sold to encourage people to use less fuel.

Dean Speth Appointed Carl W. Knobloch, Jr. Dean

Gus Speth, who has led F&ES for the past eight years, has been appointed the inaugural Carl W. Knobloch, Jr. Dean.

Carl Knobloch, Yale College Class of 1951, said that his gift is a vote of confidence in the school's mission and a generous contribution to the \$3 billion Yale Tomorrow capital campaign.

"My wife, Emily, and I consider F&ES to be the number one school of its kind in the world," said Knobloch, a Wyoming-based businessman and philanthropist, who founded and chairs the West Hill Foundation for Nature, a nonprofit corporation that supports environmental projects.



Laura Heath

“The preservation of our natural ecosystems is critical to the continued economic strength of our country, as well as the

health of all Americans,” he said.

“There is an impending crisis in the degradation of the world’s environment,

which we must prevent for the sake of our children and their children. F&ES is the finest training ground for those who will forge the way.”

During his tenure, Dean Speth has played a key role in increasing national and international awareness of the world’s most pressing climate issues. He has been credited, as well, with shepherding F&ES in a process of major change and expansion. “I am deeply honored to be the first to hold the Knobloch deanship,” said Dean Speth. “Never has the need for enlightened stewardship of our natural resources been so urgent. At Yale, and in his efforts to save the land, Carl is providing outstanding leadership.”

Knobloch added: “Gus is just as good as you can get as the head of this great school.”

As a founder of both the Natural Resources Defense Council and the World Resources Institute, Dean Speth has held a number of influential posts, including administrator of the United Nations Development Programme and chair of President Carter’s Council

on Environmental Quality. In addition to numerous articles, his latest book, *Red Sky at Morning: America and the Crisis of the Global Environment*, has been widely recognized.

Prior to endowing the new deanship, Knobloch contributed funding to F&ES in 2005 to create the Carl and Emily Knobloch Environment Center. The center will be the premier gathering place for environmental activities at the university and will be located in Kroon Hall, a new sustainable home for the school that is scheduled to open in late 2008.

“The deanship will stand as a permanent tribute to Mr. Knobloch and his exceptional commitment to F&ES and its mission of safeguarding the health, integrity and beauty of the natural world,” said Yale President Richard Levin. “We are also thrilled to be able to honor Gus and his extraordinary vision, dedication and accomplishments in this way.”

Program to Encourage ‘Green’ Industry in Developing Countries

A Yale research team is introducing a program that will encourage the adoption of environmentally friendly industrial activity in developing countries.

The new program, Industrial Ecology in Developing Countries, will examine the flow of energy, materials and water through industry and the natural environment. The first studies are being

conducted in China and India, whose rapidly industrializing economies are putting a strain on natural resources. The program’s ultimate goal is to encourage ecologically sustainable industrial production that is fueled by firms that share resources and waste.

“Industrial ecology is especially critical for developing countries, where large, poor populations are urbanizing rapidly and depleting key resources,” said Marian Chertow, Ph.D. ’00, director of the program at Yale’s Center for Industrial Ecology. “Resource productivity and eco-efficient industry are urgently needed to address these challenges to sustainable development.”

The Chinese government has already created 16 eco-industrial park projects that are intended to serve as prototypes for ecologically sustainable production. China has been seeking a new industrialization model that will reconcile rapid economic growth and environmental degradation through the proposed Circular Economy Promotion Law, which would require an evaluation of the environmental friendliness of products before they enter the market.

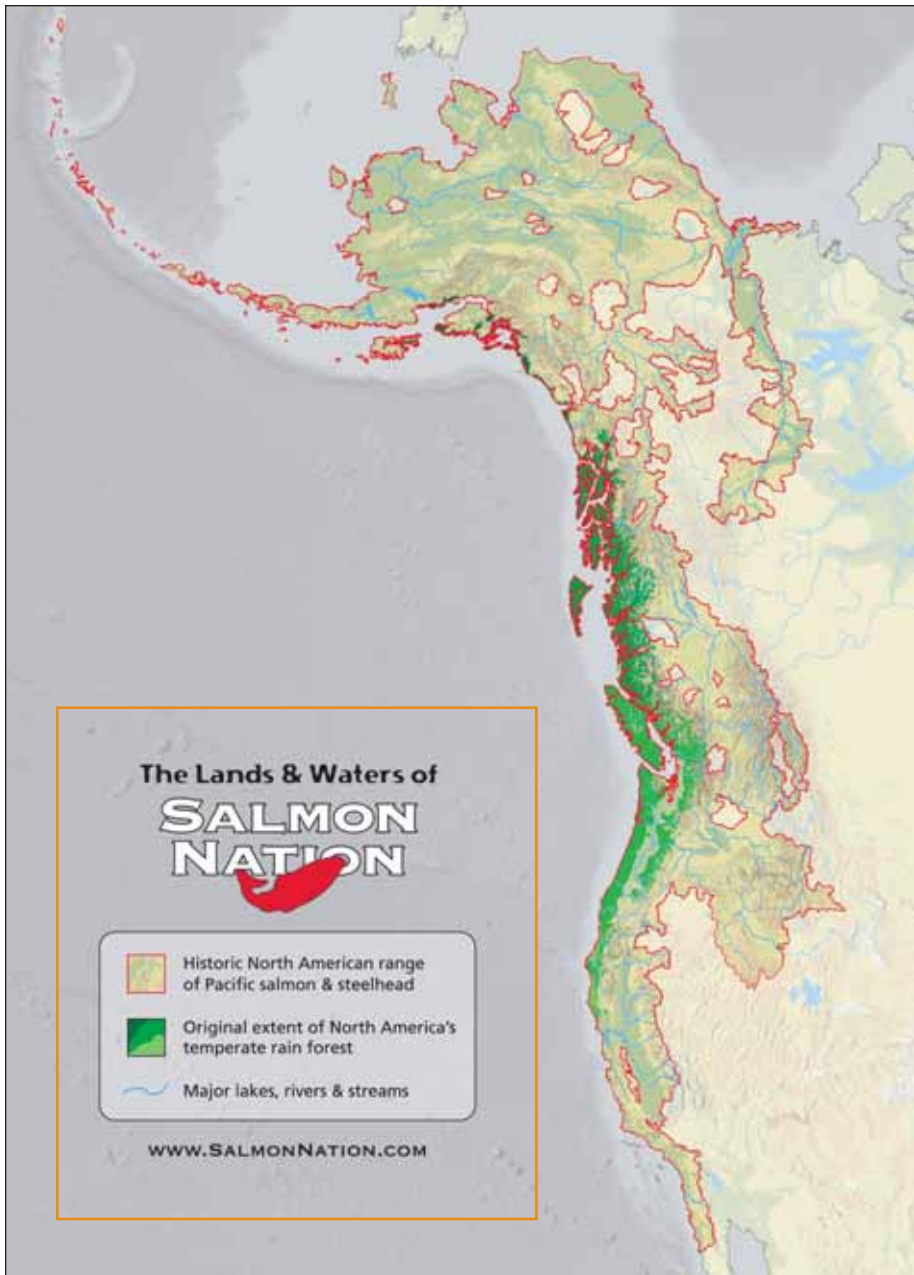
In India, the Yale team will work with regional planners and the nonprofit Resource Optimization Initiative in Bangalore to identify the flow of resources through local economies and what is being used and wasted. ■

Visit the Yale School of Forestry & Environmental Studies website at environment.yale.edu

to Promote a Conservation Economy

By Heather Millar

Spencer Beebe '74 has spent years deeply rooted in local time and space. After working abroad for more than a decade with The Nature Conservancy and Conservation International, which he co-founded, Beebe came home, hoping to use lessons learned in the rainforests of Brazil and elsewhere to help save the coastal forests of his native Pacific Northwest. Ecotrust, the nonprofit Beebe founded in 1991, promotes what he calls a “conservation economy,” founding banks and partnerships that create economic growth while discouraging sprawl, preserving biodiversity and working toward social goals like better opportunities for Native Americans. Beebe limited his focus to what he dubbed Salmon Nation, the coastal watersheds of the Pacific Northwest, where chinook and other salmon species have spawned for millennia. Yet Ecotrust quickly went international, and may now be poised to go global.



The Ecotrust model, which integrates indigenous culture, economic development and ecology on a regional scale, has begun to travel far beyond its native realm of the coastal watersheds of the Pacific Northwest, dubbed Salmon Nation by Ecotrust officials.

that country's far north, and is in the final stages of laying the groundwork for an Ecotrust Australia. In addition, organizers in places as far-flung as Mexico and the Carpathian region of Eastern Europe have begun to study Ecotrust, with an eye to adapting to its methods – such as creating financing coalitions to fund native ownership of sustainable businesses – to local problems such as poverty and deforestation. Hundreds, perhaps thousands, of conservation organizers around the world have begun to study the way Ecotrust disseminates information about conservation methods to native communities on the Internet and through an Ecotrust-sponsored website.

“We try to increase access to information, technology and capital. How do we take those core globalization forces and put them back in the hands of local people? That's what we're all about,” explains Beebe, who serves as president of Ecotrust and vice chair of Ecotrust Canada.

Those ideas – searching for common goals that can bring together banks, environmental groups, local leaders and politicians to boost growth that is sustainable rather than extractive – resonated with Rosemary Hill, a vice president of the Australian Conservation Foundation, when she first heard about Ecotrust in 2003. She had traveled to a roundtable in the Kimberley region, in Western

Within three years of its founding, the original Ecotrust, based in Portland, Ore., spawned Ecotrust Canada, a Vancouver-based sister group. The Canadian group naturally adopted Ecotrust's core activities of protecting salmon habitat, promoting sustainable forestry and assisting native communities in the temperate rainforest of British Columbia.

But the Ecotrust model – integrating indigenous culture, economic development and ecology on a regional scale, using interdisciplinary teams and local financing – has begun to travel far beyond its native realm of temperate rainforest, abalone and yearly salmon runs. The Australian Conservation Foundation has concluded that the approach could be adapted to work in

“How do we take those core globalization forces and put them back in the hands of local people?”

That’s what we’re all about.”

Spencer Beebe

Australia, where scholars and policy makers were meeting to discuss northern Australia’s economic and ecological challenges: crushing poverty in aboriginal communities; lackluster industrial development; conflict between those in favor of promoting mining ventures that could create jobs and those who fear that more mines could destroy ecosystems; and how to resolve aboriginal claims to land ownership and demands for reparations.

“Here in northern Australia, we already knew what to argue about. Ecotrust seems to create a space where people can come together and come up with positive solutions,” explains Hill, who has long worked in the biologically diverse region that stretches from Queensland across the top of the continent. “What I heard was that Ecotrust was getting the government, philanthropic and banking sectors, as well as the general public, to rethink sustainable development, especially among indigenous communities. They could point to concrete examples of sustainable development, as well as social and ecological equity.”

Ecotrust and Ecotrust Canada seem fired by the notion that what society needs to do to solve its environmental and social woes is not one thing, but hundreds of things, including promoting green architecture – diversifying local economies so that they’re not dependent on one resource such as timber and increasing resource efficiency. Over the years, both Ecotrusts have been whirling dervishes of activity: co-managing forestry companies with First Nations (Canada’s term for aboriginal peoples); helping to found Shorebank Pacific, touted as the first environmental bank; funding

environmental startup companies and local fishing enterprises; promoting everything from green building to “slow food” to cultural mapping of native cultures and resources.

Sometimes, Ecotrust takes the lead in these projects. Often, Ecotrust staff members broker information, capital and connections. They use mentoring, banking, planning and mapping services to help others add to the “triple bottom line” – the social, economic and environmental capital – of Salmon Nation. Since 1999, Ecotrust Canada has made more than \$10 million in loans to sustainable business, one-third of them indigenous-owned, like the micro-hydro power project run by the Hupacasath people along China Creek near the city of Port Alberni. Not every project has been an unmitigated success, but even those skeptical of Ecotrust and Ecotrust Canada allow that they have focused on what’s local, sustainable and good for the community.

“It’s a very practical approach to what is often a philosophical or theoretical conversation,” explains Greg Kehm, who as Ecotrust Canada’s information services manager has worked on projects such as developing a land use plan that emphasizes the traditional values of the Heiltsuk people of British Columbia and using geographic information systems (GIS) to help the Tsleil-Waututh people gain Forest Stewardship Council certification for its logging operations.

Northern Australia, where Hill has made her life’s work, needs all those tools and more. The region stretches from the Great Barrier Reef and the Cape York Peninsula in the east to the Gulf of

Carpenteria, the Top End and the Kimberley. It takes in spectacular vistas: rainforests, savannas, mangroves, wetlands and pristine coasts. More languages and cultures thrive in this region than perhaps anywhere in the world, save Papua New Guinea, Hill says. While the climate and soil vary too erratically for agriculture, there's mineral wealth aplenty: silica and bauxite, uranium and copper. Yet the people who live in the isolated communities that dot this expanse live very hard lives.

"We think that our coasts here in British Columbia are remote and scattered, a long way from markets with poor networks and infrastructure. All of the above is true, but you can magnify those things by a factor of 10 in northern Australia," says Ian Gill, a native Australian who now serves as president of Ecotrust Canada. "There, the communities are even more remote, and connecting to markets is even more difficult."

Hill explains that the region hasn't been successful for industrial development or agriculture. "There's overwhelming poverty, substance abuse and welfare dependency. The life expectancy of indigenous peoples is 20 years less than for nonindigenous people," she says. "There's a lot of dialogue about mining here, but not about conservation of culture or about sustainable economies, which is what the people who live here are interested in. This is what we found that Ecotrust had done very successfully: linking up indigenous and nonindigenous sectors; bringing together banking people and environmental people; getting long-term business support; offering services like banking, credit, planning, mentoring

and cultural mapping. They have started to create a local economy that connects to a global market."

In 1998, Ecotrust began working with the Tsleil-Waututh, a Salish First Nation with coastal ancestral lands just north of Vancouver. The 400-member nation wanted to advance its culture and desired greater stewardship of the land, but was unsure how to proceed. The title to their ancestral lands, which once spanned 190,000 hectares, had become largely unenforceable. Ecotrust experts worked with native leaders, first helping them with mapping of traditional lands and then with land use planning.

The Tsleil-Waututh signed an agreement to co-manage Indian Arm Provincial Park with the provincial authorities. Not long after this, Ecotrust's expertise in finance and forestry helped the nation to purchase 320 hectares of forestland at the head of Indian Arm. Ecotrust also helped draw up plans to manage the land sustainably and to gain Forest Stewardship Council certification for the nation's operations there. Ecotrust has similar collaborations with 25 First Nation communities along the British Columbia coast.

"We were impressed that Ecotrust has delivered sustainable business outcomes with real jobs for people in situations where welfare dependency and the collapse of rural industries are rife," says Hill. "That seems to be their approach – the principles we identified – community development and preservation of indigenous culture and rights. This combination seems to unleash the power of the people themselves to solve their own problems."

In October 2005, Gill and a Tsleil-Waututh chief traveled to Australia to be featured speakers at the same Kimberley meeting where Hill of the Australian Conservation Foundation had first heard of Ecotrust two years earlier. The following year, Hill and two aboriginal leaders traveled to the Pacific Northwest. In Vancouver and Portland, they met with planners, GIS experts, researchers and bankers to learn more about the practicalities of turning Ecotrust's many plans and projects into reality.

"Native communities need legitimate data. That's one of the fundamental things we do: help them get information so that the native communities can walk into a permitting hearing and make their case with data that bureaucracies will understand. That doesn't mean the natives always win, but up to now they've always lost," Gill explains. "There are real parallels between Canada and Australia: They're both Commonwealth countries. They have a similar history of colonization of native peoples and of resource extraction from native lands. In the last generation, indigenous leadership in both countries has insisted on greater rights and some compensation for lands they view as stolen. But the real parallel is this: they are both remote communities with large indigenous populations, sitting on resource wealth and vastly outgunned by the capital and political weight of people who want those resources."

To try to restructure that dynamic, the Australian Conservation Foundation, the Kimberly Land Council and Balkanu Cape York Development Corporation (an indigenous business group) formed a steering committee in 2006 to explore

“They have started to create a local economy that connects to a global market.”

Rosemary Hill

how an organization similar to Ecotrust Canada might promote sustainable development in northern Australia's indigenous communities. At the end of that year, a report from the Kimberley Roundtable found that mining and irrigated agriculture, the ventures prevalent in the north, continued to damage both the north's environment and its local culture. The report called for the development of arts, tourism and land management industries instead.

Meanwhile, Hill conducted a formal feasibility study of the Ecotrust concept. She released a summary of her findings in May to Land & Water Australia, a research and development corporation within the Australian government, concluding that a “cultural and conservation” economy could work in the north. She recommended that an Ecotrust Australia be formed to promote a “quadruple bottom line,” adding a fourth goal, aboriginal justice, to the original three goals of augmenting social, economic and environmental capital. She also called for a restructuring of Australian tax and business laws – rewarding philanthropic giving and setting up a loan-guarantee fund, for instance – to help an Ecotrust group get started down under. The full report will be made public at the end of 2007.

“We do want to start an Ecotrust Australia that would bring forward a more sustainable economy in the north,” Hill says, explaining that the goal would be economic growth without the environmental damage and social upheaval that is now prevalent. “We're talking with people now. Hopefully, we'll have something to say in the next few months.”

Meanwhile, representatives from World Wildlife Fund International's Danube Carpathian Programme visited both North American Ecotrust offices, exploring the possibility of applying Salmon Nation methods to their region of Eastern Europe. An environmental nongovernmental organization near Cancun – Comunidad y Biodiversidad – has started working with Ecotrust to develop along similar lines. And while Ecotrust Canada has restricted its activities to the West Coast, it's beginning to get inquiries from groups in the country's boreal region. Ecotrust Canada's “Aboriginal Mapping Network” – a best-practices and GIS resource – logs 40,000 visits each month. In just the last 12 months, the mapping network has signed up 1,000 registered users from every continent.

“It's at an interesting stage. Are we content to do what we do in our region, or do we take this global opportunity? If bioregions are the correct scale, how do we relate to other bioregions?” asks Astrid Scholz, Ecotrust's vice president of knowledge systems.

Ecotrust Canada's President Ian Gill asks, “Is there a development model here that bridges what have always been seen as the contradictory goals of economic development and conservation? And is there a way to triangulate that into the rights of indigenous peoples? I think there is, and it's something the world needs.” ■



1942

Dick Jorgensen, D.F. '54, writes: "I am in Pittsburg, Calif., keeping busy with trustees in my church, a board-of-directors job for a senior housing facility and its many committees and some landscape painting. I lost my dear Cay three years ago after 63 years together; I have a son and daughter, four grandchildren and five great-grandchildren. Since we lost our faithful secretary, **Ham Williston**, I have tried to get as much news as possible to honor his memory, and the class has responded. **Mel Chalfen** and wife, Judy, are living in the home they built 10 years ago for retirement in Newton, Mass. Mel concluded his career in home inspection but still does consulting, plays piano and paints, as time permits. They both enjoy their grandson, age 12. Mel has been somewhat slowed as a result of a fall a year ago. **Ben Eggeman** and wife, Judy, are in Alexandria, Va. We shared long memories by phone, as he and I lived in adjacent rooms in Branford College from 1938 to 1939. Ben spoke proudly of his three sons, all professionals, with one lawyer right in town with them to keep him in line. They have six grandchildren. I received a thoughtful letter from Barbara Gray Brown advising us of the loss of her father and our classmate, **John Gray**, in May after a year and a half of illness. She says her father always referred to the rest of us as his "Yale buddies," and I feel the same way. **Sid McKnight** is in Sautee, Ga., after a long career in Southern hardwoods. He helped set up the Southern Hardwoods Laboratory and research plots, and became chief of the lab in 1970. He left the Forest Service after 30 years and spent many more helping manage Southern forests. Sid lost his love, Bonnie, after 62 years of togetherness, and they have three daughters, six grandchildren and eight great-grandchildren. Bette and **Dick West** moved about a year ago to Ocala, Fla., to be closer to their daughter. They are residing in assisted living, as Bette has bad arthritis. Dick is proudest of his work in Monroe Village, N.J., where he developed a

complete arboretum of over 100 native and exotic trees with fountains and so forth. When the Wests left there, the Village named the arboretum for him. It has been great to talk to the class; we now number six."

1946

Class Secretary

Paul Burns
pburns@lsu.edu

Paul Burns, Ph.D. '49, writes: "I was recently elected to the Louisiana State University School of Renewable Natural Resources Hall of Fame." Paul has written his memoirs of his years as a forestry student at Yale from 1941 to 1942 and 1945 to 1949. At the end of his 11-page document, he briefly reports on his experience in 1955 as a Yale forestry alumnus. Paul's memoirs were triggered by his learning that James Fickle is writing a history of the Yale School of Forestry & Environmental Studies. Besides furnishing Jim with a copy of his memoirs, Paul also sent copies to three longtime friends, **Ed Adelberg '43**, Ph.D. '49, **Dave Smith**, Ph.D. '50, and **Herb Winer '49**, Ph.D. '56. He is willing to send a copy to any alumnus or faculty member. For requests for copies sent by mail, Paul's address is P.Y. Burns, LSU School of Renewable Natural Resources, Baton Rouge, LA 70803; or by e-mail at the address above. ■ **Don Maus** and his wife, Beulah, write that Don had his 91st birthday in January. Their youngest child, Anne, was born in 1955, the same year Paul Burns' youngest daughter was born. Don took early retirement from the Oregon State Department of Forestry, and then worked with his wife for 15 years as wedding photographers. After moving with Beulah to Eugene, Don specialized in restoring old photos. Beulah is 87 and continues to keep in good physical shape by swimming.

1947

Class Secretary

Evert Johnson
swede-doc@mindspring.com

Harry Wilson writes: "I've enjoyed the job of mailing out requests for

the Yale Alumni Fund. Not many of the Class of '47 still active in support. When we are mostly over 85 years of age, lots of things in our lives slow down. In 2002, I solicited 14, with nine donors resulting. This year I solicited nine with five donors. For me, the joy is being in touch with classmates. **Everett Bean** is retired in Dover, N.H., and **Robert Parker** is in Issaquah, Wash. Our class secretary, **Evert Johnson**, is a retired professor from Auburn University. I remember **Ian Place**, Ph.D. '53, from Ontario, a very nice fellow. The most pronounced change at the school is the number of female forestry students. There were none in our day, and now they make up over half the classes. I praise the Lord that I can walk around a three-acre lake each day, four times or 1.2 miles – much better than taking pills."

1948 60th Reunion Year

Class Secretary

Francis Clifton
fhcpsyfor@webtv.net

1950

Class Secretary

Kenneth Carvell
kencarvell@aol.com

1951

Class Secretary

Peter Arnold
arnoldp@nccn.net

Peter Arnold writes: "I have all but officially retired from the field of forestry consulting, having turned the business of my one remaining client over to a younger associate. When my license to practice runs out, I will not renew. On my 70th birthday, more than 13 years ago, I spent the day marking timber at close to 7,000 feet above sea level. Today, my knees tell me that if that is what I really want to do, I can just go ahead without them, even the new one I bought over a year ago. I tell them they don't have to worry. And, after 34 years at the same address (with four years spent in Ecuador), we have sold our 40-acre ranch and its wine grape vineyard, and we are moving up the hill to a new house –



a sobering thought for someone in his ascending 80s to think about, but we'll weather it. I'll be around to help the buyer adjust his new albatross now and then to make it fit more comfortably around his neck." ■ **Lester Bradford** writes: "Life is much unchanged from year to year in Washington. I take advantage of the cheap ski-lift tickets for a couple of winter months. Clearing trails with the Pacific Northwest Trails Association provides some pleasant hikes in the North Cascades, as does the local Audubon group. I much enjoy working regularly with a steady crew on Habitat for Humanity projects. This pleasant life doesn't keep me from a continuing concern for the many people suffering from poverty and the devastation of war. I appreciate F&ES' attention to global issues!"

1952

Class Secretary

Milton Hartley
redheded@olympus.net

Bob Bond writes: "My wife, Barbara, and I live year round in Hallowell, Maine, at Granite Hill Estates Retirement Community. In 2003, we sold our winter home in Leesburg, Fla., and gave up being 'snow birds.' I am in my third – and last – year as president of the residents' association. I play a little golf and tennis and volunteer at the Maine State Museum on Monday afternoons. Two classmates visited this summer. In June, **Harry Hopkins** and wife, Karen, were vacationing on Cape Cod and visiting relatives in Maine, so they visited with us for a couple of days. Gladys and **Gene Carpenter** were here in late August for a few days on their return trip from Duluth, Minn., to Leesburg via a son's home in Connecticut. They summer in Duluth, which is their former residence, where Gene worked in marketing research with the U.S. Forest Service. Following graduation, Gene and I worked at the former Fordyce Lumber Co. in Arkansas, where the late **Bob Clark '42** was chief forester and **O.H. 'Doogie' Darling Jr. '58** was in his early career before going to Crossett Lumber, eventually to become head of its forestry operations. The three of us have stayed in touch over these

many years and continue to be in touch with Ruth Clark, Bob's wife."

■ **Herm Sommer** writes: "Living in Lakewood, Wash., in the same beautiful home we built in 1978 on Chambers Creek among the old-growth fir trees. Last year we built a Lindal home at Grapeview on the beach, with a sweeping view of Case Inlet and Mount Rainier. We alternate our time between the two homes, and because we are very fortunate to have our three children and their families in the Puget Sound area, we can all enjoy the beach home."

1953 55th Reunion Year

Class Secretary

Stanley Goodrich
slgmyg.good@quest.net

1954

Class Secretary

Richard Chase
RACHase@aol.com

1956

Class Secretary

Jack Rose
jackarose@sbcglobal.net

Gerardo Budowski '56, Ph.D. '62, writes that he retired from the Costa Rican-based international University for Peace in 2006 after serving as vice rector for four years and 17 years as head of the Department of Natural Resources and Peace. He lives in Curridabat, Costa Rica, and is writing a book on "living fences."

■ **Doug Crutchfield**, of Summerville, S.C., writes that after 40 years of forest research, he retired and is enjoying his wife, kids and grandkids while traveling to Scotland, Sweden, New Zealand and other points – some as foreign and far away as California. He spent the bulk of his time with Westvaco Corp. doing high-powered studies on peat soil, loblolly and pond pine progeny tests, fertilizers and P-deficient soils. ■ **Patrick Duffy** writes: "Elisabeth and I live in West Vancouver, Canada, with adult kids and grandchildren nearby. We travel a fair bit, sometimes with my U.N. work (37 countries and counting), and enjoy the cultural and outdoor benefits of this location. Elisabeth is from Vienna, so we visit the European

continent periodically. I am winding up 2.5 years as senior environmental analyst and panel advisor on the government review of the \$900 million Mackenzie Gas Pipeline Proposal of Esso and partners (including the Aboriginal Pipeline Group). The project is to bring Arctic gas from the Mackenzie River Delta south to Alberta and the southern gas distribution system. And lately I have been finishing reporting on work for the Food and Agriculture Organization on participative rural assessment in impoverished northern provinces of Vietnam. This is to share information with farmers, communes and government agencies in advance of regional rehabilitation projects supported by international agencies. Paul Barten is on the committee with me; he is presently with the University of Massachusetts. I see **George Nagle '64, Ph.D. '70, Gordon Weetman '58, Ph.D. '62**, and other F&ES grads from time to time, and I talk up the school for prospective applicants. Current passions are masters alpine ski racing and managing the Alpine Club of Canada Climbing and Trekking camps in the Canadian Rockies for members over 55." ■ **Henry Gerhold** writes: "I retire from the School of Forest Resources, Pennsylvania State University, at the end of December as professor of forest genetics. My home and office addresses will remain the same, as I shall continue to work as a volunteer on some activities in urban forestry and Christmas tree genetics. We have a marvelous new forest resources building with modern facilities and beautiful native hardwood veneers and furnishings. Thus, after a gratifying 51 years, I'm glad I can enjoy my office and contacts with colleagues for a while longer. I completed two books this year, so it seemed like a good time to retire. One is *A Century of Forest Resources Education at Penn State*, which became available just in time for the school's centennial celebration in April, attended by 500 alumni and friends. The other book, *A Forester's Legacy: The Life of Joseph E. Ibberson* (see Bookshelf, page 17), is the fascinating story of a Yale alumnus who worked his entire career for the Pennsylvania Bureau of Forestry at a

modest salary, yet had the perspicacity to acquire a fortune in forest lands and financial investments.” ■ **Kirk Rodgers** writes: “I’m an avid outdoorsman and currently the manager of 6,500 acres of pine forest and wetlands on the eastern shore of Maryland. As president of my family’s timber corporation, which is the largest family forest ownership in the state, I’ve been drawn into the center of practical debates on sustainable management of forests both locally and nationally. I am the immediate past president of the Maryland Forests Association, past president of the Forest Landowners Association and active on the executive committees of both organizations. I also serve on the board of directors of the National Network of Private Forest Landowners and the Forest Landowners Tax Council. I frequently lecture at meetings on forestry and testify before Congress. The last two years have been a particularly interesting period for me. I had the honor to help lead the celebration of the Maryland Centennial of Forestry and Parks. The centennial dates from the hiring of my grandfather, **Fred Besley**, Class of 1904, as Maryland’s first state forester, a position in which he served with distinction for 36 years, making him the longest-serving state forester in the nation’s history. During the centennial celebration, it became clear that the most important accomplishments in the establishment and management of Maryland state forests and parks had occurred during his tenure. The celebration concluded on July 31 with the burial of a time capsule. The person throwing the first shovelful of dirt on the capsule was Helen Besley Overington, daughter of Fred, and the occasion was her 100th birthday. To see some wonderful photos of the event and to read my speech, which tells some of the story of the centennial, visit www.dnr.state.md.us/centennial.”

1957

Bill Ticknor III recalled his 1956 role as secretary of the *Camp Log*, reporting on students’ experiences from their time at the Crossett, Ark., field camp. He offered to send a copy

of that document to the Office of Alumni/ae Affairs for inclusion in the school’s historical archives. Bill also reported that, following a career in various forestry jobs, he switched to the mental health field for eight years prior to retiring last December. He and his wife, Shirley, are in Grove City, Ohio, in the Columbus area.

1958 *50th Reunion Year*

Class Secretary

Ernest Kurmes
ernest.kurmes@nau.edu

Herster Barres writes: “One of my life’s passions has been getting tropical trees to be productive on tropical farms. Initially, working with the U.S. Forest Service, and later, as a Food and Agriculture Organization forestry expert, I worked 16 years with species trials and associated research and promotion, ending as a U.N. Development Programme manager of a farm diversification program. In 1993, the Environmental Protection Agency asked me to develop a program for carbon sequestration on tropical farms. It was approved in 1995 as a U.N. Framework Convention on Climate Change/Activities Implemented Jointly (AIJ) by the United States and Costa Rican governments. We established a non-profit called Reforest the Tropics (RTT) to fund and manage the program. While the AIJ program is for research and development to create a model, RTT is a voluntary carbon-offset program, accepting donations to establish carbon-offset programs for U.S. emitters. As climate change becomes more evident, we have seen our program continue to expand, and we have raised \$560,000 to establish 26 projects for 54 mostly New England sponsors. Our latest 1-hectare project is for the F&ES Class of 2007. Because we expect the forest to be profitable, we expect it to be managed indefinitely for farmer income, meanwhile sequestering CO₂ for U.S. sponsors in the growing forest stand. There are few tropical farm forests that are profitable, so this is an ambitious goal. We work with churches, schools, Connecticut College, the Mohegan Indian Casino, a nut roasting company in Massachusetts, Rotary Clubs and individuals. The rest of my life is

spent on family matters, playing cello in various groups, riding my 1976 BMW motorcycle (it purrs) and playing tennis.” reforestthetropics.org or hbarres@aol.com

1959

Class Secretary

Hans Bergey
hberg16@aol.com

Dave Challinor, Ph.D. ’66, writes: “I’m scientist emeritus at the Smithsonian Institution, with a delightful small office at the National Zoo’s research building in the Conservation Biology Department. I’m there almost all working days and, like many of my colleagues, find that time is too short to get done everything you want to do. My main effort is to keep up with the fast-breaking new research in ecology, particularly plant/animal interactions and all aspects of interplant and interanimal behavior. I write a monthly essay on diverse topics dealing with natural history that is distributed by e-mail to various Smithsonian supporters. Although I’ve given up competitive sculling, I still row regularly on the Potomac and recently had a nice spin in a double with my granddaughter, who’s off to Brown as a freshman in a week or so. I retain happy memories of my time at F&ES and the great help I got with my dissertation from **Harold Lutz** ’27, Ph.D. ’33, **Dave Smith** ’46, Ph.D. ’50, and Professor **Garth Voigt**. ■ **Art Seamans** writes: “My wife, Joyce, and I live in Lewiston, Idaho, where I retired after 34 years with the U.S. Forest Service. I work part time as staff for the Idaho Lands Fund out of Boise. We, in turn, work with the Idaho State Snowmobile Association, the Northwest Professional Power Vessel Association and the Hells Canyon Alliance. I also guide and drive jet boat tours into Hells Canyon part time. When not doing that, we travel, boat, fish and play at photography. We have two daughters, one teaching elementary school in Lewiston and the other an anthropologist with the U.S. Forest Service. We also have five grandchildren and three great-grandchildren who keep us young.”

Visit the Yale
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 & Environmental
 Studies website at
environment.yale.edu



1960

Class Secretary

John Hamner

jhamner@bellsouth.net

Evangelos Biblis writes: "I retired nine years ago from the Auburn School of Forestry after 35 years of service. I have published 88 refereed papers and several other publications. I've also presented research papers in Germany, France, Denmark, Sweden, Finland, Taiwan, South Africa and Turkey. Every year, my wife and I visit the Greek island that we love, Sifnos. Over the years, we have visited 27 Greek islands, among them Santorini, Mykonos, Milos, Crete, Skopelos, Skiathos, Thassos, Lesvos, Rodos and Poros. Presently I am working on a book titled *Wood Panel Products and Properties*."

1961

Class Secretary

Roger Graham

Keville Larson is chair of Larson & McGowin, Forest Managers & Consultants, headquartered in Mobile, Ala. He writes: "I received a Lifetime Achievement Award from the Forest Landowners Association (FLA) and am not sure whether to consider it premature or a message that they want me to quit!" Keville is a past president. The summer 2007 newsletter of the Association of Consulting Foresters reports: "This high honor is reserved for those who have given a lifetime of service to private landowners and to the association. Mr. Larson has been a member of FLA for nearly 50 years, SAF since 1961 and ACF for more than 40 years."

1962

Class Secretary

Larry Safford

lsaffordnh@earthlink.net

Soonthorn Bhothigun writes: "After having completed my diploma course in 1952, I worked with Thailand's Royal Forest Department, Ministry of Agriculture. I received a bachelor's degree from the faculty of forestry, Kasetsart University, in 1958. In 1960, I was granted a government scholarship to further my study in the United States. I completed the

course of master of forestry in 1962. After graduation, I returned home (to Thailand) and worked at the same place – the Royal Forestry Department – until I retired in 1990. I live in Bangkok with my wife, two sons, two daughters and nine grandchildren."

1963 45th Reunion Year

Class Secretary

James Boyle

forsol40@comcast.net

Joe Gorrell writes: "I retired after 42 years in the federal service in 1995. I started with 15 years with the Forest Service, four years at the Office of Management and Budget and the balance at several bureaus in the Department of the Interior. My last assignment was with the National Park Service in Washington, D.C. I received my 50-year pin from the Society of American Foresters a couple of years ago. In 1995, I moved to the Wilderness Battlefield area in Spotsylvania County, Va. It is about 15 miles west of downtown Fredericksburg. I attended law school at Catholic University after leaving Yale in 1963, and always wanted to be a country lawyer. I started volunteering at the Rappahannock Legal Services Office in Fredericksburg in 1996 and have since continued to do that at least one day a week. I was awarded the Lewis F. Powell Pro Bono Award two years ago for my legal work at RLS and other court-appointed work by the Virginia State Bar. My wife, Ann, and I travel a good bit. We had a wonderful experience with the National Park Service employee and alumni group at the Grand Canyon last fall. We are heading for southern California this fall. I have five grandchildren and another on the way in December. We enjoy relatively good health and take everything one day at a time. I was sorry to learn of Bill Reifsnnyder's passing. He was my main professor while I was at Yale. I had known him previously when living in California."

1964

Stephen Hanover writes: "As associate extension professor emeritus at North Carolina State University, I am

enjoying retirement in southwest Florida. I have been enjoying travel in China. I have seen many sites during my five trips so far. I have found a wonderful lady to enjoy life with. She is a Chinese traditional-medicine doctor. My memory of the Yale tropical forestry (wood) series booklets serves me well, as I like to study trees here on the Tropic of Cancer."

■ A.V. Revilla, Ph.D. '78, writes from Eastern Mindanao, Philippines: "The International Tropical Timber Organization (ITTO) agreed in 2004 to fund a three-year project called Integration of Forest Management Units into a Sustainable Development Unit (SDU) through Collaborative Forest Management in Surigao del Sur, Philippines. I was asked to come out of retirement to lead the project, which commenced in November 2004. Two major project outputs are required: creation of the stakeholders' collaborative framework and formulation of a medium-term action plan to operationalize the collaboration. With the team's persistent efforts, the stakeholders have become eager and enthusiastic to learn and pursue a different approach to sustainable development and natural resource conservation. The two major outputs, including detailed proposals for priority livelihood projects to improve the plight of the very poor stakeholders, were completed in November 2006. The present ITTO project is purely a technical assistance project; there is no fund to implement projects on the ground. Search for funding has so far been a futile effort. There is also a critical need to assist the stakeholders' association during its infancy. Worse, the expected extension of the project has been derailed by the failure of government to pay its dues to ITTO." javr0639@yahoo.com

1965

Class Secretary

James Howard

jhoward@sfasu.edu

1966

Class Secretary

Howard C. Dickinson Jr.

1967

Class Secretary

Robert Hintze
bclues@aol.com

1968 40th Reunion Year

Class Secretary

Gerald Gagne
Gerald.gagne@sympatico.ca

Darius Adams writes: "I have been a professor in the Department of Forest Resources at Oregon State University since returning here in 1995, continuing research on long-term regional and national timber supply, and recently on the options for accelerating the sequestration of carbon in forests. In July, I agreed to serve as interim head of the department for two years while the College of Forestry undergoes a major reorganization. My wife, Claire, is also a professor on the college faculty. We started our family late, so our older son is heading off to college this fall."

1969

Class Secretary

Davis Cherington
cheringt@aol.com

Bob Lee is retiring from the University of Washington this year, where he has taught natural resources sociology for 30 years. He and his wife, Trudy, have built a home in Bow, which is in the Skagit Valley. Bob will continue to do a limited amount of teaching, complete writing two books and pursue hobbies of woodworking, gardening and traveling.

1970

Class Secretary

Whitney Beals
wbeals@newenglandforestry.org

Rick Matheny writes: "After graduation and return from active duty in the Army Medical Service Corps, I married Ines Loustau, joined the 118th Medical Battalion of the Connecticut Army National Guard for 10 years and started my career in public health. In 1972, I returned to Yale in the master of public health program in the medical school, graduating in 1974. After a two-year stint as director of environmental health

for the East Shore Health District in Branford, I was appointed director of health for the Farmington Valley Health District, a position I still hold after 31 years. The Farmington Valley Health District is an independent entity that serves as the local public health department for 10 valley towns with a population of 106,000 and an area of 315 square miles. I have just finished eight years on the board of directors of the National Association of County and City Health Officials – the last four years as a member of its executive committee. Living in Granby, Conn., we raised four children and are now proud grandparents of 2-year-old Jack. I play in two golf leagues during northern Connecticut's five-month golf season, and I am a very serious amateur photographer with an extensive online gallery. I don't anticipate retiring any time soon." www.nikoniansimages.org/galleries/showgallery.php/cat/500/ppuser/12017/sort/3

1971

Class Secretary

Harold Nygren
tnygren@juno.com

Barry Bryan writes: "After spending 19 years in the private sector, I have been working in the economics and trade branch of the British Columbia Ministry of Forest and Range for the past 17 years. Located at ministry headquarters in Victoria, I combine my training in forestry and economics as compensation advisor in the valuation for compensation of long-term forestry tenures that have been taken back by the province for various land use initiatives, such as new parks, First Nations treaty settlements and the more recent volume reallocation under the 2003 Forestry Revitalization Act. I maintain an active interest in the valuation and allocation of publicly owned forest resources. I have been married to my wife, Gillian, for 38 years, and we are finding that our seven grown children (six daughters and a son) still keep us busy. I remain physically active, enjoying running, biking and swimming (especially at the Sooke River potholes during the summer)." ■ **Sukhraj Dhillon** has recently published two popular books, *Art of Stress-Free Living:*

Eastern and Western Approach and Science, Religion & Spirituality. These are in addition to his earlier publications. His main aim in all his books is to combine Eastern and Western views. These and his other books are now available from Amazon. Sukhraj dedicated *Art of Stress-Free Living* to Professor Graeme Berlyn out of love for his mentor and Yale University.

■ **Kent Hanby** writes: "I retired from Auburn University, where I served as director of student services in the School of Forestry and Wildlife Sciences from 1996 to 2003. In addition, I taught the fire management course. I spend my time these days playing golf. I also teach continuing education workshops and a prescribed burn manager certification course for the Alabama Forestry Commission." ■ **Jim Kimmel** writes: "I am at Texas State University-San Marcos, where I am Jesse H. and Mary Gibbs Jones Professor of Southwestern Studies and director of the Research Center for River Recreation and Tourism. My most recent publication, *The San Marcos: A River's Story*, was published by Texas A&M University Press in 2006." ■ **Bill Lapointe** writes: "I just retired as head of the Natural Resource department at a regional school after 35 years. I am working part time as the curator of a natural history museum and filling in the rest of my time working for an antique decoy auction house (a longtime passion). I live in Massachusetts, but spend every available moment in the wilds of Maine or New Hampshire."

■ **Harold (Tom) Nygren** writes: "Since retiring from the U.S. Forest Service 10 years ago, I have gotten deeply involved in managing our tree farms and working with small woodland owners. This has led to volunteer positions as a member of a watershed council, member of the Oregon Sustainability Board and president of a woodland owner cooperative. My previous experiences in federal forestry have been helpful in my experiences in private-sector forestry and working with watershed and sustainability issues. I occasionally run into Yale grads. Last week I had the opportunity to provide advice to **Julia Falconer '86** and her husband,

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& Environmental
Studies website at
environment.yale.edu



Tom Schneidermann, about some property they have in Oregon. They now live in Brussels, Belgium.”

■ **Jim Okraszewski** writes: “I have been in Michigan’s Upper Peninsula since leaving Yale. My wife and I have four grown children, who are all over the place, with one working several years in Antarctica and now in the Arctic, and the rest in Chicago, Los Angeles and Lower Michigan. My wife, Clare, is a fifth grade teacher. After some logging and cruising and sawmilling for a couple of years, I joined Mead, once MeadWestvaco and now NewPage, and have been with that company for 34 years. I work to bring four NewPage mills into compliance with several chain-of-custody standards. The high point of my career was managing 730,000 acres, the wood procurement group for the largest mill in Michigan and a large hardwood sawmill and dimension plant. Now I am sliding toward retirement in mid-2008 near Watersmeet in the Western Upper Peninsula. I am looking forward to the change, away from this paper-work madness of chain-of-custody certification.” jimok@chartermi.net

■ **Phil Reynolds** writes: “I have been in Canada for nearly 25 years, working as a research scientist for the Canadian Forest Service since 1983. I am a dual Canadian and U.S. citizen. I am working on climate-change research, but have spent most of my career involved with vegetation management research. I am also doing some work with agroforestry at the University of Guelph in southern Ontario. Before immigrating to Canada, I worked for the natural gas industry for four years (environmental affairs) in Delaware and taught for a year at a state university in southern New Jersey, with time before that as a postdoc in New Hampshire and Ohio. My wife, Cynthia, and I have two sons, Trevor, 21, and Ben, 17. Trevor is in his second year of college, concentrating in social sciences: law and justice, and sociology. Ben is a senior in high school and will likely spend a fifth year in high school before attending college, a common practice in Ontario. He is artistically oriented, a very good artist (drawing, painting and sculpture) and musician

(guitars and drums). We live on an island in the north channel of Lake Huron, about 31 miles east of Sault Ste. Marie, Ontario. In April, I and other colleagues from France and the United States were awarded the 2007 Silvicultural Prize of the British Institute of Chartered Foresters. The Silvicultural Prize is awarded to the most-cited silvicultural paper published in the British journal *Forestry* during the previous three years, as established by international citation indices. The paper, “Designing forest vegetation management strategies based on the mechanisms and dynamics of crop tree competition by neighboring vegetation,” was published in 2006 [*Forestry* 79(1): 3-27].”

■ **Ron Wilson** writes: “Mary and I are in Sydney. I retired from Forests NSW (state government forestry) in July 2004 after 44 years. The position I retired from was in timber marketing, which included dealing with major transfers of state forest to national park and cutbacks to timber allocations. Since then, I have been working in plantation forestry with Rothschild Bank and now with another small company that has plantation assets in NSW and Victoria and is marketing investments in softwood and hardwood plantation forestry under managed investment schemes. Australia has given major tax breaks to expand the national plantation estate. I work part time for both companies, and I am enjoying the challenges. I am also chair of the NSW Division of the Institute of Foresters (similar to the Society of American Foresters). In this voluntary role, I had been quite busy with the running of ANZIF, a conference at Coffs Harbour that took place in June for a week with 350 delegates from Australia and New Zealand. Our married daughter has a new baby boy, so we are enjoying being grandparents. She lives at Manly, which is only a 10-minute drive. Our son and his girlfriend are traveling the world and have just completed a four-month trip to India and Nepal on mopeds that he made. They are now off to Europe. I have become active in cycling and am in competitive ocean swimming. I also sing in a choir, play sax in a band and am chair of a ski lodge in Thredbo.”

1972

Class Secretary

Ruth Hamilton Allen

ruth.allen@aehinstitute.com

In June 2007, **Ruth Allen, Ph.D.** ’77, gave a talk titled “Global Health, Environment and Justice for Women and Men” at the 2nd International Women’s Conference in Bangalore, India. The talk was based on the first chapter of her book-in-progress on the same theme. Female heads of state, first ladies, parliamentarians, high government officials, business leaders, scientists and Bollywood stars mixed with 500 invitees, including female tribal villagers and students from local schools for first-time learners from rural India under the sponsorship of the International Association for Human Values and the Art of Living Foundation. The foundation’s youth-leader teams and trained teachers and professional volunteers are busy all over India and in 150 countries.

Projects include planting trees, biodynamic farming, building houses, conducting hygiene projects to improve village sanitation and running basic health care clinics and educational programs in prisons and an HIV/AIDS clinic, along with fostering harmony in diversity and human values. The conference celebrated the education of female children and denounced female feticide. Following her talk, she was interviewed by India Today TV and *Femina*, the leading Indian women’s magazine. She is involved in development of a Web-based *Women in Leadership* international coaching program in conjunction with program organizers. <http://us.artofliving.org/service-projects/women-empowerment.html>

■ **Rosalind Batchelor** writes: “I am working freelance and part time, mostly doing consultancy or interim management in social housing and urban regeneration. I have recently become chair of our local nonprofit furniture recycling business. I also enjoy folk dancing, including American contra, which took us to St. Croix in the U.S. Virgin Islands in February, followed by three weeks visiting archaeological sites in Mexico.”

■ **James Grace** was appointed this year as the Pennsylvania deputy

secretary for state parks and forestry in the Department of Conservation and Natural Resources. He is responsible for the direction of the bureaus of State Parks and Forestry, as well as the Bureau of Facility Design and Construction. James has served as the state forester of Pennsylvania since 1994. He previously served in a deputy secretary role in the former Department of Environmental Resources, from 1987 to 1993. During the early part of his career, he served on the faculty in forestry at Rutgers and Penn State universities. He lives with his wife, Roberta, in Camp Hill, Pa.

1973 **35th Reunion Year**

1974

R.A. Lautenschlager writes: "I am the executive director of the Atlantic Canada Conservation Data Centre (www.accdc.com), a group serving the conservation science needs of federal and provincial government agencies in Atlantic Canada, as well as nongovernmental organizations and consultants throughout the region. In addition, I continue to be active in forestry, having written two articles for the *Journal of Forestry* last year – one examining approaches to Globally Sustainable Forestry and a second providing a summary of a coordinated forest research effort in Ontario following the 1998 ice storm. I live in Sackville, New Brunswick, with my wife, Wendeline Price, and two children, Anne and William. I write and record music. My fifth CD, "No More War," was released a month ago." www.myspace.com/ralautens

1975

Israel Acosta-Contreras writes: "This summer I had the opportunity to visit the Yale campus again, 15 years after my last time there. My heart beat faster than usual when I entered Sage Hall. I am sure that my wife and my granddaughter, who were with me, noticed my emotions as I walked through the building, once home for two wonderful years. I visited the construction area of Kroon Hall, found it very inviting and hope to return soon and spend time visiting it when it is completed. After retiring from the Inter-American Development Bank, I

left its headquarters in Washington, D.C., and returned to my home country, Colombia. Since 1997, I've worked as a national and international consultant in the fields of forestry economics and environmental management." ■ **Raju Govindaraju** writes: "I am a geneticist in the Framingham heart study at Boston University School of Medicine. I am applying many of the genetic approaches I learned as a graduate student in forest genetics at F&ES. From a genetics perspective, forest trees and humans share a great deal in common. While working toward understanding the genetic basis of cardiovascular diseases, I have also developed an interest in exploring the link between evolutionary principles and human health (my interest in ecology and evolutionary biology began at Yale as well). I do this work with my colleague, Steven Stearns of the Department of Ecology and Evolutionary Biology at Yale. We held a meeting in May at Duke, and the participants included evolutionary biologists, physician-scientists, human geneticists and biologists, epidemiologists and ethicists. I am also organizing a plenary session on the topic at the upcoming American Society of Human Genetics in San Diego. In collaboration with others, both Steve and I are trying to advance the field of "evolutionary medicine." My wife, Kamala, and I live in Lexington, Mass. We have three children, Srilakshmi, 19, Devaki, 17, and Yashvi, 7. I recently heard from **Libby Hopkins**. As always, she is happy and contented. She tells me that she is thinking of retiring. Time passes by so quickly." ■ **Gary McVoy, Ph.D. '79**, directs maintenance and operations at the New York State Department of Transportation, where he led the Environmental Analysis Bureau for many years. Environmental stewardship and sustainability are Gary's principal professional interests, and he is active on the national scene with the establishment of the American Association of State Highway and Transportation Officials Center for Environmental Excellence, the environmental research program of the National Academy's Transportation Research Board/National Cooperative

Highway Research Program Projects, and development of the transportation industry's "A New Vision for the 21st Century." ■ **Kathy Pierce** writes: "I am the National Environmental Policy Act compliance officer for the Bonneville Power Administration (BPA), which is a federal power marketing agency within the U.S. Department of Energy. BPA markets wholesale electric power from 31 federal hydroprojects in the Columbia River Basin and one nuclear plant. About 35 percent of the energy used in the Pacific Northwest comes from BPA, which also operates and maintains about 75 percent of the high-voltage transmission in its service territory – Idaho, Oregon, Washington, western and eastern Montana, California, Nevada, Utah and Wyoming." ■ **Diane Renshaw** writes: "Ten F&ES alums and their guests took the first-ever San Francisco Bay Area F&ES field trip. Planning for the trip began last September, when **Kath Schomaker '96**, director of Alumni/ae Affairs, met with graduates living in the Bay Area. This summer's trip featured a visit to Tassajara Hot Springs in Monterey County, with an overnight stay at Hastings Reserve, the University of California natural history preserve in Carmel Valley. We departed the San Jose/San Francisco area early with a 14-mile drive into Tassajara along a mountain road through the Ventana Wilderness in the rugged Santa Lucia Mountains. Evidence of the 1977 Marble Cone and the 1999 Kirk fires is visible along this route. I recounted my experiences with the fire history of the area, and special guest Léo Laporte, professor emeritus of earth science at University of California, Santa Cruz, pulled out his maps and shed light on the rugged outcrops and dramatic topography. At Tassajara, I led a tour of an ongoing native plant propagation and restoration project that I have been working on since 1993. We enjoyed an elegant luncheon and spent the afternoon at the natural Japanese-style hot springs and swimming pool. In the late afternoon, our group drove out to Hastings Reserve in upper Carmel Valley, where we met and mingled with a group – just back from a field trip to Big Sur and

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a tour of sudden oak death sites – in town for the Ecological Society of America/Society for Ecological Restoration meetings in San Jose. Following a catered dinner, we sat in the dusk watching the bats until it got dark enough to grab binoculars and spotting scopes and head for an open hilltop. There **Flip Dibner** kept us enthralled late into the night with a guided tour of the constellations. The next morning we shared a memorable breakfast in the Hastings communal kitchen. Then Mark Stromberg, director of the reserve, treated us to a guided tour of the historic ranch buildings and surrounding habitats of the reserve. In keeping with the mods tradition, we not only had fun but we learned something. Getting to know each other and meeting with the other field trip group at Hastings set the stage for some interesting conversations, networking opportunities and local microbrew sharing. Along for the fun on this trip were **Andrea Cristofani Geurts '98**, **Jessica Hamburger '98**, **Libby Jones '02**, **Ph.D. '07**, **Marcia Tobin '96**, **Ann Clarke '81**, **D.F.E.S. '92**, and **Duncan Clarke**, **Léo** and **Marty Laporte** and **Flip**. (See photo at the F&ES Alumni/ae website.)

1976

Stuart Hart writes: “For the past two decades, I have dedicated myself to the area of sustainable business. I am the S.C. Johnson Chair in Sustainable Global Enterprise at Cornell University’s Johnson Graduate School of Management. In August, I released the second edition of my book, *Capitalism at the Crossroads: Aligning Business, Earth, and Humanity*, with a new foreword by Al Gore. I will be on sabbatical leave during the 2007-08 academic year at the University of Michigan’s Davidson Institute and Erb Institute for Global Sustainable Enterprise.” ■ **Colin Peterson** writes: “Last November, I became fiber supply manager for International Paper’s Terre Haute paper mill. My wife, dogs, cat and I have all enjoyed the much milder springs and summers in Indiana compared to Alabama; as well as being only a three-hour drive from where I was born and raised in

Peoria! I spend most vacations back in South Carolina with four daughters and four grandchildren, and hope to retire there some day. My wife and I are celebrating our sixth wedding anniversary this year, and we are traveling to New York City and Cape Cod to see Sandy’s family and all the historic sites and sounds of beautiful New England. I have stayed in touch with **Bill Timko** from F&ES and his wife, Pam.”

1977

Class Secretary

James Guldin
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Charles Hewett, Ph.D. '82, has served as vice president and chief operating officer of the Jackson Laboratory, the world’s largest mammalian genetics research institution in Bar Harbor, Maine. He oversees the lab’s operation and directs its nonprofit business, raising 2.5 million mice yearly and providing custom breeding and *in vivo* research services for the worldwide biomedical research community. He also served as CEO of Atlantic Energy Partners from its founding in 1999 through April 2004, during which he also served as vice president and secretary to the board of the Cianbro Companies, one of the eastern United States’ largest heavy-infrastructure construction entities. He has developed and managed energy generation facilities, a pharmaceutical manufacturing company and various forestry projects, domestically and internationally. He has also held posts with the State of Maine and the U.S. Department of the Interior. He has served on the boards of numerous organizations throughout Maine, including the Maine Development Foundation, which he chaired.

1978 30th Reunion Year

Class Secretaries

Susan Curnan
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Regina Rochefort
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This past spring the second biennial Western field trip reunion took place

in western Turkey. **Andrew Schwarz**, **Loring LaBarbera**, **Tom Rumpf** and wife **Annie Tara**, and **Bob Gipe** and wife **Betsy Fine**, along with **Bill Hanson '77** and **Kate Troll '77**, met in the coastal town of Marmaris for the start of a weeklong cruise along the Mediterranean coast. Bare-boat chartering a 45-foot sloop, Bob served as captain, with other classmates serving as willing students. Sailing conditions ranged from no wind to too much wind, as the F&ES reunion members explored remote peninsulas, ancient ruins and secluded coves. By the end of the week, the crew had mastered the vocabulary of sailing. Early reports hint that the site for the next reunion will be western Thailand. ■ **Ellen Baum** writes: “My youngest son attends Yale College. Dropping him off gave me a chance to visit Sage and find my class picture. I am a senior scientist with the Clean Air Task Force, a small nongovernmental organization that works on climate and air quality. My work ranges from looking at the role of non-CO₂ climate forcings in the Arctic, to getting the whole story on biofuels, to figuring out if biochar can actually benefit climate and soils. It keeps me on my toes and gives me some fleeting moments of optimism.” ■ **John Hoffnagle** has served as the executive director of the Land Trust of Napa County since 1988. Last spring, John was able to attend the Stanford Business School’s executive program for nonprofit leaders, which he highly recommends. The family vacationed in Europe for the first time this summer and was able to spend a day en route with **Sheila** and **Ed Becker** at their home in Topsfield, Mass. John hosts the F&ES reception at Land Trust Alliance rallies, which occurred this year in Denver. The big news is that John’s daughter, **Elena**, is attending Yale this fall as a freshman. She’s in Morse College. ■ **Dora Lee** writes: “I have taken on a new assignment with Exelon, a large utility based in Chicago with generation facilities in Illinois, Maryland, Pennsylvania and Texas. For the last several years, I have been working on a variety of assignments on strategy and operations. The new job has an unusual title – FERC licensing

support manager. What this entails is managing the recreational facilities located in the watershed of our hydropower station on the Susquehanna. We have 6,800 acres of land on both sides of the Susquehanna, 700 of which are actively managed. I will be working on getting the recreational facilities up to our commitments as we get ready to apply for a new license. It is a fortuitous assignment on the eve of our 30th graduation from Yale – a homecoming, of sorts, after wandering around the world doing different things. I live in Chester County in Pennsylvania, have taken up dressage as a sport and am absolutely smitten by a pony named Moonie.” ■ **Emly McDiarmid**, director of admissions at F&ES, was one of a delegation of 100 students, faculty and administrators who went to China in May, led by Yale President Richard Levin. Invited by President Hu of China at his visit to Yale in April 2006, the group included representatives of all the university’s schools, as well as several Yale students from China and others who had studied there. The delegation visited Peking University and Tsinghua University in Beijing, Fudan University in Shanghai and Xi’an Jiaotong University in Xi’an. In addition to interaction with Chinese students and scholars, the delegation met with government leaders, toured major cultural and historical sites in Beijing and Shanghai and explored historical sites in the ancient city of Xi’an. ■ **Joshua Schwartz** is an associate professor of biology at Pace University in Pleasantville, N.Y. His research focuses on the communication of frogs. He lives in Kent, N.Y., with his wife, Leslie, and three turtles.

1979

Class Secretary

John Carey
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Bob McKinstry, J.D., has been working on Vermont’s climate planning process. He is also working on a project to use habitat banking and a revolving fund to protect the bog turtle in Chester (Penn.) and New Castle (Del.) counties under a Habitat Conservation Planning Grant. In addition, he is involved in a startup

company with a new process for chemical sequestration of carbon dioxide emissions that will produce bulk chemicals for sale. He spent some time at Penn State, and then returned to Ballard Spahr midsummer.

1980

Class Secretary

Sara Schreiner-Kendall
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Charles Dvorsky, coordinator of the Continuous Water Quality Monitoring Network, writes: “The late Lady Bird Johnson encouraged me to attend F&ES and provided letters of recommendation. I came to know her during her tenure as a regent at the University of Texas, where we conferred on the environment and open space at the university. Upon my return from graduate school, she provided me counsel concerning employment. In 1980, I signed on at the Lower Colorado River Authority, an agency of the State of Texas, charged as a soil and water conservation district, and established their environmental monitoring programs before accepting a position with the primary state environmental agency. With Mrs. Johnson’s encouragement, I have provided support to developing environmental programs in the Dominican Republic, Peru and Brazil.”

■ **Peter Lewis** writes: “Just spent some time with **Chris ‘Too Tall’ Brown** ’79. Chris came out to northern California in his official capacity as the U.S. Forest Service’s director of wilderness and wild and scenic rivers. He was on a listening and learning tour, which took him to the Klamath and the Shasta-Trinity national forests, where I happened to have a few trail crews working – great to see him again after 30 years!” ■ **Tom McHenry** completed the Paris-Brest bike race on August 25. That day he sent an e-mail stating that he had finished “at 10 a.m. after battling the worst weather they’ve had in many years.”

1981

Class Secretaries

Fred Hadley
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Carol Youell
envstew@snet.net

Lillian Beerman writes: “I have

returned to my home in Galveston, Texas, where civilization meets the sea. A few years ago I earned my Ph.D. from the University of Michigan. The chair of my distinguished committee, **Patrick West, Ph.D.** ’75 (also a student of Professor Bill Burch), informed me after my defense (which was the best time I had had in years) that I am an environmental sociologist. My scholarly accomplishment owes much to the encouragement and support of my friends from the Environmental Protection Agency and F&ES, including **Chuck Dvorsky** ’80, who got me a job with the state, and the late **Stephen Spurr** ’40, **Ph.D.** ’50, whose spirit helped me become a visiting scholar at the LBJ school. Occasionally, I hear from my friends at HGS and fellow alumni – **Gail (Kalison) Reynolds** and **Dan Reynolds** ’82, **Susan Becker-Jacob** ’82, **Bob Turnage** ’82 and **Thea Wiess Hayes**.” ■ **Ann Clarke, D.F.E.S.** ’92, writes: “I had a wonderful time on the West Coast field trip. My husband, who is in political science, said he really learned a lot. This was his first official field trip. Thank you very much for organizing the trip with Diane Renshaw. I also enjoyed attending the alumni reception in San Jose (in association with the Ecological Society of America meetings).” Ann is chief of the Environmental Division of the NASA Ames Research Center in Moffett Field, Calif. ■ **John Echeverria, Ph.D.** ’81, executive director of the Georgetown Environmental Law & Policy Institute since 1997, was presented the 10th annual Jefferson Fordham Advocacy Award from the American Bar Association’s Section of State & Local Government Law. He received the honor at the ABA’s annual meeting in San Francisco on August 10. The award was presented in recognition of his achievements in the field of state and local government law. The Jefferson Fordham Advocacy Award “recognizes outstanding advocacy or legal writing within the area of state and local government law.” Before going to Georgetown, John was general counsel at the Audubon Society and general counsel and conservation director at American Rivers. He was an associate at Hughes, Hubbard &

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Reed and served as law clerk to Judge Gerhard Gesell of the U.S. District Court for the District of Columbia.

■ **Mark Hitchcock** consults for *Fairweather Forestry* in northwestern Washington, and serves on the boards of the Skagit Land Trust and Skagit Conservation District. ■ **Mark Plotkin** sends greetings from Brazil. This year, he was named Newman School Alumnus of the Year (second place: Peyton Manning, MVP of Super Bowl XLI). Mark also won the Auerbach Award of the Wilderness Medical Society for contributions to the medical community's appreciation of indigenous healing wisdom, and was named the Cincinnati Zoo's Wildlife Conservationist of the Year for working with 27 Amazonian tribes to map, manage and protect 41 million acres of ancestral rainforests.

1982

Class Secretaries

Barbara Hansen
bjhansen@fs.fed.us
Kenneth Osborn
forstman@fidalgo.net

Mir Javed Hussain writes: "I am supervising the Greater Mekong Subregion Environment Operations Centre. As part of the aim to build the environmental management capacity of the center, we are looking for faculty to work with colleagues in the region on biodiversity conservation and sustainable natural resource management (forest, water), and for interns who can work on field sites."

■ **Betsy Jewett** writes: "I have been working for the past four years on bringing a science center to my hometown, Spokane, Wash. We have a fabulous site on the Spokane River for the Mobius Science Center, when it is built. Three years ago, we merged with the local children's museum and, two years ago, opened Mobius Kids, which is science-oriented and for children up to third grade. I am co-chair of the exhibits design and education committee, hiring an exhibits design firm to work with sustainable architect William McDonough and Partners, to build a science center. We hope to open our doors by 2010."

■ **Ada Ndeso-Atanga** writes: "I have been a professional forester for the United Nations for the past seven

years. I am a consultant for the Food and Agriculture Organization and the World Agroforestry Centre. I intend to visit F&ES when I come to the United States to see my children, who are undergraduates at three different universities."

1983 25th Reunion Year

Class Secretary

Stephen Broker
ls.broker@snet.net

Carol Kennedy Hearle writes: "I am at the University of Maryland and working on conservation and sustainability issues." ■ **Ann Pesiri Swanson** was honored by the University of Vermont Alumni Association in June. President Daniel Mark Fogel presented this citation to Ann: "For more than two decades, Ann Swanson has dedicated her life to the conservation of the Chesapeake Bay, most recently as the executive director of the Chesapeake Bay Commission, a tri-state legislative authority composed of legislators, cabinet secretaries and citizens from Maryland, Virginia and Pennsylvania. ... In the Bay region, there is hardly a piece of conservation legislation in the tri-state region that does not have Ann Swanson's mark on it. She is known for her ability to lead and to be the catalyst of new ideas. She also has a gift for translating science into policy. Currently, Swanson heads up the region's efforts on the reauthorization of the Federal Farm Bill. ..."

1984

Class Secretaries

Therese Feng
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Roberta Tabell Jordan
rjordan@clinic.net

Denise Schlener is the national director of the Land Trust Alliance. In the summer issue of *Exchange: The National Journal of Land Conservation*, the following announcement appeared: "Denise will lead the delivery of the Alliance's programs to land trusts nationally and lead the field staff. She cut her teeth in professional environmental organizing and lobbying with her experience of working on the Alaska national interest lands legislation in the late 1970s. Most recently,

Denise served as director of the Chesapeake and Central Appalachians field office for the Trust for Public Land. Previously she served as director of the Northern Forest Protection Fund for the Open Space Institute and as executive director of the Nature Conservancy Connecticut Chapter, where she led a successful campaign to secure \$185 million in new state funding for conservation."

1985

Class Secretary

Alex Brash
abrash@npca.org

Anne Sergeant writes: "I manage peer reviews for the grants program in the office of research and development at the EPA, and it feels good to know I'm helping sow the seeds for future environmental protection. I also get to do cool stuff like work on our National Sustainable Design Expo." <http://es.epa.gov/ncer/p3/expo/index.html>

1986

Dave Braun writes: "My wife, Becky Nelson, and son, Zev, 14, are loving life in Hood River, Ore. We just did a kayak trip on the Klikitat River, Class II and III rapids. My consulting business in tree care, forestry and ecorestoration is growing (with critical help from Becky, who does the books). My favorite part is pruning 80 feet up a Ponderosa pine. Zev has packed his freshman schedule with three band classes; he and his buds have a 'band,' which hasn't made it out of the basement yet. Becky, a 1986 graduate of the Yale School of Nursing, is the main health care provider at NORCOR, the regional jail." ■ **Eric Carlson** writes: "My wife, Susan, and I live in Washington, D.C., on Capitol Hill. I divide my time professionally between sustainable planning, architecture consulting, media development and teaching graduate courses in green design at the Corcoran College of Art & Design in D.C. As an artist, I alternate between the abstract and representational; a recent painting of mine was shown at the Corcoran Gallery. However, my present focus is more conceptual – a kinetic sculpture powered by

photovoltaic panels, tentatively titled ‘Solar Loom.’ ■ **Caroline Norden** writes: “Curtis and I are living in Yarmouth, Maine, and raising two girls, Sarah, 8, and Katrina, 2. I have a part-time land conservation consulting practice, which keeps me incredibly busy. We spent a great week this summer with **Brenda Lind** and her two girls at our camp on Mountain Pond.”

1987

Class Secretaries

Christie Coon
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Melissa Paly
mpaly@aol.com

Christie Coon, Pamela Manice, Nina Marshall, Melissa Paly and Josh Royte had a good time at the F&ES reunion. The Class of 2002 seems to be vying for a close second to the Class of 1980 in the spirit department. But it was really great to reconnect to one another and the school; learn about the incredible diversity of initiatives going on; meet terrific grads and some fired-up current students; meet Nina’s husband, Doug, and Christie’s other half, Allen; watch Tom Siccama get almost choked up by the Distinguished Service Award he so much deserved; get a glimpse of the new building; and, most important, gorge on the world’s best pizza at Sally’s. ■ **Jean Brennan** is an international conservation scientist for the Defenders of Wildlife in Washington, D.C. She has over 10 years of professional experience across a range of technical areas, including wildlife conservation, forest ecology and natural resource management, climate-change science and international environmental policy. Jean was previously employed by the U.S. Agency for International Development, where she served as a senior science advisor. Among her duties, Jean assisted the environment staff and partners in nongovernmental organizations overseas with carrying out strategic planning and program design, including establishing performance monitoring plans and conducting evaluations. Her most recent work in Asia focused on issues related to wildlife trade, enforcement and issues of forest governance and illegal

logging. She is an experienced field biologist with advanced degrees in the areas of animal behavior, ecology and population biology. She has conducted long-term research in Malaysia, Indonesia, Kenya and Madagascar on a variety of species, including mountain lions, sea otter, mongoose, Asian elephants, gaur, small mammal populations and numerous African and Asian species of primates. ■ **Nina Marshall** writes: “I have been in touch with **Mary Rowen, D.F.E.S. ’92**, and in fact just spent a night at her lovely D.C. apartment that has the most gorgeous view of the treetops (she lives near the zoo). And, under certain circumstances, she can even hear the Grevy’s zebra snorting.” **mrowan@usa.gov** ■ **Doug McGuire** writes: “I’m working at the Food and Agriculture Organization. Colette is busy pursuing art, and ‘little’ James is two years out of college and living in Northampton, Mass.” ■ **Joel Seton** writes: “I immigrated to Israel two years ago. There I met **Laura Fink** (now **Laura Seton**), an immigrant from Chicago who has been in Israel for 16 years. We married in Jerusalem this year with 400 family members and friends there to rejoice with us. We then traveled in the United States for a five-week coast-to-coast tour to catch up with loved ones who could not make it to our wedding and for family celebrations in San Francisco and Chicago. My time in Israel has been mostly occupied with intensive Hebrew language study, with a grant pending for work on some water-related environmental projects. **Laura** works as an independent writer, editor and graphic artist. She is also an accomplished songwriter and musician. We make our home in Jerusalem.”

1988 20th Reunion Year

Class Secretaries

Diane Stark
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Philip Voorhees
pvoorhees@npca.org

Eric Dolin writes: “I am living in Marblehead, Mass., with my wife, Jennifer, and two children: Lily, 10, and Harry, 7. We love New England and especially being so close to the

ocean. Jennifer works on energy efficiency and environmental issues at Osram Sylvania, where she is the environmental marketing manager for General Lighting. In July, my most recent book was published – *Leviathan: The History of Whaling in America* (See Bookshelf, page 17), and I quit my job as a fishery policy analyst at the National Marine Fisheries Service in Gloucester, Mass. I am now a full-time writer, having signed a two-book contract with W.W. Norton. In July, I began my book tour, which focuses mainly on New England, and that has been a lot of fun. To see where I have been and will be, check out my website.” www.ericjaydolin.com ■ **Anthony Irving** writes: “I partner with **Star Childs ’80** on EECOS. Our kicks come from being in the woods and comparing the differences and similarities of various sites. So we’re earth detectives, and I like to think we’re getting pretty good at it. I’m also working on getting the Eightmile River in southeastern Connecticut designated as a federal Wild and Scenic River. After six years and passage in the House, we’re just waiting on the Senate and the president’s signature sometime this fall.” ■ **Manuel Ramirez** writes: “I am director for Nicaragua, Costa Rica and Panama for Conservation International, working both on terrestrial and marine ecosystems. It has been a challenging experience for 19 years. I do lots of traveling in the entire region of Central America, South America and other places.” ■ **Carlos Rodriguez-Franco, D.F.**, is director of the Forest Management Sciences staff for the Forest Service. Before joining the Forest Service, Carlos worked in the USDA’s Agricultural Research Service, where he was based in the Office of International Research Programs. He moved to the United States from Mexico and became an American citizen in 2003. He acquired many years of high-level government management experience before joining the U.S. civil service in 2003, including as director general of forestry research at Mexico’s National Institute of Forestry, Agriculture and Animal Husbandry Research.

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1989

Class Secretaries

Susan Campbell
susan.campbell@comcast.net
Jane Freeman
jane@ewalden.com

Jenny Aley writes: "I've been working in environmental education and interpretation for the past 10 years, most recently for Brookside Nature Center in Montgomery County, Md., where I am the volunteer coordinator and a park naturalist. We have about 90 volunteers who help us with nature programs and camps, native plant gardening and trail monitoring. I recruit, hire, train and assign the volunteers. My husband, Steve Gold, a 1987 graduate of Yale Law School, just started teaching environmental law. We are avid bird-watchers and enjoy traveling, but we don't have to go far – our house borders a small wooded park and, as a result, we've seen 43 different species of birds at our feeders." jennyparks@att.net

■ **Dawn Amato** writes: "In addition to my work as a communications trainer, I am a personal and professional life coach, specializing in career development, work transitions and work-life balance. I trained with the Coaches Training Institute in San Rafael, Calif., and now have my own thriving practice, Silver Wings Coaching and Consulting, in Boulder, Colo. I work with clients across the United States. In addition to my work as a life coach, I am also rekindling my love for environmental and essay writing, and I am exploring some options for a monthly column. I remarried in February 2000 my wonderful partner, Dave Gelderloos. Maddie, 14, and Nevin, 11, are mine. Lucy, 20, and Ben, 15, are his. We've loved that they have all become ours! Our sense of peace comes from living in the mountains, where we hike, ride mountain bikes and enjoy every season." ■ **Susan Campbell** writes: "Work is the most satisfying ever, as our new business, Massachusetts Woodlands Cooperative, strives for financial viability in the near future. The coop is FSC-certified, so when our members sell logs to us, we coordinate the value-added processing and then sell wood products into

regional niche markets. A promising new business model for our neck of the woods, but it comes with a steep learning curve." ■ **Peter Kyburg** writes: "I am practicing law on Nantucket with Kyburg & Wilson, P.C., where I do mostly real estate transactions. I was the chair of the Nantucket Conservation Commission for many years. I have three children with my Costa Rican wife. We just celebrated 11 years of marriage. We go to Costa Rica three months a year, where we surf, fish and play tennis in the tiny west coast town of Ostional." ■ **Claudia Martinez** writes: "We returned to Bogota at the end of August. My children are fine, enjoying their grandmother and cousins and uncles. I have resigned from the Andean Development Bank and will be organizing myself independently next semester, hoping to have more time for my family and me." claudia@eduvi.com ■ **Cyril May** writes: "Yale has kicked environmental management issues into very high gear over the last three years, as evidenced by the creation and expansion of the Office of Sustainability (www.yale.edu/sustainability). Whereas I used to push for environmentally preferable products and practices for most of my 17 years working here, it is now the administration that pushes me to implement programs related to recycling and green cleaning. Outside of Yale, I work with the Connecticut Recyclers Coalition (CRC). We worked with a number of players to pass an electronics recycling bill in Connecticut. I represented the CRC in an advisory capacity as the Department of Environmental Protection developed a new solid waste management plan. Much more fun has been providing the 'Recycling is Magic' storytelling/magic show to school groups around the state over the last several years (ctrecyclers.org/recyclingmagic.doc). I am very happy at home with wife Becky (met through the Compost Co-op and my shifts working at the F&ES library) and children Natalie, 10, Nick, 6, and Ella, 2." ■ **Sara Nicholas** writes: "We've been in central Pennsylvania for the past 10 years, where I left the nonprofit world and the fun of knocking down small

dams for American Rivers to become a state bureaucrat with the Department of Conservation and Natural Resources. I still work on river issues, but have taken on some new things, like deer management, which is a lively topic here in the Keystone State. My daughter, Charlotte, who was born during our second year at F&ES, is now in college. She is a biology major at the University of Wisconsin in Madison, and her younger sister Tess is a junior in high school. Steve runs a progressive think tank here, where he is usually the 'other point of view,' and our pets run the household." ■ **Yajie Song, D.F.E.S. '95**, writes that he is the principal investigator and research scholar of the Yale Urban Environmental Crisis Management (UECM) research project. "The 2007 China UECM Forum was held in Shenzhen, China, and was co-hosted by the China Association of Mayors (CAM) and the UECM project. More than 70 mayors, deputy mayors and other urban leaders from 28 Chinese cities attended this year's forum. The collaboration between CAM and the UECM project provided helpful experience that targeted China's urban environmental crisis control and development. This is especially relevant with the recent Tai Lake water pollution crisis in Wuxi, Jiangsu Province, along with recent months of floods, hurricanes, sandstorms and air-water pollution events. Invited speakers included F&ES Professor William Burch and Hixon Center Director Colleen Murphy-Dunning, among many other distinguished guests. I had the privilege of presenting the main address to the forum. Valuable support was provided to the program by Goldman Sachs and the Global Institute of Environment and Sustainable Development."

1990

Class Secretaries

Judy Olson Hicks
Carolyn Anne Pilling
capilling@gds.org

Ann (Allen) Camp writes: "As I met most of my fellow classmates during Mods, they may be interested/amused/horrified to know that I've

been tapped by Dean Speth to carry on with their organization, given Tom Siccama's impending retirement. I've been his understudy for the past two years, and this year it's my turn to host 'under the tree.' Remember? Cautions about poison ivy and yellow jackets, matching up those with places to stay and those needing same, asking who's been robbed already. ... So many memories! If you're ever in New Haven, stop up for a visit on the third floor of Marsh Hall. With my new appointment, I'll be there at least until 2012! P.S. My daughter, who attended some of the TGIFs as an infant, is now in college. Was it all that long ago?" ■ **Jen Lamb** writes: "I am living happily at the eastern base of the Wind River Mountains in west-central Wyoming, where I manage public policy for the National Outdoor Leadership School. As pressures on public land in the West have increased, my job has turned toward advocacy – working to protect the wilderness 'classrooms,' where we teach, mostly from oil and gas development. My husband, Jim, and I took a late dive into parenthood and just welcomed our baby boy, Bennett, in August of 2006." ■ **Najib Murtaza** writes: "Our daughter, Nadine, graduated from Bryn Mawr in May 2006, and is back home with us. She has joined our family enterprise, Headstart School Islamabad (www.headstart-pakistan.com). She is a student counselor and also teaching English to a group of Chinese students at a sister concern, Thames Business School. Alamdar is in Rochester, N.Y., and should graduate in 2008. I visited New Haven in August last year with Nadine. It was a pleasure to meet up with Jane Coppock. I quit the World Bank a few years ago and have joined our school full time. I can always manage to squeeze some time out for golfing." ■ **Susannah Troner** writes: "I write grants to raise money to help pay for services for the Dade County (Florida) Office of Strategic Business Management. The county is starting a sustainability office to work on climate change issues, so hopefully I will also be involved with this effort in some capacity. I have joined an advisory board for a midwifery education/

training program offered at a local college. I really want to support midwifery and the wonderful, but few, midwives that we have in our community. I am also focusing on trying to remodel a portion of our house using as many green options as we can afford." stroner@bellsouth.net

1991

Class Secretaries

Richard Wallace
rwallace@ursinus.edu

Geoff McGean and his wife, Trish, and their children are doing well and living in Lincoln, Mass. Geoff is the executive director of a small land trust called the Rural Land Foundation.

1992

Class Secretary

Katherine Kears Farhadian
farhadian@verizon.net

Lisa Diekmann writes: "I'm at the Wilderness Society and all is well. After 11 years at the Yellowstone Park Foundation, it was hard to leave such a wonderful place. The mission of the Wilderness Society is noble, its approach deliberate, the dialogue well-reasoned, the staff wonderful and the cause a worthy one. I am looking forward to this new chapter of my life."

1993 15th Reunion Year

Class Secretaries

Dean Gibson
deang@duke.edu
Molly Goodyear
bvidogs@cox.net
Heather Merbs
hmerbs@aol.com

Andre (Thomas) Eid has been based in Nairobi, Kenya, for two years, representing Norway and the Ministry of Foreign Affairs. His specific task is to follow the work of the United Nations Environment Programme and the United Nations Human Settlements Programme, UN-HABITAT, both of which have their headquarters there. He feels privileged, and the work is extremely relevant to his years at Yale. ■ **Jeff Griffin**, his wife, Amy, and their three boys have just moved from Portland, Ore., to Billings, Mont. Jeff is busy as an

independent consultant for environmental project design and evaluation through the Global Environment Facility, the United Nations and other clients. ■ **Kathy Roy Hooke** writes: "I'm in my 14th year teaching 11th graders at the Mountain School in Vershire, Vt. Last year, I taught environmental science and introduced some Terre Eco elements including an all-school field trip up Moosilauke. We take 45 students from around the country (mostly cities) each semester, and I really love the opportunity to share my world with them and see it through their eyes. I've also been having lots of fun introducing our son, Benjamin, to the natural world. He loves doing 'tree ID' when we go for hikes. By his second birthday, he could identify 12 local trees! My husband, David, has discovered the joys of timber frame construction, and after building us a cabin on the shores of Penobscot Bay in Maine and a new house in Vershire, he has started a business called Timberhomes LLC. I'm trying to take back all the nasty things I've said in the past about sappy old pasture pines now that I've seen the beautiful curved timbers that David can create from them." ■ **Kate Lance** was featured as a Geographic Information Systems (GIS) hero in the spring 2007 issue of *ArcNews*, a publication of ESRI, which is an international company headquartered in Redlands, Calif., that provides GIS and the support to use them. The newsletter cited Kate for her work promoting spatial data infrastructure initiatives on the continent of Africa: supplying relevant documents to the Nigerian Geoinformation Policy Drafting Committee in 2003, participating in the stakeholders workshop for the adoption of the draft policy, providing free advisory service for the implementation of the national geospatial infrastructure in Nigeria and being the resource person at a five-day regional workshop on Spatial Data Infrastructure. She is the founder and editor of the *Spatial Data Infrastructure (SDI) Africa Newsletter*. Kate is committed to promoting the use of reliable geospatial data and tools, while working on her Ph.D.

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environment.yale.edu



1994

Class Secretaries

Jane Calvin

jcalvin@prospeed.net

Cynthia W. Henshaw

chenshaw@newenglandforestry.org

Jane Whitehill

janewhitehill@hotmail.com

Jeffrey Andrews writes: "I'm an attorney at the firm of Locke Liddell & Sapp in Houston, and my practice is primarily patent litigation. My wife, Dale, and I are keeping busy with our two daughters, Isabelle (Izzy), who is starting kindergarten, and Georgia, 18 months old." ■ **Brooke Barrett** writes: "I returned to Seattle in May after four months in South America, ending my trip in the rain-forest of Peru near Puerto Maldonado. I went to New Orleans in June to work with the St. Bernard Parish school board rebuilding effort." ■ **Andrew Beckerman, Ph.D. '99**, writes: "My wife, Sophie, Rosabel and I are having a great time in Sheffield, United Kingdom. I am an associate professor at the University of Sheffield, and Rosabel is nearly a year old. I was at the Ecological Society of America meeting in San Jose and ran into my old boss, Oswald Schmitz, as well as Laura Meyerson '95, D.E.E.S. '00, and Frederick Meyerson '95, Ph.D. '00, Evan Preisser '98, Andy Kulmatiski '99, Karen Beard '96, Ph.D. '01, and Barney Luttbeg. All in all, a Greeley Labs-like reunion."

■ **Geoffrey Blate** writes: "I became a father last summer and again just recently. We adopted a little boy, Daniel (2 years old in August), from Kazakhstan, and we just came home with Sabina. So now we are a family of four. Last September, I started an American Association for the Advancement of Science 'Science and Technology Policy Fellowship' at the Environmental Protection Agency's Global Change Research Program. I don't get to work on tropical ecology and conservation, but I'm learning a lot about climate-change adaptation strategies. It was fun to see **Cynthia Barakatt '93**, **Josh Foster '93** and **Jessica McGlyn** earlier this year. Cynthia ran one of the professional development workshops that AAAS organizes for Science and Technology

Policy fellows. I ran into Josh at Union Station a few months ago. I met Jessica at a seminar at the World Wildlife Fund. I see **Don Chen '92** and his family regularly, which is a lot of fun, and keep in good touch with **Bill Mott '93** and **David Moffat.**" blate.geoffrey@epa.gov ■ **Jane Calvin** writes: "I enjoyed visiting with **Cynthia Caron**, who was home from Sri Lanka, and the amiable **Mark Ashton '85, Ph.D. '90**, at the Caron family lakeside cottage in early August. I am a voice for urban land protection as director of the Lowell Parks & Conservation Trust. I also enjoy getting involved in a local congressional campaign. Our son, Silas, 5, enters kindergarten in the fall, and his younger brother, Isaac, continues to demonstrate his ability to creatively push boundaries." ■ **Cynthia Caron** writes: "I consult for the United Nations Office for Project Services in Sri Lanka, and the job has taken me to Bangkok and Dubai. I am a project manager for disaster-related assessments. I am monitoring conditions in refugee camps. I have an article about environmental protest and means of citizenship in the *Journal of Asian and African Studies* (47)." ■ **Susan Carpenter** writes: "I am the land preservation director and counsel to the Westchester Land Trust in Westchester County, N.Y. We are, as always, pretty busy with conservation easements, especially in the New York City watershed in northern Westchester. I will be forever grateful to Tom Siccama for teaching me something about how to understand what I am looking at when I am out in the field." ■ **Eliza Cleveland** writes: "I competed in the Pan American Games in sailing. The games were held in Rio de Janeiro from July 13 to 29. I competed in the Hobie Cat 16 class and unfortunately we came in fourth, just missing getting a medal. It was an amazing experience to represent the United States. There were 5,600 athletes from 42 countries competing. The United States sent about 600 athletes to the games. See the F&ES alumni website for two photos of me sailing and wearing a red hat. I am at the Peabody Museum of Natural History and living in Branford." ■ **Marlene Cole** writes:

"I'm working at an education think tank in Cambridge, Mass., developing a high school curriculum in bio-complexity. I've also been teaching environmental biology at Boston College. I was hanging in Amagansett, N.Y., last weekend and met a couple of the latest F&ES crop, **Rachel Gruzen '07** and **Alark Saxena '07.**" ■ **Anne Paddock Downey** writes: "I ran a half marathon, even though this time last year I couldn't run a half mile! But I trained all year long and was able to complete the race. During the first part of the race, it was 95 degrees and humid, and I almost didn't make it. But then a thunderstorm blasted through town, dropping the temperature by at least 20 degrees. With a storm raging around me, my adrenaline shot up, and I ran a quick pace for the last five miles, actually passing people. I was the top fundraiser (the race benefited the Children's Hospital at Dartmouth), bringing in over \$5,000 from more than 50 donors, several of whom are F&ES classmates!" ■ **Steve Harrington** writes: "We are riding out a year of atrocious Irish weather and a number of lost family members (our children's last grandparent and great-aunt, among others), but the sea-kayaking guide work is expanding, and I am just beginning the hunt for a book agent for the novel that I have written. I'm working on a proposal for a small marine ecology center in our remote corner of Ireland, and am helping draft some alternative policy positions on forestry for Ireland. Present policies are atrocious despite Forest Stewardship Council certification." ■ **Mary Jensen** writes: "After almost nine years working full time for the National Outdoor Leadership School as a field instructor, I graduated from nursing school and took a job at the University of Utah Hospital in Salt Lake City. I completed a five-month nurse residency program in critical care, and am now working as a registered nurse on the burn trauma intensive care unit. The work is challenging, sometimes very taxing and gratifying – the University of Utah is the regional burn trauma center for five Western states. I'm still adjusting to life in Salt Lake City after living in

Lander, Wyo. (pop. 8,000), since 1996. I'm getting married to Nils Eddy, an architect and native of New Hampshire. We're both transplants to this desert city and making our way together. The wedding is scheduled for September, when the heat subsides and fall colors start showing up Alta way." ■ **Bill Keeton** was awarded tenure and a promotion to associate professor of forest ecology and forestry at the University of Vermont. His research has focused on old-growth riparian forest dynamics in the Adirondack region and experimental silvicultural methods for promoting old-growth characteristics and functions in managed forests. He is also actively involved in research on climate change, carbon and biomass, and he recently initiated work on sustainable forestry in the Ukrainian Carpathian Mountains. He lives in Burlington with his wife, Karen, and two children, Will, 7, and Julia, 3.5. william.keeton@uvm.edu. ■ **Erik Kulleseid** writes: "Mark and I and the girls are adjusting to the shock of our move from the Upper West Side of Manhattan to Albany. I accepted an appointment as deputy commissioner for open space protection in the state parks department. I walk to work, but have to rely on the car for shopping." ■ **Sherry Login** writes: "Our second son, Gal, was born in August 2006. Two months later, we took Gal and his brother, Ziv, on a five-week camping trip to Australia. It was quite an adventure, 36 hours of traveling with an infant and a toddler. We drove north along the coast from Sydney, to Cape Tribulation and then to Cairns in a six-berth camper-van. The campervan was quite luxurious – toilet, shower and even a flat-screen TV, which came in handy during those toddler moments. In May, I returned to part-time work at Con Edison after nine months of maternity leave. I provide environment, health and safety support for Con Ed's Distribution Engineering, Energy Services and Energy Efficiency Departments." ■ **David Moffat** is director of sustainability with Clark Sustainable Resource Developments, based in British Columbia. CSR Developments is an international

resource extraction company that puts sustainable resource development into everything that it does. The company was founded on the belief that business can and should produce social good and contribute to the sustainability of our planet's ecosystem while producing financial returns that reasonably reward the risk and commitment of their shareholders. David is shuttling between the Pacific Northwest and Ghana. david@csrdevelopments.com ■ **Sean Murphy** writes: "I moved to Portland, Maine. My new company focuses on alternative energy (hydro, wind, tidal)." ■ **Jen (O'Hara) Palmiotto**, D.F.E.S. '99, and **Peter Palmiotto** '92, D.F. '98, had a wonderful visit from **Mirei Endara de Heras** in May. ■ **Melissa Spear** was appointed Connecticut state director by the Trust for Public Land (TPL), a national nonprofit conservation organization, in June. Melissa replaces **Tim Northrop** '03, who left the organization after 10 years to join the F&ES Development office. Melissa is in the New Haven office, where she will lead new conservation projects, adding to those she has already coordinated – for example, the soon-to-be completed Ethel Walker Woods project in Simsbury, Conn., which will protect several hundred acres of forest and meadows that are critical to the town's water quality. As state director, she will direct local land conservation projects and help communities create funding for land conservation. She will also oversee several regional programs in Connecticut, including its Parks for People program in Hartford; its Connecticut River program, which is refining and implementing a plan for conservation in the river's watershed; and its Litchfield Hills Greenprint program, where TPL and partnering organizations are working to develop a long-term vision for conservation in Litchfield County. She lives in Bethany, Conn., with her husband and family, where she was a former selectwoman, and now serves on the planning and zoning commission. ■ **Eileen Cates Stone** writes: "My son, Kieran, is 4 years old. My husband and I are having fun teaching him how to ski. Last year, two partners

and I formed Sage Energy Group, a renewable energy development company." In early July, Eileen and family welcomed a new baby brother for Kieran, Ethan Frederick. ecates@nycap.rr.com ■ **Diana Wheeler** writes: "At the end of June, Don, Kate and I flew from Austin to Washington state. We stayed at national parks on the Olympic Peninsula and then took the ferry over to Victoria, B.C., to see **Dave Moffat** and Carol Hall, who were in the process of relocating there. It's a gorgeous island, and we got to visit Butchart Gardens at the height of the rose season and go out Orca watching on a small boat. We especially enjoyed wearing the required big orange jumpsuits that made us look like astronauts. We're expecting a little brother for Kate in early December." ■ **Jane Whitehill** writes: "I'm occupied with medical writing and political troublemaking, and having a good time doing both. We had a splendid TGIF-NYC, organized by **Javier Dominguez**."

1995

Class Secretaries

Marie Gunning

mjgunning@aol.com

Ciara O'Connell

cmoconnell@comcast.net

Marie Gunning writes: "What a shock to learn that Rico Tarifa was among those killed in the GOL plane crash over Brazil (Obituaries, Spring 2007, page 56). How sad for us to lose such a kind and happy spirit. Rico was truly a very special individual and a much loved member of our class. Thank you to **Testuro Mori** for sharing one of the e-mails Rico sent him not long before his tragic death. In it, Rico speaks to all of us: 'I hope you give yourself the opportunity to follow your dreams. Life is now. We all must look for love and follow our dreams.'" ■ **Fred Meyerson**, Ph.D. '00, writes: "**Laura Meyerson** (D.F.E.S. '00) and I published lead articles in the May issue of *Frontiers in Ecology*. I wrote my article, 'Migration and the Environment in the Context of Globalization,' with two Mexican co-authors – Jorge Durand and Leticia Moreno. Laura,

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with co-author Hal Mooney of Stanford wrote the article, 'Invasive Alien Species in an Era of Globalization.'

1996

Class Secretaries

Kathryn Pipkin

kate@goodisp.com

Julie Rothrock

jarothrock@verizon.net

Saleem Ali writes: "My new edited volume, *Peace Parks: Conservation and Conflict Resolution* was published by MIT Press, (see Bookshelf, page 18). In the preface, I mention how my time at Yale inspired me to work on some of these issues. A description of the book and endorsements (including one from E.O. Wilson) can be found at the publisher's website." <http://mitpress.mit.edu/catalog/item/default.asp?tttype=2&tid=11250>

■ **David Casagrande** has been a professor of environmental anthropology at Western Illinois University since 2005. He and his longtime soul mate, Donna, have purchased 55 acres along the Spoon River, which they plan to restore to native habitat.

■ **Michael Dorsey** was a featured speaker at the Environmental Leadership Program conference in July on climate leadership and solutions in Newark at the New Jersey Institute of Technology. The conference, "Emerging Leaders, Emerging Solutions: Taking Action on Climate Change and Global Warming," highlighted model policies and practices for creating change in individual lives and local communities. He writes: "Government, business, academic and grass-roots leaders are encouraging individuals and organizations to take action in increasingly effective ways. Collectively, these efforts represent a blueprint for changing the way our country responds to the threat of global warming." Also on the program were **Don Chen '99** and **Shalini Gupta '02**. ■ **Andi Eicher** writes: "My wife, Dr. Sheba Eicher, and I are helping people with HIV/AIDS through home-based care in the city of Thane, India. We had Govind Rangrass, a Yale college student, do a focus group among elderly caregivers as part of his research into

the role of the elderly in HIV care. Our daughter, Asha, 6, is blossoming and loves learning to read. Our son, Enoch, 4, is showing glimpses of a future architect and engineer in his work with Lego blocks."

andi@aya.yale.edu ■ **Liza Esser** teaches middle school science in Washington, D.C., and recently took a group of students on an adventure to Alaska. She is engaged to be married in June. ■ **Paulette Frank** writes: "I am a senior director of strategy and assurance for Johnson & Johnson's Worldwide Environment, Health and Safety Department. I absolutely love my work and love doing it on behalf of a company where caring for people and the planet are at the heart of the founding principles. I am also expecting my second son in September, and can't wait to be the mother of two little boys who love and respect nature as much as their mommy does." ■ **Derek Halberg** writes: "Christy Johnson (an exchange scholar at F&ES in the fall of 1996) and I had our second child in June, Eleanor 'Nora' Raye Halberg. Our 3-year-old son, Caden, is relishing his new role as a big brother. We reside in Chapel Hill, N.C. Christy is an advisor to USAID's environment team for Latin America and the Caribbean. In March, I was promoted to executive director of the Tar River Land Conservancy, where I've worked since the summer of 2004." dhalberg@tarriver.org ■ **Jared Hardner** writes: "I'm living in Amherst, N.H., with my wife and 2-year-old twin daughters. I'm running a consulting practice, Hardner & Gullison Associates LLC. Work includes projects to evaluate the performance of conservation programs for donors in the field of conservation and design of biodiversity management strategies for corporate clients."

■ **Sarah Hick** writes: "I had a commitment ceremony with my partner, Suzie Darnell, in October 2006. **Lisa Clark** came out from Oregon to be part of the ceremony. I am writing my doctoral thesis to finish my Ph.D. in curriculum and instruction at the University of Minnesota, and will be a professor of education at Hamline University in St. Paul starting this fall. I just ran into **Matt Norton** while hik-

ing in the Boundary Waters Canoe Area near my mom's cabin. He's working at the Minnesota Center for Environmental Advocacy, the same place where I interned after graduating from F&ES." ■ **Ali Jalili** writes: "I'm in the Foreign Service. I follow the oil and gas sector in the economic section at the U.S. Embassy in Moscow. My wife, Courtney, is an executive officer with USAID. Our two boys, Brady, 6, and Aidan, 4, are happy living in our townhouse complex. For climate change folks, last winter was the warmest in Moscow in something like 120 years. We were happy about that."

jalilichubb@yahoo.com ■ **David Newman** writes: "I'm the director of sustainability for a life sciences company called Millipore. This is a new position for the company. My organization also includes environment, health and safety and properties. I am looking at how to reduce our greenhouse gas emissions, and at product life cycle management and alternative energy options for our manufacturing plants. Our son, Ben, is 2, and we live in Carlisle, Mass." david_newman@millipore.com

■ **Matt Norton** writes: "I'm in Twin Cities, Minn., working on forest management improvements, encouraging public lands to be managed to restore the range of natural variability to Minnesota's forested landscape. I'm also working for rational management changes in how state and federal public land managers in Minnesota control off-highway vehicles. I'm working to guide clean, renewable biomass energy research and demonstration dollars to native perennial (prairie) restoration and cellulosic energy production, rather than forest-based energy production. My partner, Kelly, and I adopted a 10-year-old girl almost two years ago. I've been working on biomass issues with **Shalini Gupta '02**." ■ **Jigme Paldne** writes: "I am running to become a national councilor from my district for a seat in the upper house of the government of Bhutan, which will become a democracy in 2008."

■ **Kath Schomaker** is running for another term on the legislative council in Hamden, Conn. She was encouraged by progress during her first

term on energy conservation, open space acquisition and approval for the final leg of the Farmington Canal Greenway through Hamden. Once the greenway is completed, hopefully by early summer 2008, she looks forward to rerouting her bike commute from home to F&ES without having to travel on Whitney Avenue. Her daughter, Claire, is happily ensconced in Philadelphia. ■ **Joanne Sciulli** writes: "I live in New Haven, and run a nonprofit that I started, Solar Youth. Check out our website to learn about our new Neighborhood Model, launching this fall." www.solaryouth.org ■ **Robin Sears** writes: "After 10 years at Columbia University (for a Ph.D., postdoc and research), I have moved back to my homeland to be the dean of The School for Field Studies in Salem, Mass. I was delighted to see classmates **Karen Beard, Ph.D. '01**, **Jenn Pett-Ridge** and **Marcia Tobin** at the Ecological Society of America gathering this year."

1997

Class Secretary

Paul Calzada
paul.calz@gmail.com

Nancy Alderman was featured in the environment and health section of *The New York Times* in May. Founder of Environment and Human Health, a nonprofit organization dedicated to protecting human health from environmental harms through research, education and promotion of sound public policy, Nancy has tackled issues such as pesticide use at schools, children's exposure to diesel exhaust on school buses and environmental influences on cancer. ■ **Shauna Alexander** started a business and gave birth to a baby girl, Carlyle, on March 24. ■ **Jose Argueta** writes: "I did a doctoral program in political science at the University of Pittsburgh. I now work at Pitt teaching and doing research. My wife, Liza, teaches part time at Pitt, but still has one more year to go to complete her Ph.D. in education. Our boy, Isaac, is 6, and our daughter, Sara, is 4." ■ **Paul Calzada** writes that he is starting a new job with the Conservation Law Foundation in Boston and will

commute from New Hampshire, where he enjoys making his home. The easiest way to find him is to go to a contra dance in southern New Hampshire. ■ **Alexander Evans, Ph.D. '06**, writes: "I moved to Santa Fe and am a research director for the Forest Guild. I'm enjoying the Southwest and I find myself working with F&ES colleagues all the time. I work down the hall from **Mike Debonis '02** and am collaborating with **Alex Finkral '97, Ph.D. '05**, on research on Ponderosa pine."

■ **Kelly Keefe** writes: "I am living in Gainesville, Fla., having fun finishing my Ph.D., and I am working in the land conservation program in our county Environmental Protection Department." kellykeefe1@yahoo.com.

■ **Jon Kohl** writes: "I live in Costa Rica. I'm specializing in environmental interpretation, protected-areas management, sustainable tourism and public use. I am affiliated with the World Heritage Centre. We are developing a long-term assistance program for World Heritage sites to carry out park planning. I have a Costa Rican wife who teaches at the University of Costa Rica, a 14-month-old son and two black cats." www.jonkohl.com

■ **Kristen (Needham) Jordan** writes: "I have been keeping busy on Vancouver Island with daughter Evelyn, 7, and son Thomas, 4, and with the launch of our farm business, Sea Cider Farm & Ciderhouse. We are growing certified organic apples and fermenting the juice into hard cider." ■ **Roger Landivar** writes: "I'm with the World Wildlife Fund in Bolivia, 10 years since I left F&ES. It has been a fun ride doing my hardest to apply some of the ideas picked up at F&ES on conservation biology to the dynamic and confusing reality of Bolivian politics."

■ **Christina Page** writes: "In June, I left Rocky Mountain Institute's energy and resources team to tackle a new opportunity in Silicon Valley. I am now director of climate and energy at Yahoo! in Sunnyvale." ■ **Peter Pinchot** writes: "I am working on the Ecomadera community forestry and wood products enterprise in the coastal plain of Ecuador. Things are going great in the project, and my family is adapting well to being in a

developing country. Spanish is coming, slowly but surely. In January, we hired **Catherine Schloegel '06**, who is doing a wonderful job helping to train community foresters, working on agroforestry and initiating environmental monitoring." ■ **Josh Reid** writes: "I live in Salt Lake City, where I practice environmental law as a partner at Parsons Behle & Latimer. My wife and I have two boys, Liam, 6, and Harry, 3. I stay very busy serving on the Utah State Board of Regents, which oversees Utah's 10 campuses." jreid@parsonsbhle.com ■ **Alden Whittaker** writes: "I live in Libreville, the capital city of Gabon, a beautiful country in Central Africa of only 1 million people. There is also plenty of wildlife, although sadly it is diminishing. I spent my first year here living at a research station in Lope National Park doing an elephant identification study. I have since moved into the finance realm and am living a relatively normal life with an office job, a comfortable apartment, a rambunctious cat and numerous fine restaurants in which to dine." alden.whittaker@juno.com

1998 *10th Reunion Year*

Class Secretaries

Nadine Block
nadine.block@verizon.net
Claire Corcoran
Corcoran_Claire@verizon.net

Nadine Block gave birth to twin boys, Alex and Eli, in May. The babies were a little early, both weighing around 5 pounds. ■ **Jelena Cali** writes: "I am a second-year doctoral student at the University of North Carolina School of Public Health in its Department of Nutrition, and a predoctoral population and environment trainee at the Carolina Population Center."

■ **Vanessa Johnson** writes: "I'm living in Boston, working as a land protection specialist with the Massachusetts Department of Conservation and Recreation." ■ **Brad Kahn** writes: "Erin and I spent some time getting to know Buenos Aires. We then traveled to Ushuaia, the southernmost city in the world. From Tierra del Fuego, we worked our way up the spine of the Andes by bus. For more on our adventures and a link to the latest

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photos, visit our blog." www.bradanderintravel.blogspot.com ■ **Elliot Mainzer**, manager of transmission policy and strategy at Bonneville Power Administration, has received an annual achievement award from the Utility Wind Integration Group in recognition of his leadership in developing the Northwest Wind Integration Action Plan. The organization, based in the Pacific Northwest, is dedicated to accelerating the integration of wind power into electric utility power systems.

1999

Class Secretaries

Jocelyn Forbush
jforbush@ttor.org
Jennifer Garrison
jennifermgarrisonross@yahoo.com
Christiana Jones
christiana@jonesfamilyfarms.com

Jennifer Baxter was elected as a principal of Industrial Economics in Cambridge, Mass., in January.

■ **Don Chen** with Smart Growth America was a featured speaker at the Environmental Leadership Program conference on climate leadership and solutions in Newark at the New Jersey Institute of Technology in July. The conference, "Emerging Leaders, Emerging Solutions: Taking Action on Climate Change and Global Warming," highlighted model policies and practices for creating change in individual lives and local communities. Also on the program were **Michael Dorsey '96** and **Shalini Gupta '02**.

■ **Jennifer Heintz** writes: "Lillian Grace Heintz, born March 2, was christened on Sunday, July 29, at Holy Trinity Catholic Church in Hartford, Conn." ■ **Gang Zong** writes: "In May, I began working at the Chinese embassy in Helsinki, Finland, as the First Secretary in charge of education issues."

2000

Class Secretaries

Erica Shaub
easffe@hotmail.com
Zikun Yu
zikun2001@yahoo.com

Alisson Araya, Ph.D. '06, writes: "I have been working for Climate Change Capital, a boutique investment

bank headquartered in London that finances renewable energy projects and runs a carbon fund. I focus on projects in Spain and Latin America, and I am spending most of my time in Madrid." ■ **Bryan Garcia** was one of seven individuals and organizations recognized by Connecticut Governor Jodi Rell for innovative contributions to address global climate change. He helped develop a program while working at the Connecticut Clean Energy Fund to educate state agencies and organizations about climate-change issues, and he contributed to the development of Connecticut's Climate Change Action Plan. He also developed programs and established aggressive targets that encouraged the development and use of renewable electricity in Connecticut, including the Connecticut Clean Energy Communities Program. This program continues to result in additional solar photovoltaic installations throughout the state. Bryan is now program director with the Center for Business and the Environment at Yale.

2001

Class Secretaries

Leigh Cash
leigh@cultureearth.com
Adam Chambers
achambers@aya.yale.edu
Jennifer Grimm
Jenniferg Grimm@aya.yale.edu

Dave Ellum, Ph.D. '07, writes: "Mona, the kids and I are situated in our new home in Asheville, N.C., where I am an assistant professor of sustainable forestry at Warren Wilson College." ■ **Rusaslina Idrus** writes: "During the spring, I returned from over a year of fieldwork in Malaysia, where I was studying an indigenous land claims court case. I returned to Cambridge, Mass., where I am in the Ph.D. program in the Anthropology Department at Harvard University." ■ **Jesse Johnson** was mentioned in a feature on "20 Ways to Live Green" in the February issue of *House & Garden*. ■ **Pradeep Kurukulasuriya, Ph.D. '06**, writes: "I am a technical advisor on the climate change adaptation unit within the environment and energy group of the UNDP in New York. I provide guidance in sup-

port of the development of UNDP's climate change adaptation portfolio. Many of the projects are funded through the Global Environment Facility." ■ **Quint Newcomer, Ph.D. '07**, writes: "I'm director of the University of Georgia's campus in Costa Rica and split my time between Athens, Ga. (enjoying the great music scene and living on a 300-acre protected hardwood forest on the Broad River), and San Luis de Monteverde. In September 2006, I married Lori Bork, who worked with Cesar Pelli and Associates in New Haven, and we're playing on a competitive traveling ultimate Frisbee team together. *Emerging Markets for Ecosystem Services: A Case Study of the Panama Canal Watershed*, co-edited by Shimi Anisfeld, Mike Fotos, Brad Gentry and me, will be out in November." ■ **Chris Nyce** and his wife, Rukmini, announce the arrival of Priya Ananda Nyce – their second girl – on April 12 in London.

■ **Michael Sterner** writes: "I am moving to Seattle to complete law school at the University of Washington. The acting dean there, Gregory Hicks, is a Yale alumnus who specializes in natural resources law."

2002

Class Secretaries

Catherine Bottrill
cbottrill@hotmail.com
Roberto J. Frau
rfrau@aya.yale.edu

Beth Alves writes: "I am working right up the road from F&ES at the Connecticut Agricultural Experiment Station for almost four years now; mother to two lovely daughters, Victoria, 4, and Stephanie, 2, and enjoying polishing up our antique colonial in Oxford." ■ **Barbara Bamberger** is living in San Diego, and traveling a lot. She has wrapped up her last bit of work for AECOM-EDAW on the North Slope of Alaska. She has also been working half time as an environmental policy advisor to the mayor of the City of Chula Vista, the second-largest city in San Diego County. ■ **Elizabeth Ban** is engaged to an environmental lawyer named Bill. ■ **Ryan Bennett** is living in San Francisco, where for the past

18 months he has been starting a boutique clean-energy private equity company called Greenrock Capital. ■ **Catherine Bottrill** is starting a Ph.D. at the University of Surrey, where her research will explore sustainable energy lifestyles and, in particular, how our personal and professional choices affect our energy use and carbon emissions. ■ **Sarah Canham** is working on updating the vegetation map of the National Elk Refuge in Jackson, Wyo. ■ **Liam Carr** is working in Angel, St. Croix. ■ **James Coleman** is an environment and natural resources officer with the United Nations Mission in Liberia, having served in previous capacities as senior environmental officer for the environmental protection agency in Liberia and chief technical officer for the Society for the Conservation of Nature of Liberia. ■ **Kim Danley** and her husband, Jeff, have settled in Midway, Utah, in the Wasatch Mountains just 10 minutes from Park City. They welcomed a little boy, Ian, this spring, and Gavin is now 3. Kim plans on resuming land conservation consulting in the fall. ■ **Matt Eddy** and Sarah Pelmas welcomed Owen Swift Collins Eddy into the world on June 6. Matt teaches field biology and works as the academic dean of the Bay School in San Francisco. ■ **Neal Etre** and **Kendra Kinscherf** bought a condo in Boston, and Kendra will be clerking for a judge at the land court, where they hear cases on land use, zoning and some environmental and conservation issues. ■ **Michael Funaro** and **Zhanna Beisembaeva-Funaro** moved back to New Haven this summer, where Danna started fifth grade and continues her passion for tennis. Kair is 1. Michael is working to protect New Yorkers from environmental disasters for the New York City Department of Health. ■ **Shalini Gupta** with Izaak Walton League was a featured speaker at the Environmental Leadership Program conference on climate leadership and solutions in Newark at the New Jersey Institute of Technology in July. The conference, "Emerging Leaders, Emerging Solutions: Taking Action on Climate Change and Global Warming," highlighted model policies and practices for creating

change in individual lives and local communities. Also on the program were **Michael Dorsey '96** and **Don Chen '99**. ■ **David Howlett** is working on his Ph.D. at the University of Florida, where he was awarded a Fulbright Scholarship for his fieldwork in Spain. He will be in Lugo, Spain, for nine months. He has been investigating carbon and phosphorus cycling in silvopasture systems in two regions of Spain. ■ **Brad Hunter** is doing an M.B.A. at the University of North Carolina, Carrboro. ■ **Shafqat Hussain** is in his sixth year working on a joint Ph.D. at F&ES and with anthropology, and is finishing his dissertation. Annie, his wife, is also writing a dissertation for her Ph.D. in anthropology. They have three children – Khadija, 8, Musa, 5, and Askari, 1. ■ **Clayt Lauter** is working at Florida Power and Light. ■ **Citlali Cortés Montaña** is starting a Ph.D. in January at Northern Arizona University's School of Forestry after having spent four amazing years with WWF. Citlali will be doing fieldwork and consulting with the National Commission of Protected Areas in the Copper Canyon area. Her Ph.D. will involve researching fire ecology and forest structure in Northern Mexican forests. ■ **Chris Nelson** works on implementation of the Regional Greenhouse Gas Initiative, both in Connecticut and on a regional level. Chris was also involved with the establishment of the Climate Registry, a collaboration between states, provinces and tribes aimed at developing and managing a common greenhouse gas emissions reporting system. On the side, Chris helped to found Sustainable West Hartford. He and Nina Arnold eloped and got married in January on a beach on Phillip Island, which is located south of Melbourne, Australia. At a belated wedding celebration in August, Chris and Nina announced that they are expecting a baby in March. ■ **Elizabeth Rowls Poppe** and husband Darrell reside in Wimbledon, London, where they have settled after two great years in Baku, Azerbaijan. Elizabeth taught biology and environmental science at the Baku International School, and is now concentrating on motherhood.

Ethan Andrew Poppe was born in London this spring. ■ **Nalini Rao** is finishing her Ph.D. in natural resources, studying water quality in the New York City watersheds. This fall, she will attend the weddings of **Gwen Busby** and **Liz Levy**. ■ **Yemi Tessema** moved to California a year ago, and she and Heinrich welcomed a baby boy, Silom, this summer. ■ **David Vexler, Ph.D. '06**, writes: "I am the environmental and social financing coordinator for Hunt Oil in the Peru Liquid Natural Gas project. This project involves the construction and operation of a world-class LNG liquefaction facility, a marine export terminal and a transportation pipeline to feed gas to the LNG plant. The pipeline will stretch from the Peruvian Andes to the coastal area." www.perulng.com ■ **Corey Wisneski** is a researcher at Battelle in Duxbury, Mass., concentrating on coastal water quality issues. She is also a member of the town conservation commission, and serves on the Duxbury Bay Management Commission, which manages Duxbury Bay for multiple uses. Corey and her husband recently bought a house in Duxbury.

2003 5th Reunion Year

Class Secretaries

Brian Goldberg

Brian.Goldberg@aya.yale.edu

Scott Threadgill

Michael.threadgill@aya.yale.edu

Elizabeth Allison is conducting research in New York's Hudson River Valley and Bhutan. ■ **Richard Chavez** writes: "**Ben Hodgdon** and **Margarita Fernandez '04** visited Nicaragua. They visited my city of Leon, and we all went to the beach to have seafood for lunch. After my work with Metafore (2005 to 2006) in Portland, Ore., I went to Nicaragua in May 2006 and started consulting for the Rainforest Alliance. I had a great time in Portland, and had the chance to meet with F&ES classmates **Nathan Carroll**, **Nancy Cuthran**, **Terry Miller**, **Karen Murray** and **Marni Rapoport**. I visited F&ES last May and had the chance to speak with my former professors: **Chad Oliver '70, Ph.D. '75**, **Florence Montagnini**, **Amity Doolittle '94**,

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Ph.D. '99, and Tim Gregoire and staff, including Peter Otis and Emly McDiarmid '78. I am enjoying my time with my three kids, Richard, Bryan and Isabel."
richard.chavez@aya.yale.edu

■ **Brian Goldberg** writes: "I'm planning and designing a sustainable community in upstate New York. For the forested site, I'm running a two-month salamander migration study to determine key habitat conservation corridors within the development."

■ **Kate Hammond** writes: "My husband, Geoff, Che and I are in the midst of a two-year stint in D.C., where I am a National Park Service fellow working for the House of Representatives' Natural Resources Committee." khammond11@msn.com

■ **Karen (Murray) Hardigg** writes: "I moved back to Alaska in January with my husband, Nick, who accepted a job with the Alaska Conservation Foundation. In June, I started a position with the Wilderness Society as the Alaska forest program manager, which means I primarily work on Tongass and Chugach National Forest policy. We both savor our three-mile bike commutes on a great trail system. I'm slowly learning how to fish."

■ **Ben Hodgdon** published an article this summer in the Bangkok-based *Watershed Magazine*, presenting notes on the state of forest management in Laos and summarizing the experiences of the sustainable forestry project that he led in Xekong Province while working for the World Wildlife Federation. ■ **Krithi Karanth** and her husband, Denis, had a baby girl, Keya Karanth-Ostrovsky, on March 31. Krithi's first paper from her Ph.D. dissertation was printed in the journal *Biological Conservation*. She continues to write her dissertation at Duke.

■ **Pete Land** recently became co-director of Wild Gift, a grant program for entrepreneurial environmentalists. He'll spend a good part of the autumn based in Idaho and would love to catch up with some F&ES Westies. Meanwhile, he's keeping his day job making videos and websites with **Bill Finnegan** at Tamarack in Vermont.

■ **Christine Lee** was elected a senior associate at Industrial Economics in Cambridge, Mass., in January.

■ **James Lucas** writes: "I am working

for PricewaterhouseCoopers' sustainable business solutions practice in Vancouver, doing forestry and environmental audits for our clients in North America. My wife has recently returned to work, and Fletcher just had his first birthday on May 27. Deb, Fletcher and I drove to southern Maine and spent some time in Boston and Brooklyn." ■ **Brendan McEaney** writes: "I moved to Santa Monica, Calif., where I run the green building program for the city."

■ **Florence Miller** writes: "I'm getting hitched to **Bill Finnegan** in September." ■ **Derek Murrow** writes that he and **Ali Macalady '06** headed to Tucson this summer for her Ph.D. work. They spent the summer in Dorset, Vt., and then moved to Arizona in August. He is going to continue working for Environment Northeast and will be going to Boston or New Haven about once a month. derek@kmhome.org ■ **Kabir Peay**,

in anticipation of his upcoming wedding, pulled together a group of his friends, including **Nathaniel Carroll**, **Avery Cohn '04** and **Oliver Grantham**, for a weeklong pre-wedding surf adventure on Panama's Pacific Coast. The week was full of big waves, tropical waters, fresh fish and Whiffle Ball matches. ■ **Soni Pradhanang** writes: "I finished my Ph.D. candidacy, and am busy going to my field sites in Skaneateles Lake Watershed, N.Y." sonimulmi@hotmail.com ■ **Curtis Robinhold** writes: "I'm commercial director for the Europe/Asia wind power business in London for British Petroleum Alternative Energy. Angela and I are enjoying a lot of European travel and seeing many of our F&ES and SOM friends." ■ **Abdallah Shah** writes: "I am in Dar, and working for the Nile Transboundary Environmental Action Project." ■ **Jay Shepherd** writes: "I'm acquisitions and development manager with Weston Solutions in Washington, D.C."

■ **Ninian Stein** writes: "I just graduated with my Ph.D. in anthropology and archaeology from Brown University in May, and am now associate director of environmental studies at the University of Massachusetts Boston. For my first semester, I will teach undergraduate courses in historic environments and in

environmental policy." ■ **Nicole Vickey** has moved to Orlando, Fla.

2004

Class Secretaries

Keith Bisson

keith_bisson@yahoo.com

Daniela Vizcaino

daniela.vizcaino@aya.yale.edu

Jennifer Vogel

jen.vogel@aya.yale.edu

Laura Wooley

le.wooley@gmail.com

Robin Barr writes: "I am a community forestry advisor for the Tropical Forest Trust's Southeast Asia programs. We help communities managing forests and agroforests to become FSC-certified. My job keeps me traveling between my base in Seattle and countries throughout Southeast Asia, though most of my time is spent on forest programs in Indonesia."

■ **Cecilia Blasco** writes: "I'm planning a trip to Venezuela to visit **Daniela Vizcaino** and to go diving in Los Roques." ■ **Cherelle Blazer** writes:

"I have a boy who is nearly 2 years old, and I am pregnant again, with a baby girl this time." Cherelle is working as head of environmental projects for EverGreen Land, an environmentally sensitive real estate developing company with a mission to connect people with nature through mitigation, land management, cost-effective problem-solving and public service. Her portfolio includes projects in Texas and Colorado. ■ **Laura Bozzi** writes: "This is my first year as a Ph.D. student at Duke's Nicholas School. I plan to focus on climate change policy." ■ **Marco Buttazzoni** writes: "Valerie (Craig) and I moved to Rome in April." ■ **Jon Cook** is working for the World Wildlife Fund's Greater Mekong Program, based in Vientiane, Laos, through next April.

■ **Kyla Dahlin** writes: "I'm living in San Francisco and starting a Ph.D. in biology at Stanford, where I'll study remote sensing, landscape ecology and climate change." ■ **Sarah Davidson** writes: "I'm at the World Wildlife Fund in Washington, D.C., with the macroeconomics program office. I recently met with **Melissa Aikens**, **Robin Barr**, **Jen Vogel Bass**, **Kim Mortimer** and **Corrina Stewart**

for a mini-reunion in Tennessee's Smoky Mountains." ■ **Yuko Dvorak-Miyata** writes: "I got married after graduation and am an environment, health & safety specialist for the Asia Pacific region with GE Commercial Finance, Real Estate. I work with **Marty Walters**." ■ **Tasha Eichenseher** writes: "I'm based in Hong Kong doing editorial research for the National Geographic Channel." ■ **Margarita Fernandez** writes: "I have moved to Oaxaca, Mexico, after two years in Laos. I am a consultant for research institutes and local nongovernmental organizations on sustainable agriculture and community development issues. I am an inspector for certified organic farms throughout Mexico, mostly coffee grower groups." ■ **Ona Ferguson** served as facilitator, according to *Exchange: The National Journal of Land Conservation*, at a recent board of directors retreat for the National Community Land Trust Network. The new National Community Land Trust Network launched this year to provide local land trust organizations with access to training, technical resources and contacts to help strengthen and increase community land trust efforts. ■ **Beth (Egan) Larry** writes: "Jeff and I tied the knot in July, and I have gone through the process of changing my name." elarry@fs.fed.us ■ **Katherine Lin** writes: "I graduated from Lewis & Clark Law School in Portland, Ore. After my three-year hiatus from the East Coast, I am a legal fellow with the Physicians Committee for Responsible Medicine in Washington, D.C." ■ **Robyn Smith Luhning** and husband welcomed a baby boy last year, and Robyn works for a corporate sustainability consulting business in San Francisco. ■ **Rosemarie Mannik** writes: "I've been living in Melbourne, Australia, for the past year and loving it. I'm working in the environmental division of Sinclair Knight Merz, an engineering consulting firm." ■ **Megan Mattox** writes: "I moved to New Zealand in March after a year and a half in Sydney, Australia. I work for Hancock Natural Resource Group in timberland investment management in Australasia. I live a block from the beach and enjoy everything outdoors." megmattox@hotmail.com

■ **Kim Mortimer** writes: "I've been hopping around the state as a wildlife biologist for Florida Fish and Wildlife Conservation Commission, and have settled in Sarasota. I'm working on private lands conservation, which has proved to be an important and difficult arena in this development-dominated state. I still have my two kitties – now all grown – and I'm doing as much art as possible." ■ **Naoko Nakagawa** went to northern Thailand in January for thesis fieldwork. On a visit back to Japan this summer, she worked with Earth-Appraisal, an environmental consultancy in Tokyo, launched by **Hironori Kamemoto, Ph.D. '97**. She enjoyed meeting **Natsuko Nakano Merrick**, who was on vacation from her Ph.D. work at Ohio State University and in Japan with her 7-month-old daughter and her Ohioan husband, Ken. Before going on her fieldwork, she had a two-month-long project in Malawi, and enjoyed vacationing in Ethiopia. ■ **Ken Odaka** writes: "As account executive and later as marketing planner of an advertising agency, I had been working for Toyota's project to release the new Camry produced in their new factory in China. Camry has been selling well since its launch and received China's Car of the Year in 2006. Since April, I have been involved in a project that is related to Toyota's hybrid vehicle in Japan." ■ **Beth Owen** and **Keith Bisson** were married on May 12 at the Gilsland Farm Audubon Center in Falmouth, Maine. You can find them at the confluence of the Stillwater and Penobscot rivers in Orono, Maine. ■ **Neha Sami** writes: "I've started my third year as a doctoral student at the University of Michigan. I'm in the process of taking my qualifying exams and will hopefully get to candidacy in the fall. I will spend most of 2008 in India doing fieldwork." ■ **Dani Simons** writes: "I am living in Brooklyn, very near **Sarah Bendit '05**, whom I see often, and **Laura Wooley** and **Jen Vogel**." Dani has been working for the New York City Department of Transportation. danisimons@hotmail.com ■ **Laura Tam** writes that she has a new job working on sustainability issues with

a San Francisco urban planning organization. ■ **Susan Tambo** writes: "We are living in Jakarta, Indonesia, and I have two kids. I am busy with the new baby, a little sister for Muta. Her name is Leia Marjorie Thandiwe Neilson." ■ **Xue Wang** writes: "I am the communication officer and critical ecosystem partnership fund China manager for Conservation International's China program that is based in Beijing." xwang@conservation.org.cn ■ **Abby Weinberg**, research manager with the Open Space Institute, was featured prominently in a *Forestry Source* article in August, "Forest Service Releases Open Space Conservation Plan," detailing the agency's advisory capabilities on open space conservation. Weinberg and OSI recently closed a deal with The Nature Conservancy on a 161,000-acre parcel that includes a two-year working forest agreement. ■ **Jeremy West** writes: "I am a resource conservation and development coordinator for the U.S. Department of Agriculture Natural Resources Conservation Service, working to build local capacity to address emerging conservation and quality-of-life concerns." www.somdrd.org ■ **Kevin Woods** writes: "I'm a regional timber trade analyst at an environmental investigation agency based in Southeast Asia. I'm working on Burma environment issues, particularly with transboundary environmental networking." ■ **Laura Wooley** writes: "I've been working at New York City Parks & Recreation for over two years. The Central Forestry & Horticulture Division has begun implementing Mayor Bloomberg's PlaNYC sustainability initiative, which involves a threefold increase in our street tree planting budget. With a goal of 1 million trees in New York City by 2030, we have a lot of work to do." le.wooley@gmail.com ■ **Heather Wright** is living in San Francisco and enjoying her new position with the Gordon and Betty Moore Foundation in its environment program. Her work is focused on grants within the Conservation International Commitment, in addition to managing grants administered to other

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environment.yale.edu



nongovernmental organizations engaged in international conservation projects. ■ **Kate Zyla** writes: “I started working on an environmental initiative with National Geographic.” kzyla@nationalgeographic.com, kazyla@gmail.com

2005

Class Secretaries

David Cherney
David.cherney@colorado.edu
Dora Cudjoe
dora.cudjoe@aya.yale.edu
Virginia Lacy
virginia.lacy@aya.yale.edu
Benjamin Urquhart
bnurquhart@gmail.com

Olga Babakina writes: “I am working in Kazakhstan for the largest EPC contractor company in Central Asia. Some of our projects include construction of the Kazakhstan-China pipeline, a Europe-Kazakhstan highway. In particular, I am part of a new team working on the upgrade of a petrochemical complex in the Caspian base. We want to make a few technical changes to produce low-sulfur, clean fuel, which will match Euro IV fuel standards.” ■ **Lauren Baker** writes:

“I work at the Center for International Environmental Law in Washington, D.C., as a program associate for the Law and Communities and Human Rights and Environment Programs. I am living with **Sarah Matheson** and enjoying D.C. life.” ■ **Lisa Botero** writes: “I just finished a master of public administration degree at the University of Miami, and am the environmental resources manager for the City of Miami Beach. I am responsible for all environmental obligations of the city, including regulatory compliance, policy development and remediation of its lands, properties and waterways. I also am a liaison with the state and county on managing the beach ecosystem.”

■ **Alvaro Redondo Brenes** writes: “I’m in the doctoral program at F&ES. In my fieldwork, I am studying the effect of land use and of political and socioeconomic factors on the conservation of mammal and bird species in the Path of the Tapir Biological Corridor, Southwest Costa Rica.” ■ **Carishma Gokhale** writes: “Aaron Welch and I were married in

August in Colorado’s San Luis Valley, and shortly after Aaron accepted a fellowship with the Colorado Conservation Trust. We are happily settled in the tiny agricultural town of Monte Vista.” As part of his fellowship, Aaron works to conserve private lands in the valley with the Rio Grande Headwaters Land Trust (RiGHT) and Ducks Unlimited.

■ **Andrea Johnson** writes: “I fight ecocrimes with the Environmental Investigation Agency from Washington, D.C., where the struggle is to pass legislation to criminalize the import or sale of illegally harvested timber products.” ■ **Richard Karty, Ph.D. ’05**, traveled to the Bay Area of San Francisco this summer and attended an F&ES picnic that included **Katy Guimond ’01**; **Anne Eschtruth ’00** and her husband, **Alexis Dinno ’00**; **Sylvia (Stone) Busby ’00** and her daughter **Aiko**; **Georgia (Silvera) Seamans ’01**; and **Upik Djalins ’00**. ■ **Josh Levine** is living in southern New Hampshire and working for Tamarack Energy, developing biomass and wind energy facilities in the Northeast. Josh and Sue’s second child, Ethan, was born in early May. ■ **Michelle Lichtenfels** writes: “I’ve been working at Portland Energy Conservation, where I administer energy efficiency programs for large California utilities, alongside **Allie Robbins (Yale SOM ’05)**. Matt has been racing his road bike, and we climbed Mt. Adams in early July. I’ve seen **Ann Grodnik**, **Amy Shatzkin**, **Jim Cronan ’06**, **Brett Golden** and **Dan Stonington** pretty regularly.” ■ **Virginia Esperanza Lorne** writes: “Matt and I celebrated the birth of our identical twin daughters, Carmen and Camille, on March 27. Their brother, Travis (born in December 2005), enjoys having a couple of siblings to prod or kiss, depending on his mood. On a sad note, our dog, Mot, died of bone cancer in April.” ■ **Sarah Matheson** writes: “I am working at the World Bank in Washington, D.C., and attempting to make it a ‘greener’ organization every day. I competed in my second triathlon in Florida.” ■ **Joe MacDougald** writes: “I head the Madison, Conn., Planning & Zoning Commission. It took years, but this year we finally put in place a

floating zone statute that requires environmental impact studies before any rezoning. By day, I run a biomaterials company. In addition, I serve as an adjunct law professor teaching land use and environmental law at the University of Connecticut Law School. I’m developing one of the nation’s first classes on climate law.”

■ **Vincent Medjibe** writes: “I received a research grant from the International Foundation of Science to conduct research on the natural regeneration of tropical timber species. My contract finished on June 30, so I left the project to our research assistants to continue and to send me the data when they finish. After I returned to my country, Central African Republic, I was accepted at the University of Florida, where I am enrolled in the School of Natural Resources and Environment to pursue a doctoral program in interdisciplinary ecology.” ■ **Azalea Mitch** writes: “I’m an environmental engineer for a consulting firm in Connecticut. I was in Cameroon working on a water distribution system with the Engineers Without Borders Yale Student Chapter this August.” ■ **Angela Quiros** writes: “I’m working part time with an NGO called Isla Biodiversity Conservation that my friends and I started, doing terrestrial biodiversity research and conservation in the Babuyan Islands, Philippines. I returned from a biodiversity survey in Camiguin Island in February. Another third of my time is spent in whale shark conservation (I did my master’s work on whale shark tourism in Donsol). I was science officer for a whale shark photo identification expedition in southern Leyte (an island in the Philippines) in March for Coral Cay Conservation/Philippine Reef and Rainforest Conservation Foundation. A final third of my time is taking care of environmental management, specifically waste management and environmental education at my family’s 20-room beach resort.” www.puntabulata.com/ ■ **Tendro Ramaharitra** writes: “I was in Madagascar for the summer doing my predissertation research. I returned to the University of California, Berkeley for the fall.” ■ **Amy Shatzkin** writes: “I’m working for International Council for Local

Environmental Initiatives – Local Governments for Sustainability, supporting the efforts of cities and counties in the Pacific Northwest develop energy global warming policy. Seattle and the area continue to amaze, and it helps that **Jim Cronan '06**, **Dan Stonington** and **Ann Grodnik** are all here as partners in crime.” ■ **Tanja Srebotnjak** writes: “I am a postdoc at the Daniel J. Evans School of Public Affairs at the University of Washington in Seattle. I also work with the Yale Center for Environmental Law and Policy.” ■ **Dan Stonington** writes: “I’m working alongside **Alison Van Gorp '04** as a project manager for the Cascade Land Conservancy in Washington State. My focus is on implementing transfer of development rights as a tool for conserving working farm and forest land in the greater Seattle area. I’m also now in my second year as a board member for *High Country News*, a nonprofit newspaper dedicated to environmental and social issues in the American West.” www.hcn.org ■ **Megan Sutton** writes: “I’ve started a new job at The Nature Conservancy as its Mountains District Stewardship program manager in Asheville.” ■ **Elena Traister** writes: “I’m in a Ph.D. program at the University of New Hampshire, and my research focuses on the effects of disturbance on stream ecology and biogeochemistry. I was in the Czech Republic researching over the summer. I returned to the Massachusetts College of Liberal Arts as an assistant professor of environmental studies this fall.” ■ **Carlisle Tuggey** writes: “I’ve been living in Portland, Maine, since graduation. I started working in the environmental practice group at Preti Flaherty law firm in the fall of 2005. I’ve had the opportunity to travel to several U.S. cities for American Bar Association environmental law conferences.” ■ **Benjamin Urquhart** writes: “On July 7, I married Julie Shoemaker in Concord, Mass. We hiked and sea-kayaked in Newfoundland for two weeks. I am a biomass specialist for the Massachusetts Department of Conservation and Recreation.” ■ **Huiyan Zhao** writes: “I am working for Mitkem Corp. in Rhode Island, and I got married!”

2006

Class Secretaries

Susan Ely
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Krista Mostoller
anderson_kb@yahoo.com
Flora Chi
ying.chi@aya.yale.edu
Reilly Renshaw Dibner
reilly.dibner@aya.yale.edu
Jill Savery
jillsavery@yahoo.com

Saima Baig writes: “I am coordinator of business and biodiversity and environmental economics with the World Conservation Union (IUCN) in Pakistan. I have been liaising with organizations in the private sector to get them more involved in conservation in Pakistan. As for environmental economics, I have completed an economic valuation of a stretch of mangroves (about 3,000 hectares). I am also working on an IUCN project on environmental fiscal reforms. In July **Kristen Welsh** and I visited **Mummi Gudbrandsson** in Iceland for two weeks. In September, I went to Nepal to attend the IUCN’s regional conservation forum.” ■ **Flora Chi** writes: “This summer, I went windsurfing and sailing in the South China Sea. The Yale Club Hong Kong also keeps me busy – routinely we gather at happy hour once a month, laced with periodic exciting events, like whiskey tasting and outdoor hiking.” flora.chi@gmail.com. ■ **Debora Fillis** writes: “I am a wetland specialist developing environmentally sensitive community plans and municipal wetland ordinances for the Delaware Wetland Assessment program.” ■ **Ross Geredien** writes: “Julie and I were married on August 4, 2007, in Princeton, N.J. We had a wonderful time with family and spent a few gorgeous days in Vermont before returning home to Annapolis, Md. I’m working as a biologist and Geographic Information System specialist for the Maryland Department of Natural Resources. I continue to work part-time to stop mountaintop removal mining.” ■ **Alicia Gray** writes: “I spent the summer of 2006 traveling in Bolivia, Guatemala and the United States. I’m living in Wareham, Mass.” ■ **Kiko Ichishima** writes: “I started working for Tetra

Tech in Arlington, Va., in February. I visited Seoul, Korea – caught up with two classmates from F&ES.” ■ **Alder Keleman** writes: “After graduation, I spent a year in Mexico City on a Fox International Fellowship, continuing research on the relationship between maize and NAFTA at the Colegio de Mexico. I am based in Mexico City, working at the International Maize and Wheat Improvement Center as a Mickey Leland International Hunger Fellow, and plan to move to D.C. in July.” alder.keleman@gmail.com ■ **Taek Joo Kim** writes: “After three months of interning at the Food and Agriculture Organization of the United Nations in Rome, Italy, I am back to my country (South Korea) working at the Korea Environment Institute. I am working on the payments for forest genetic resources project.” ■ **Jayoung Koo** had a baby in March, and is in a Ph.D. program at University of California, Davis. ■ **Wei-Chien Lai** has been working on a project to draft a management plan for the first national marine park – Dongsha Atoll Marine National Park—for a research institute in Taipei. In September, she went with **Kim Wilkinson** and **Jill Savery** to Bhutan to visit **Chimi Wangmo**. She says that she is getting married soon. ■ **Deanna Lekas** writes: “I’m applying my F&ES industrial ecology education to the area of green nanotechnology at the Wilson Center in Washington, D.C. I’m also enjoying weekends at the beach with my husband, whose last name – Lizas – I will adopt soon.” ■ **Luisa Lema** finished her fellowship at the United Nations Foundation at the end of August and returned to Colombia in mid-September, where she is a consultant with the foundation. ■ **Mary McNealy** writes: “I am moving from Philly to Portland, Ore., and taking a new job with WebMD. I am definitely looking forward to the more outdoor-oriented culture out there, since my hiking boots have gotten too little use in Philadelphia.” ■ **Chris Meaney** writes: “I’m living in D.C. and working for the National Marine Fisheries Service as a Knauss Fellow in the office of Habitat Conservation. My efforts are focused on the policy and management

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class notes



associated with developing ocean renewable energy technologies and the potential impacts on living marine resources. I am also engaged!”

■ **Madeleine Meek** writes: “I joined the Peace Corps and will be in Morocco until June 2009, working on protected-areas management, agroforestry and environmental education. I am ever grateful for the skills that I learned at F&ES and for all the professors and classmates who taught them to me.” ■ **Daniel Piotto** is a doctoral student at F&ES and the Lewis B. Cullman fellow at the New York Botanical Garden.

■ **Anil Pokhrel** writes: “I work on disaster risk reduction and climate-change adaptation at the Institute for Social and Environment Transition in Kathmandu. With field sites and collaborating partners in different regions of Pakistan, India and Nepal, I get to interact with a large number of people and experts.” ■ **Perrine Punwani** writes: “I am the program manager for the Post Conflict Development Initiative (PCDI) of the International Rescue Committee (IRC), one of the largest international humanitarian nonprofit organizations in the world. I have been spending the bulk of my time in the Washington, D.C., office, but have spent two months in the Democratic Republic of the Congo working on the Community Driven Reconstruction Project. I used my F&ES skills to write a simple environmental impact assessment that communities will use as they develop small infrastructure projects through the program. I am also part of IRC’s climate change working group.”

■ **Markelle Smith** writes: “I am a land protection specialist for the Oakland Land Conservancy in Rochester, Mich. My husband, Samue, is attending Cranbrook Academy of Art, and we are expecting a baby in November.” ■ **Deborah Spalding** is co-founder and chief investment officer at Chaplin Global LLC in Guilford, Conn. She is also the newest member of the Switzer Foundation board of trustees. She offers a wealth of experience in asset management and alternative investments, and she also has a great deal of experience serving

on environmentally focused nonprofit boards. www.switzernetwork.org

■ **Rebecca Sanborn Stone** writes: “I am leaving the Orton Family Foundation after a wonderful year. The foundation’s offices are moving to Middlebury, Vt., which is too far for me to commute. I will continue to work on one project with the foundation (the Manchester Youth Commission) and occasionally on small projects. I look forward to doing some freelance writing and consulting in the short-term. I also got married this summer.”

■ **Yue Wang** writes: “I am working on a project for the Nature Conservancy that aims to help the Chinese government build two national parks in China’s southwest in three years. I work in Kunming, where I was born, and stay with my mom.” ■ **Kristin Welsh** writes: “I work for the Environmental Leadership and Training Initiative, a joint project between F&ES and the Smithsonian Tropical Research Institute. I took an amazing two-week trip to Iceland with **Saima Baig** to visit **Mummi Gudbrandsson**.”

■ **Kim Wilkinson** writes: “I’m writing from Taipei, where **Jill Savery** and I visited **Wei-Chien Lai** en route to Bhutan to visit **Chimi Wangmo**. I make my living as a freelance writer, consultant and wilderness guide in Lake Margaret, Wash.”

■ **Christina Zarrella** writes: “After a year in Washington, D.C., my husband and I have relocated to Williamstown, Mass. I work for the Association of Fish & Wildlife Agencies as their multistate conservation grant program coordinator via telecommuting and occasional trips to D.C.” ■ **Xizhou Zhou** writes: “I work for ‘IEc,’ which stands for Industrial Economics, an environmental consulting firm based in Cambridge, Mass.”

2007

Class Secretary

Rosalie Kerr
rosi.kerr@yale.edu

Anamaria Aristizabal writes: “I have accepted a position with McKinsey, the American management consulting firm in Colombia. What occupies my time is Aldeafeliz, an ecovillage

that I have created with my friends on the outskirts of Bogota. It is 3.5 hectares of lush vegetation, streams, small ponds, rivers and mountains that is home to a community of people wishing to live in harmony with nature and with each other. An ecovillage is a creative response to such societal ills as environmental degradation, violence, individualism, consumerism and alienation from nature.” anamaria@aristizabal.net

■ **Terry Baker** writes: “I accepted a forester position with the Forest Service in southwest Oregon on the Siskiyou-Rogue River National Forest, working in silviculture and presale.”

■ **Bridgid Curry** appeared in the weddings and celebrations section of *The New York Times* in June, announcing her marriage to Amos Presler. She is a presidential management fellow and regulatory analyst at the Environmental Protection Agency in Washington, D.C., where she will examine the effectiveness of environmental regulations.

■ **Sue Ely** writes: “I am the legislative and communications manager for Alaska Conservation Alliance and Alaska Conservation Voters in Juneau. I’ll be working under **Kate Troll ’77**.” ■ **Manisha Gangopadhyay** writes: “I got a job with the California Public Utilities Commission and an apartment in Oakland.” ■ **Michael Perlmutter** writes: “I’ve played gigs with Zoyres and have also been playing a few other things, Bulgarian music with Hudi and some Klezmer.” ■ **Vanitha Sivarajan** writes: “I am an American India Foundation Service Corps fellow in Madurai, India, working on water resource management with a local nongovernmental organization. I started in September and will continue until next year July.”

■ **Nalin Srivastava** writes: “I am a program officer in the National Greenhouse Gas Inventory program of the Intergovernmental Panel on Climate Change in Hayama, Japan.” nalinks@gmail.com ■ **Kate Woodruff** writes: “I am living in Branford, Conn., working with the Connecticut River Conservation District, as well as periodically for Shimi Anisfeld in his lab.”

Henry Osgood "Red" Anderson '38 (1914-2007) died at home in Dickson, Tenn., on May 12, shortly after suffering a stroke. A native of Williamsport, Tenn., Red was the son of Dr. Henry Osgood Sr. and Ethel Claire Gardner Anderson. After receiving his bachelor's degree from Vanderbilt University and his M.F. from Yale, he volunteered for military service with the U.S. Navy and graduated from the V-7 program at Annapolis, Md. During World War II, from 1942 to 1946, he served in the Pacific as lieutenant aboard the troop transport ship USS Grafton and the destroyer USS Conway. Before and after his military service, he worked for more than 42 years as a forester and surveyor with the Tennessee Division of Forestry. Throughout his career, he was affiliated with the Society of American Foresters and, in 2000, was elected a fellow of the SAF. He was a member of the Dickson First United Methodist Church and Dickson Rotary Club, and a leader for the first Boy Scout troop in Dickson. An avid outdoorsman and enthusiastic bird-watcher, he demonstrated a lifelong love of nature, geology and plant and animal life. He is survived by his wife of 57 years, Frances Cowan Anderson; four children, Robert, William, James and Martha Anderson Martin; and five grandchildren, Ashley, Stephen, Aquina, David and Cole.

Elmer Bacon '37 (1914-2006) died on May 30, 2006, at the age of 91. Born on June 10, 1914, in East Haven, Conn., Elmer was the son of Edgar Bacon and Lotti Fairchild. He graduated from New Haven High School in 1931, and earned his B.S. at Connecticut State College in 1935 and an M.F. from Yale. After completing a fellowship at the University of California in 1937, he joined the U.S. Forest Service in 1939 in Quincy, Calif. That year, he married Dorothy Chapman, a graduate of the University of California. In 1941, he entered the U.S. Army Air Corps and served until 1946, achieving the rank of major. He returned to the U.S. Forest Service in Susanville, Calif., and was promoted in 1948 to ranger.

In 1956, he became a superintendent for the Allegheny National Forest, moved the following year to a staff position in Allegheny N.F.'s Fire Control Division in Washington, D.C., and authored "Training in Forest Fire Behavior" for *American Forests* magazine. He was chief of information and education for the U.S. Forest Service in the Intermountain Region of Ogden, Utah, and led, with Arthur Greeley '35, a first-of-its-kind national fire training course that enrolled 30 trainees. In 1966, he began serving as deputy chief in the Division of Range Management, in Washington, D.C. He is survived by his wife and two children.

Malchus Baker '65, Ph.D. (1941-2002), died on Sept. 24, 2002, at the age of 62. Malchus obtained a B.F. from Southern Illinois University in 1964. After earning an M.F. from Yale, he completed a doctoral program in forest hydrology at the University of Minnesota in 1971. He worked for the Forest Service's Rocky Mountain Research Station in Tempe and Flagstaff, Ariz., from 1969 until his death. His contributions to forest hydrology and watershed management were numerous and noteworthy, including authorship or joint authorship of 112 journal articles, technical bulletins, symposium proceedings, books and reports. He was a frequent presenter at scientific conferences, symposia and other professional meetings. In addition, he helped organize numerous regional, national and international conferences. He was noted for his role as curator and authority on the Beaver Creek and other historic watershed research programs in the Southwest. He was a member of the adjunct faculty at the University of Arizona and Northern Arizona University, where he presented guest lectures and guided the research programs of many graduate students. Shortly before his death, he was recognized with the Rural Community Assistance Award from the chief of the Forest Service for work he did as part of the Upper Verde River Adaptive Management Partnership in the Prescott National Forest.

Everett Bean '47 (1921-2007) of Dover, N.H., died at his home on August 14 at the age of 86. Everett was born in Derry, N.H., on February 23, 1921, the son of George Bean and Mabel Stella (Larkin) Bean. He spent his youth in Exeter, summering in Tunbridge, Vt., and graduated from Exeter High School in 1939. He received a B.S. in forestry from the University of New Hampshire in 1943; that year, he married Elizabeth "Libby" Blood in Hollis, N.H. He then joined the Army Engineers to serve in Europe during World War II, where he trained in the use of aerial photogrammetry for the creation of bomb sights. Following the war, he earned his M.F. from Yale. After his early years as a forester in North Woodstock and Webster, N.H., he worked for the N.H. Department of Transportation as a highway surveyor and engineer, from 1953 until his retirement in 1986. He subsequently volunteered at the Strafford County jail, tutoring inmates in mathematics as they studied for their graduate equivalency degrees. He was a member of St. John's United Methodist Church from the time he and his family moved to Dover in 1954. Over the years, he served as a lay leader, taught Sunday school and loved to sing in the senior choir. As one of the "Methodist Men," he helped sponsor a Boy Scout troop and enjoyed his years as a troop leader and district advancement chair. The Boy Scouts honored him for his service with the Silver Beaver Award and the District Award of Merit. He is survived by two daughters, Natalie Kimble and Katherine Whitehead; a son, Christopher; a sister, Hazel Lovett; eight grandchildren; seven great-grandchildren; and several nieces and nephews. He was preceded in death by his wife, Libby, with whom he enjoyed 54 years of marriage.

Robert Bulchis '40 (1915-2007) died at the age of 92 on May 13 in Corvallis, Ore. Bob was born in Minersville, Pa., to immigrants Frank and Elizabeth (Naikelis) Balczius. Following graduation in 1931 from



Minersville High School, he began “riding the rods” across the country. His Depression-era travels took him from Pennsylvania to Florida, to California and finally to his “hobo headquarters” in Seattle. In 1933, he joined the Civilian Conservation Corps, with assignments in the Wenatchee and Olympic national forests. This inspired him to enroll in the University of Washington School of Forestry, from which he graduated with honors. While there, he worked for the Quilcene Ranger District of the Olympic National Forest, with two seasons as a lookout on Mt. Walker. He then went to Yale and earned his M.F. with honors. In 1940, he began his career in personnel management in New York City with the Civil Service Commission (now the U.S. Office of Personnel Management), where he met Helen Foxx, whom he married in 1942, just before departing for Port Lyautey in French Morocco as second class petty officer radar man with the U.S. Navy. Following World War II, he and Helen settled in Woodhaven, N.Y. They moved to New Jersey, and he continued in the Civil Service Commission in New York City. In 1971, he retired and, with Helen, returned to the Pacific Northwest. In Corvallis, he seriously pursued his Lithuanian roots, establishing a strong network of Lithuanian relatives and acquaintances, and with his son, Bill, participated in a human chain across Lithuania in support of Lithuanian independence from the Soviet Union. He is survived by his sons, Bob, Ed and Bill; his daughter, Kathy; his sister, Elizabeth Ketrus; and four grandchildren.

John Gray '42, Ph.D. (1920-2007), a registered professional forester, former university professor and part-time actor, died on May 5 at the age of 86. John was born in Falls Church, Va., on July 5, 1920, the son of Dr. and Mrs. Lewis Gray. He earned his B.F. from Pennsylvania State University in 1941, and then his M.F. from Yale. Following noncombatant service as an Army Air Corps communications officer in World

War II, he joined the North Carolina Agricultural Extension Service in 1945 as an extension forestry specialist. He served for 18 years, the last 13 as professor and head of the Extension Forestry Department. In 1963, he went to the University of Florida, where he served as professor and director of the School of Forest Resources and Conservation. In 1969, he earned his D.F. from Duke University's School of Forestry. He joined the U.S. Forest Service in 1977 on a detail in forest policy in Washington, D.C., and was appointed director of the service's Pinchot Institute for Conservation Studies in 1978. He retired there in 1982. In 1986, he and his wife, Mildred, a native of Crossett, Ark., took up residence in Little Rock, where John became active in state forest policy. He was a senior associate at Winrock International; chaired committees for the Arkansas Wildlife Federation and Arkansas Division, Society of American Foresters; and was active on the Arkansas Forestry Association's communications and teachers' conservation workshop committees. He also embarked upon a stage and screen career, which included appearances in the movies *Mars Attacks!* and *The Rainmaker* and numerous industrial training films and television commercials. He was preceded in death by his wife, Mildred Toney Gray, and son, John. He is survived by a daughter, Barbara Brown.

William Guttentag '42 (1919-2007) died on May 13 in West Palm Beach, Fla., at the age of 88. Born in Englewood, N.J., in 1919, Bill earned his bachelor's degree at Rutgers University, followed by his M.F. at Yale. In 1943, he married Sally Waller. He served as a captain in the U.S. Coast Guard during World War II. He and his family moved to Toronto in 1955, where he started a wholesale plywood company. After retiring, he served as a volunteer executive in developing countries. He loved to travel and had a passion for boating, biking, water skiing and scuba diving. He was, above all, a

devoted husband and father, whose children and grandchildren carry on his many enthusiasms and miss him greatly. He is survived by his wife, Sally; two children, Gail and Rob; five grandchildren; and a brother, Jack.

William MacConnell '48 (1918-2007) died at his home in Amherst, Mass., on March 17. He was born in Odell River, New Brunswick, to David and Marion (MacInnes Smith) MacConnell, the fourth of nine children. The family moved to Westboro, Mass., in 1924, where he graduated from Westboro High School in 1937. Following two additional years of secondary schooling at Mount Hermon School, he enrolled at the University of Massachusetts, where he graduated in 1943, immediately after which he joined the U.S. Army. After World War II and earning his M.F. at Yale, he began teaching at the University of Massachusetts. From 1960 until his retirement in 2000, he also served as the coach of the UMass ski team, becoming the only academic faculty member in the history of the university to coach a sport. Remembered as a gifted raconteur, he also expressed pride in the fact that he was the only person at UMass without a Ph.D. who had been awarded a faculty position. Upon retirement, he retained an office at the university. He is survived by Shirley, his wife of 64 years; his son, Peter; two daughters, Sandy Doolan and Heather Bessey; two sisters; seven grandchildren; and three great-grandchildren.

Robert Martin '42 (1918-2006) died on December 1, 2006, at the age of 88. Robert was born to Albert Martin and Myrtle Hanor in Pittsfield, Mass., where he graduated from Pittsfield High School in 1936. He earned a B.S. in 1940 from Massachusetts State College. After earning an M.F. from Yale, he enlisted in the Army Air Corps and married Carolyn Nutting of W. Boylston, Mass. He served until the end of World War II, achieving the rank of first lieutenant. In 1946, he joined General

Electric as an engineering assistant at the Steel Mill Group in the Industrial Control Division in Schenectady, N.Y. The following year, he worked briefly for the Maryland Department of Forests and Parks in Bel Air, Md. He eventually returned to General Electric in Pittsfield to work in the Phenol Plant Chemical Division. He is survived by his wife, Carolyn; and three sons, James, John and Thomas.

John Mitchell, who had a long and noted career in environmental journalism, died on July 7 of a heart attack at the age of 75 in Albany, N.Y., while returning to his home in Old Lyme, Conn., from the High Peaks area of the Adirondacks. John, or "Mitch," as he was called by friends, was a contributor to *environment: Yale* and wrote the cover stories, "Conservationists Thinking Big to Save the Last Great Places" and "The Coming Water Crisis," in the spring 2006 and 2007 issues, respectively. Besides being a devoted conservationist, he was an environment editor for *National Geographic* magazine, editor-in-chief of Sierra Club Books and field editor and writer for *Audubon* magazine. He was born in Cincinnati, and was a graduate of Yale College, Class of 1954. He was a Mellon Fellow at F&ES in 1980. He was the author of many books, including *Losing Ground*, *The Catskills: Land in the Sky*, *The Hunt*, *Dispatches From the Deep Woods* and *The Man Who Would Dam the Amazon*. In addition, his writing is included in a number of anthologies: *National Audubon Society: Speaking for Nature*, *Norton Book of Nature Writing* and *Points Unknown: A Century of Great Exploration*. Besides his wife, Alison, he is survived by a brother, P. Lincoln; a sister, Betsy; two daughters, Katherine and Pamela; and three grandsons.

Charles Lee Remington (1922-2007), professor emeritus of ecology and evolutionary biology, field naturalist and museum curator, died on May 31 in Hamden, Conn., at the age of 85. Born to Pardon Sheldon and Maud Remington in Reedville, Va.,

on January 19, 1922, Charles became interested in the natural world as a child in St. Louis, Mo. He received a B.S. in 1943 from Principia College. He served as a medical entomologist in World War II, traveling throughout the Pacific, researching and combating afflictions such as insect-borne diseases suffered by servicemen active in that theater. He received his Ph.D. from Harvard in 1948, where he worked on the systematics of Thysanura and other primitive arthropods with the noted entomologist Frank Carpenter. His lifelong focus, however, was butterflies and moths. In 1947, with support from his wife and longtime scientific collaborator, Jeanne Remington, and in partnership with Harry Clench, he founded The Lepidopterists' Society. He held many positions in the society, including president and editor of its scientific journal. In 1948, he joined the Department of Zoology at Yale. During the next 44 years, he held appointments in the Department of Biology, the Peabody Museum of Natural History, F&ES and the Institution for Social & Policy Studies. From 1958 to 1959, he was a Guggenheim Fellow at Oxford University, where he worked with the geneticist E.B. Ford and others. He taught courses in ecology, evolution, entomology, bioethics, endangered species and the biodiversity crises, including his hallmark "The Biology of Terrestrial Arthropods." He mentored several generations of scientists, advising more than 80 doctoral candidates and 60 undergraduates on their honors theses. He became intrigued by island biology while serving in the military in the Pacific and, over time, visited more than 75 islands. He also took his research, students and family to the Rocky Mountain Biological Laboratory in Gothic, Colo., to investigate the biology of high-altitude ecosystems. He was widely known for establishing a cicada preserve to protect one of the largest remaining colonies in southern Connecticut. While at Yale, he also served as curator of the Entomology Division at the Peabody Museum. There, he assembled a world-class

insect collection of more than 1 million specimens. He helped found the Connecticut Entomological Society and the Xerces Society, and served a variety of other scientific organizations as a member and an officer. He is survived by his wife, Ellen Mahoney, of Hamden; his former wife, Jeanne Remington, of Boulder, Colo.; three children from his first marriage, Janna, Eric and Sheldon; and three grandchildren, Luke, Ijyo and Jeffrey.

Armin Wehrle '40 (1916-2007) died on August 18 of natural causes at the age of 91. Armin, the son of Francis and Agatha (Faller) Wehrle, was born in Thomaston, Conn., on April 12, 1916. After graduating from Thomaston High School in 1933, he received a B.F. from the University of Connecticut, and attended the University of Munich in Germany and Yale. He worked with the Civilian Conservation Corps until 1940, when he joined the U.S. Army. During World War II, he served in the U.S. Army's First Infantry Division and was part of the Normandy landing on D-Day. In 1942, he married Clare Walker. After he retired from the military as a lieutenant colonel, he went to work for the Plywood Research Foundation in Tacoma, Wash. He later devoted 25 years to his work for Georgia-Pacific Corp. in Coos Bay, Ore., and later worked in consulting on engineered board products. In 1977, the Washington State University Department of Engineering gave him a distinguished award for his achievements. In 1987, he was married a second time, to Catherine Reeves. He was a member of the Obsidians and the Coos Art Association and was active with the environmental committee and Anglers Club in Sunriver, Ore. He enjoyed tennis, fishing, skiing and mountain climbing. He is survived by two daughters, Ingrid and Martha; and two grandchildren. His first and second wives and one daughter preceded him in death.

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Dean's Message...

continued from page 3

the book *Land and Natural Development (LAND) Code: Guidelines for Sustainable Land Development*. Benoit says the goal is to provide a method of sustainable development that's practical and not so radical that it will alienate developers.

The LAND Code rating system awards positive and negative points based on how businesses address various development challenges. The builder of a mall, for instance, would earn points for clustering buildings, minimizing impervious surfaces and installing a rain garden to filter water on-site, but would lose points for developing near a wetland or some other sensitive ecosystem.

"Existing codes cover bits and pieces of what we're calling for," Benoit says. "What we're trying to do is codify comprehensive guidelines for developing land in a sustainable way. We're moving in that direction. Even 10 years ago, something like a rain garden or a mall with a constructed wetland was considered radical. Now, they're common."

Stephen Kellert, Tweedy Ordway Professor of Social Ecology, has long argued that we need a fundamental re-evaluation of how we design and construct our buildings, towns and cities. Kellert insists that we must go beyond simple green building. However wonderful high-efficiency water and heating systems and recycled materials may be, they're not enough. "What we need is restorative design, design that mimics the natural cycles of light and air and the views and experience of nature that have been lost in most modern buildings and cities," he says.

Last year, a new joint master's degree program in environmental management and architecture was launched at Yale. Students are now in the second year of a four-year program that emphasizes restorative design. The two host schools, the School of Architecture and F&ES, are also establishing a joint tenure-track position in sustainable design and development, to educate a new generation of interdisciplinary thinkers. F&ES has pioneered the development of joint master's degree programs with six other schools at Yale, including the Law School, the Divinity School and the Department of Epidemiology and Public Health.

A growing cadre of scholars, architects and designers has joined Kellert in concluding that restoring nature to humanity's home is not only good for nature, it's good for people (see *environment: Yale*, "Nature in Humanity's Habitat," Fall 2006). Various studies on what's formally called *biophilia*, or "love of nature," have shown that patients heal faster, students learn better and workers are more productive when they have access to natural light, outside air and views of the environment.

Hoping to further build this case, Kellert's team is now collecting data about the current health, well-being and productivity of Bank of America employees, who soon will move into Manhattan's One Bryant Park, which aspires to be the first office tower to achieve LEED Platinum, the highest rating awarded by the U.S. Green Building Council. In addition to incorporating sustainable design, the new skyscraper also incorporates biophilic elements, such as natural light, fresh air circulation and views of roof gardens and parks. Kellert's team will collect data before and after the move, as well as monitor a control group of Bank of America employees who work in more conventional settings.

Ellen Brennan-Galvin, a lecturer and senior research scholar, spent 25 years at the United Nations Population Division, working on urban transit and environmental issues in more than 20 cities in the developing world. She now teaches two courses – one on urban sustainability and another on transportation and urban land use planning in the developing world – to a mixture of students from F&ES and the School of Architecture in the joint degree program. Each semester, she takes some 20 students to places like Beijing, Bogota, Curitiba, Delhi, Dubai, Johannesburg, Mexico City, Sao Paolo and Shanghai to study various local transportation methods. "There are incredibly interesting innovations and possibilities in urban planning and transportation evident in the developing world," she said. "The challenge is how we scale up and apply these innovations on a much broader basis."

In the end, the future is ours to build, and putting sustainability front and center in that future requires the careful integration of environmental values into all its aspects. That's the work of sustainable design, and our goal here at F&ES is to place the school at the forefront of this work. As you can see, we have made a strong beginning. ■

The Emerging Alliance of Religion and Ecology

By Mary Evelyn Tucker and John Grim

For many years, environmental issues were considered to be the concern of scientists, lawyers and policy makers. Now the ethical dimensions of the environmental crisis are becoming more evident. What is our moral responsibility to future generations? Can religious and cultural perspectives be considered in creating viable solutions to environmental challenges?

Until recently, many religious communities have been so absorbed in internal sectarian affairs that they were unaware of the magnitude of the environmental crisis. Certainly the natural world figures prominently in the major religions: God's creation of material reality in Judaism, Christianity and Islam; the manifestation of the divine in the karmic processes underlying the recycling of matter in Hinduism and Jainism; the interdependence of life in Buddhism; and the Tao (the Way) that courses through nature in Confucianism and Taoism. Despite those emphases on creation, many religions turned their focus from the turbulent world in a redemptive flight to a serene, transcendent afterlife.

Questions arise, then: If religions are willing to stand by and witness the withering of the Earth, has not something of their religious sensibilities become deadened or, at best, severely reduced? Why have religions

been so late in responding to environmental issues, and what are the obstacles to their full participation? Why has apocalyptic thinking come to interpret ecological collapse as a manifestation of the end time?

We cannot deny the limits or the intolerant dimensions of religions as expressed in sectarianism and violence. Examples are evident throughout history, as well as in contemporary global conflicts. However, religions have also contributed to liberating movements for social justice and human rights. In that spirit, it is important to note that religions have changed over time, transforming themselves and their dogma in response to new ideas and circumstances. Although Christianity had no ban against slavery, Christian churches in Britain and the United States came to embrace the abolitionist position. Given that history, we have reason to believe that as the moral dimension of the environmental crisis becomes ever more apparent, religions will energize and support a new generation of leaders in the environmental movement.

Religions have developed ethics for homicide, suicide and genocide; now they are challenged to respond to biocide and ecocide. Moreover, the environment presents itself as one of the most compelling concerns for robust interreligious dialogue. The common ground for dialogue is the Earth itself, along with a shared sense among the world's religions of the interdependence of all life.

A new scholarly field of religion and ecology is emerging, with implications for environmental policy, as well as for understanding the complexity and variety of human attitudes toward nature. The Yale

School of Forestry & Environmental Studies, for example, under the leadership of Dean Speth, has initiated an interdisciplinary project on climate change and a joint degree program with Yale Divinity School that include the role of religion and values. Many environmental-studies programs in the United States are seeking to incorporate such a broad ethical approach into their curricula.

The effort to identify religiously diverse attitudes toward nature was the focus of a major international conference series on world religions and ecology held at Harvard in the late 1990s. It resulted in a 10-volume series of books distributed by Harvard University Press. The American Academy of Religion has a vibrant section focusing on scholarship and teaching in religion and ecology. A scholarly journal, *Worldviews: Environment, Culture, Religion*, is celebrating its 10th year of publication. Clearly this field of study will continue to expand as the environmental crisis grows in complexity and requires increasingly creative interdisciplinary responses.

The religions are starting to find their voices by exploring culturally diverse environmental ethics. The monotheistic traditions of Judaism, Christianity and Islam are formulating original eco-theologies and eco-justice practices regarding stewardship and care for creation. Hinduism and Jainism in South Asia, and Buddhism in both Asia and the West, have undertaken projects of ecological restoration. Indigenous peoples bring to the discussion alternative ways of knowing and engaging the natural world.

All of those religious traditions are moving forward to find the language, symbols, rituals and ethics

for encouraging protection of bioregions and species. Religions are beginning to restore the Earth through such practices as tree planting, coral-reef preservation, energy conservation, responsible consumption and river cleanup. In addition, religions are bridging the gap between those concerned with social and economic justice and those working for a sustainable environment. This is a new moment for the world's religions, and they have a vital role to play in the development of a more comprehensive environmental ethics. The urgency of this process cannot be underestimated. Indeed, the flourishing of the Earth community may depend on it.



Herold Shapiro

John Grim and Mary Evelyn Tucker

Mary Evelyn Tucker and John Grim, co-founders and co-directors of the Forum on Religion and Ecology, teach religion and ecology at Yale University. They are editors of the Harvard book series Religions of the World and Ecology. More information on the Forum on Religion and Ecology is available online (www.religionandecology.org).

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The episodes in the F&ES series feature, to date, Dean Gus Speth, “The Heart of the Matter”; David Skelly, “It’s Not Easy Being a Frog”; Stephen Kellert, “Biophilic Design: Opening the Door to Nature”; Dan Esty, “Green to Gold”; Oswald Schmitz, “Global Warming and Species Distribution”; Marian Chertow, “Industrial Ecology: Why Waste Waste?”; and Robert Mendelsohn, “Poor Countries to Pay the Price for Global Warming.”



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