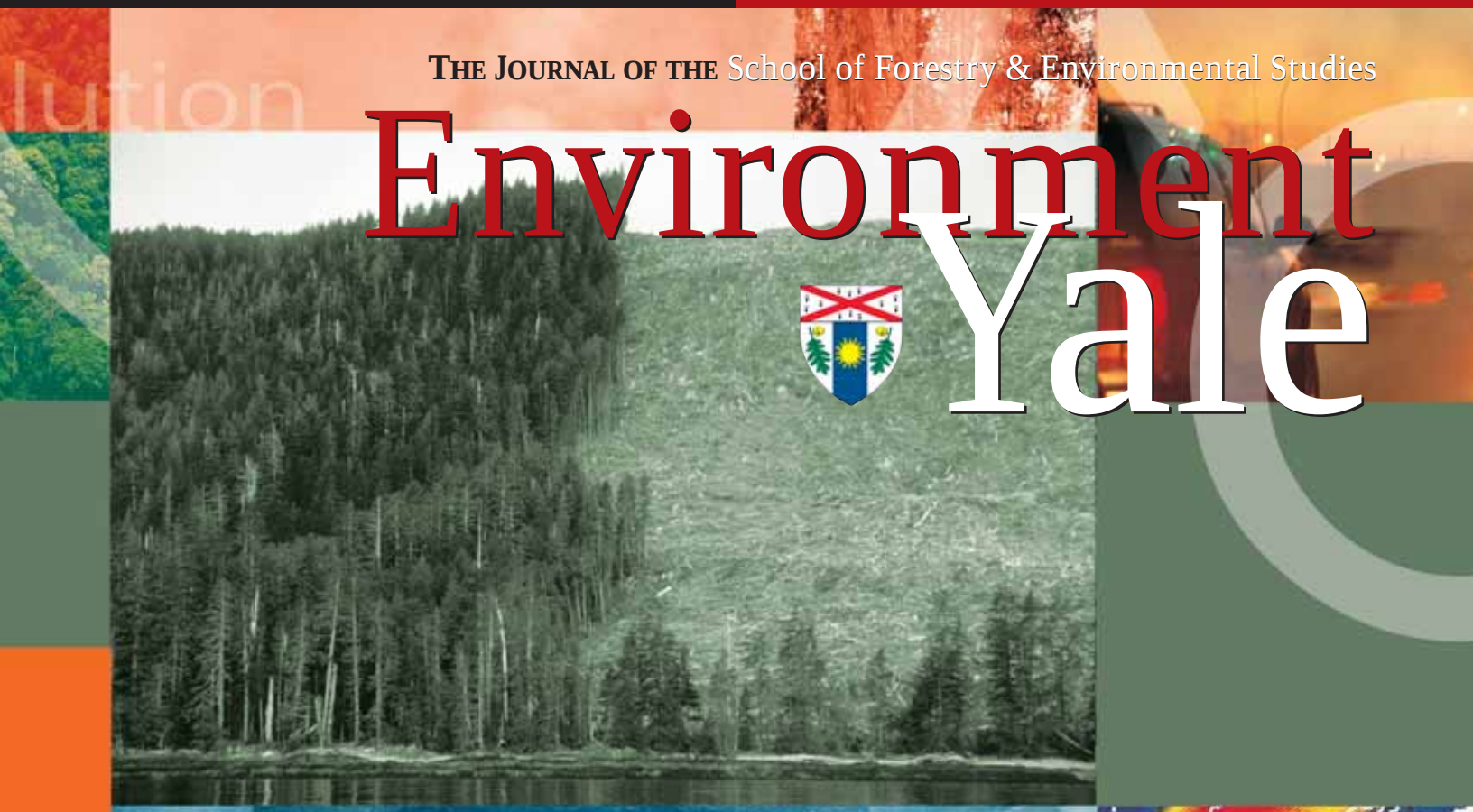
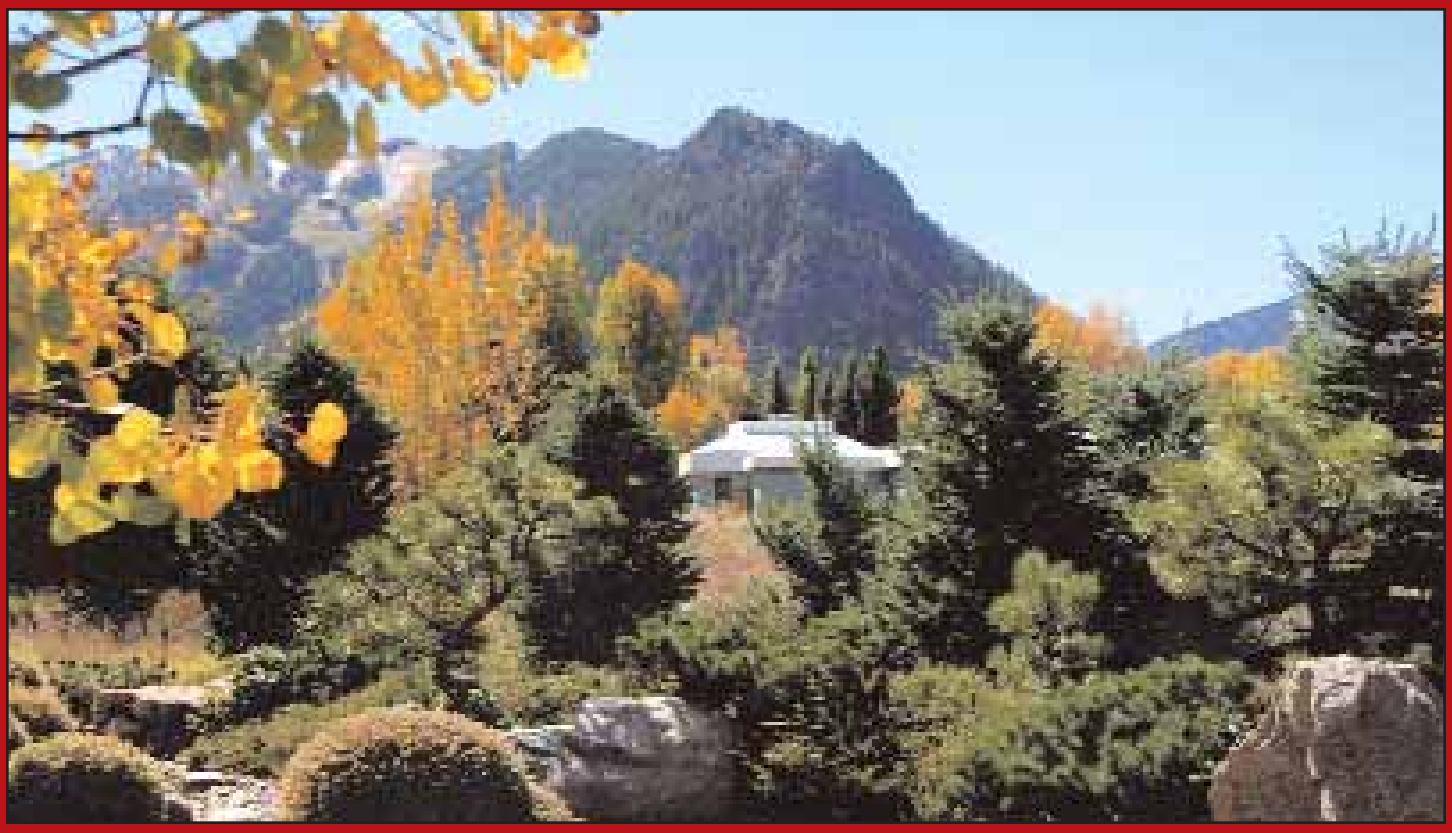
Fall 2005

The Journal of the School of Forestry & Environmental Studies

Environment Yale



As a Remedy to Global Warming, Do Forests Matter?



Leaders on the issue of climate change convened in October for an F&ES-sponsored conference, Climate Change: From Science to Action, at the Aspen Meadows Resort (above) to discuss how best to address the barriers that lie between good science and effective policy and action. The story and photo spread begin on page 24.

LETTERS

To the Editor:

Many of us involved with the New York City Audubon would like to voice some concerns about the green commitment to your new facilities ["What Makes a Building Green?," Spring 2005]. New York City Audubon has been in the forefront of the issue of birds being killed by colliding with glass. After habitat loss and fragmentation, collisions with glass pose the single greatest human-related threat to birds. We applaud the measures being taken to design a climate-neutral building for the School of Forestry & Environmental Studies and trust that the use of glass is being carefully considered.

E.J. McAdams
Executive Director, New York City Audubon

To the Editor:

I read the F&ES spring magazine and it looks terrific—substantive stories, great news about the building and even better news about the placement of your students.

Jim Salzman
Duke Law School
Nicholas School of the Environment and Earth Sciences, Duke University

To the Editor:

Great articles, nice overview of the new building and a generally good show! It's great and instills both pride in the institution and some hope that leadership in environmental affairs continues.

Henry Young '74
President, Young Environmental Sciences
Manhasset, N.Y.

To the Editor:

While attending my 50th reunion earlier this month, I was delighted to be exposed to *Environment: Yale*. Involved in the water aspects of "green" building, I looked forward to reading the lead article ["What Makes a Building Green?," Spring 2005]. I was shocked to read the paragraph on page 8 dealing with the "living machine." The slighting of the underlying ecological values inherent in the solar aquatic and/or living machine needs to be corrected. The technology, the ecological treatment on-site of waste water—be it black water, gray water or storm water—needs to be recognized and extolled by the likes of the School of Forestry & Environmental Studies.

Norman Allenby
Yale College Class of 1955
San Diego, Calif.

Due to the volume of correspondence, *Environment: Yale* regrets that it is unable to respond to or publish all mail received.
Letters accepted for publication are subject to editing. Unless correspondents request otherwise, e-mail addresses will be published for letters received electronically.

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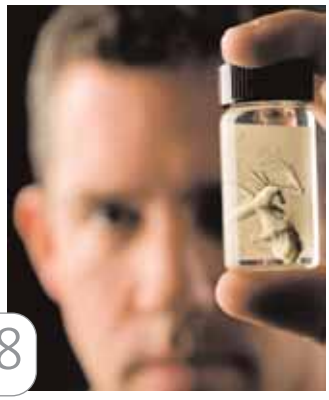

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The Heart of the Matter

© Peter Otis

Dean Speth

By Dean James Gustave Speth

Central to the mission of America's environmental schools is the development of professional environmental managers. The majority of our graduate students at Yale are enrolled in our master of environmental management program. But what exactly is environmental management?

When I am asked this question, I reply that environmental management is the new business of bringing our human enterprise into harmony with the natural world of which we are a part. And I add: it's the most important thing in the world.

I know this may sound exaggerated, but I think the truth of this statement will become clear in the years ahead. The enormous expansion of the human enterprise in recent decades has brought us to the threshold of a fundamentally new era in which environmental management must quickly emerge as the top priority of governments and peoples everywhere.

Consider first that environmental losses are already great. Half the world's tropical and temperate forests are gone. About half the wetlands and a third of the mangroves are gone. Ninety percent of the large predator fish are gone, and 75 percent of marine fisheries are now overfished or fished to capacity. Twenty percent of the corals are gone, and another 20 percent severely threatened. Species are disappearing at rates 100 to 1,000 times faster than normal. Most agricultural land in drier regions suffers from serious deterioration. Persistent toxic chemicals can now be found by the dozens in essentially each and every one of us.

Consider also that human activities are now large relative to natural systems. We severely depleted the Earth's stratospheric ozone layer without knowing it. We have pushed atmospheric carbon dioxide up by one-third, and started the dangerous process of warming the planet and disrupting climate. Everywhere Earth's ice fields are melting. We are fixing nitrogen at a rate equal to nature's; one result is the development of at least 150 dead zones in the oceans due to overfertilization. We already consume or destroy each year about 40 percent of nature's photosynthetic output, leaving too little for other species. Freshwater withdrawals doubled globally between 1960 and 2000, and are now approaching a quarter of all river flow. The following rivers no longer reach the oceans in the dry season: the Colorado, Yellow, Ganges and Nile, among others. We live in a full world, dramatically unlike the world of 1900, or even that of 1950.

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About half of the world's wetlands and a third of the mangroves are gone.

Consider also that all we have to do to destroy the planet's climate and its biota is to keep doing exactly what we are doing today, even with no growth in the human population or the world economy. But human activities are growing—dramatically. It took all of history to build the $7 trillion world economy of 1950, and today we add that amount of economic activity every 5 to 10 years. The world economy is poised to double and then double again by mid-century. This economic growth cannot resemble the growth of the past; it requires new designs and new technologies. Everything must be different—construction, manufacturing, energy production, transportation, forestry and agriculture—all very different.

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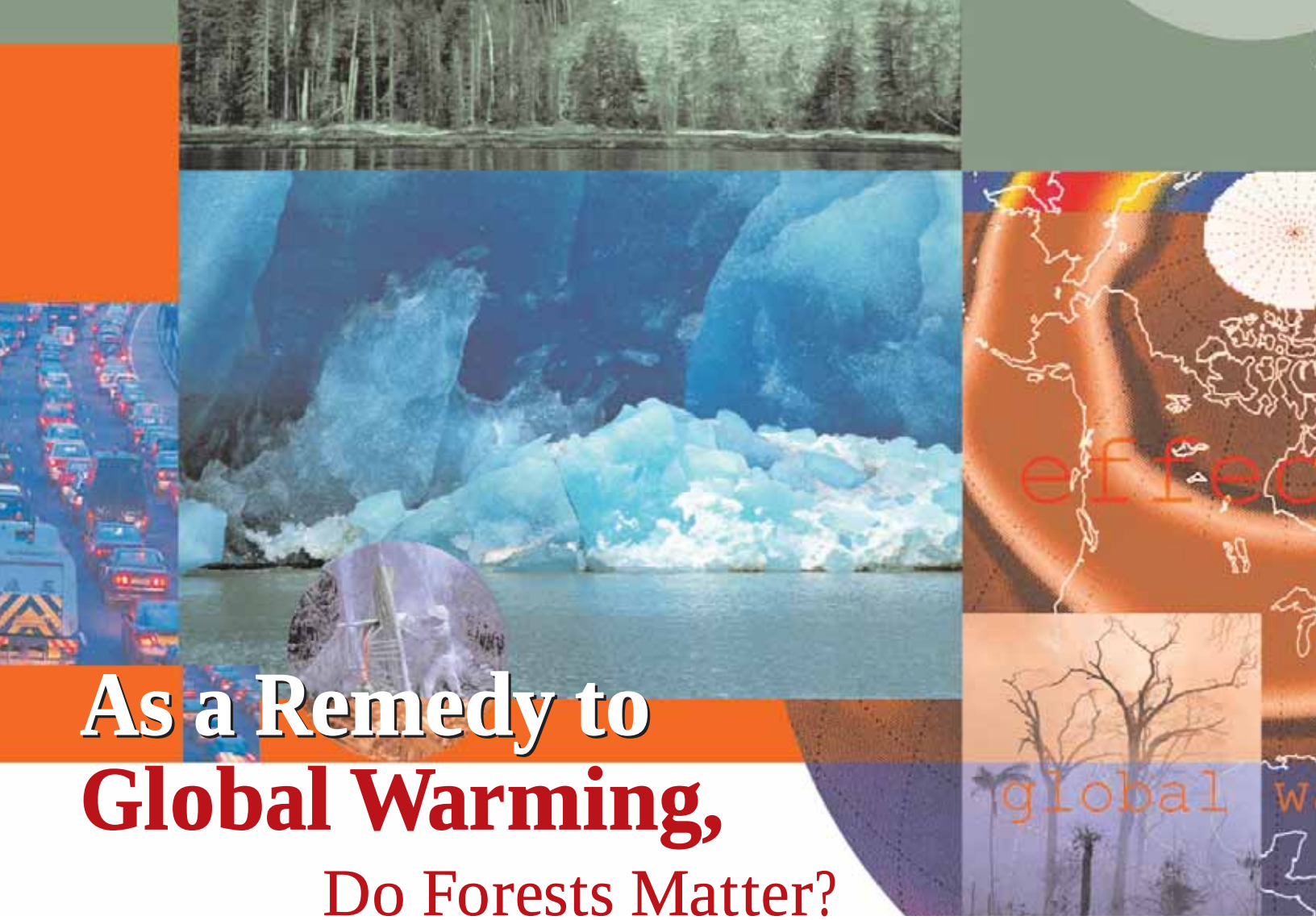


As a Remedy to Global Warming, Do Forests Matter?

By Richard Conniff

There was a time, in the 1990s, when forests seemed to offer an almost miraculous remedy to the problem of global warming. It's an idea that has persisted in the public imagination. But for much of the past decade, until now, forests have been sidelined in the debate over public policy on global warming.

Almost everyone, from university researchers to rock stars and electric utility executives, accepts the basic premise: Because trees remove carbon dioxide from the atmosphere through photosynthesis, they represent a part of any serious response to global warming. Take away the water, and a tree is about 50 percent carbon by weight. But from this starting point, discussion about the value of forests quickly gets complex, chaotic and, at times, a little surreal.

By planting one tree for every 60 fans attending their concerts, for instance, the Rolling Stones announced in 2003 that they would render an entire tour "carbon neutral"—that is, it would contribute no net carbon dioxide to the atmosphere. Since the calculation included the cost of getting everyone to and from the stadium, these were possibly the hardest-working trees in rock-and-roll. The for-profit Carbon Neutral Company, formerly a nonprofit called Future Forests, which handled the Stones effort, also calculated that its reforestation projects had rendered the production of 30 million CDs "carbon neutral," for groups from Coldplay to the Foo Fighters.

That same year, U.S. electric companies announced that they would offset 700,000 metric tons of carbon dioxide emissions from power plants, with projects ranging from small urban plantings to participation in a Nature Conservancy effort to protect 153,000 acres of rainforest in northwestern Belize. The U.S. Energy Information Administration, which tracks such voluntary efforts, reported that "one large sugar maple is capable of removing more than 450 pounds of carbon dioxide from the atmosphere in a year." Then, with a leap of the statistical imagination, it calculated that "preserving approximately 31 trees per operating automobile in the United States would offset all U.S. automobile-related carbon dioxide emissions."

Broad claims like that have elicited skepticism about the value of forests in the global-warming debate. For instance, another U.S. government report says sugar maples will disappear from New England late in this century because of global warming. So would 31 loblolly pines suffice instead? What about 31 seedlings? And how many trees would it take to offset a Mercedes-Benz Grand Sports Tourer, which the Rolling Stones are currently endorsing as part of their "A Bigger Bang" tour, with no claims to carbon neutrality?

Xuhui Lee, associate professor of forest meteorology and micrometeorology, at his research site in Norfolk, Conn. © hshapiro8@aol.com

"Without understanding episodic release, it's very hard to get a handle on the question of whether forests can be used as a sequestration tool."

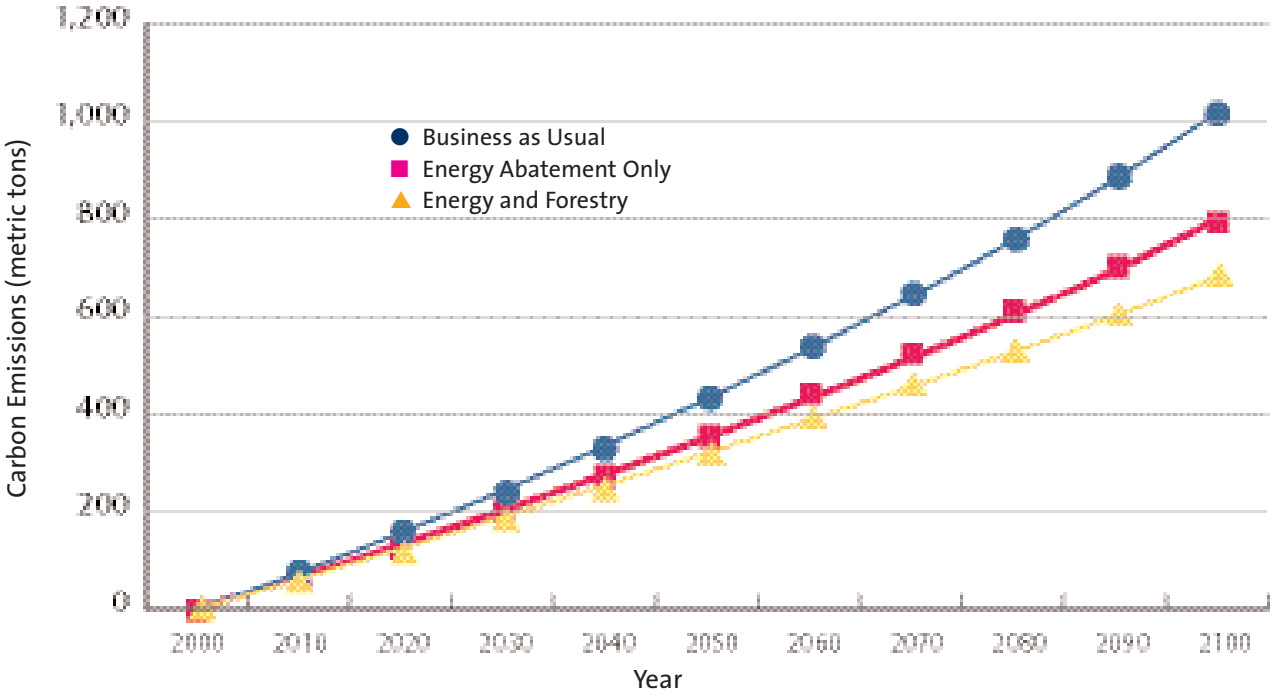
Xuhui Lee

The underlying idea of using trees to offset pollution has also elicited fierce debate, including at times the odd spectacle of environmentalists angrily protesting reforestation projects and industrialist tree-huggers ardently advocating them. One critic has accused utilities of selling "a warm, fuzzy feeling" with reforestation projects that are based on faulty carbon accounting. Another has derided such projects as "a morning-after pill for fossil fuel excesses."

The skeptics have at times included countries and companies trying to meet their targets for reducing carbon dioxide emissions under the Kyoto Protocol. The effort to find projects that "lock up" or "sequester" large quantities of carbon, as a way to offset emissions that cannot readily be reduced, has encountered numerous credibility gaps. The Holcim Group, a Swiss cement company, recently pulled out of one non-forest offset scheme, with an executive predicting that loose accounting standards would produce "other Enrons" among the companies developing such projects and "other Arthur Andersens" among the auditors. And early this year, a Kyoto certification committee rejected two large-scale reforestation projects in Brazil and Belize. The committee, which has yet to accept a single forestry offset, said it could not reliably account for how much carbon the projects would actually sequester or for how long.

What's going on here? Don't trees in fact do a lot of our environmental dirty work? Aren't forests and forestry projects an indispensable part of the solution to the global-warming crisis? And, if so, can researchers develop a scientific methodology to account for the carbon budgets of different forest types? That is, can they make the accounting accurate enough that investors and insurance companies would be willing to put their money into forest sequestration projects? Or will the beneficial possibilities of forests get lost even as the painful realities of global warming become increasingly evident?

Dean Gus Speth notes that the time for answering such questions is alarmingly brief. He rattles off a list of changes already caused by global warming. Ice sheets and glaciers are melting everywhere. Sea levels have risen 6 inches. Sea temperatures have warmed, fueling more intense hurricanes. A vast area of Siberian permafrost is melting and beginning to release methane, which is 40 times



A study co-authored by Robert Mendelsohn and Brent Sohngen shows the level of worldwide carbon emissions if nothing is done to curb greenhouse gas emissions, with energy abatement only, and with energy abatement and a global effort to use forests for carbon sequestration. Source: Brent Sohngen, Ph.D. '96

more potent than carbon dioxide as a greenhouse gas. A threatened village on the coast of Alaska faces imminent relocation, at a cost of more than $185 million, with the likelihood that 180 other villages will soon follow. And the World Health Organization estimates that, in the year 2000 alone, the effects of global warming, including heat waves, flooding, malnutrition and the spread of vector-borne diseases, killed 150,000 people.

"And that's with this little 1 degree Fahrenheit of global warming," says Speth. "We have another degree in the can," based on greenhouse gases that have already been released into the atmosphere, and the likelihood of another few degrees beyond that. The concentration of carbon dioxide in the atmosphere is currently higher than at any time in the past 650,000 years, having risen from 280 parts per million (ppm) in preindustrial times to 380 ppm today. At the present rate of increase, says Speth, the world will cross the 450-ppm mark, widely regarded as "a point you don't want to go beyond," in another 25 or 35 years. And yet the coal-fired power plants scheduled to be built between now and then "could generate as much carbon dioxide as has been put into the atmosphere by human activity in all of history."

"By 2010 everybody in the world is going to realize that the goals ... to address global warming are too low."

Dean Speth

This dire prospect can make the role of forests seem, at times, like a trivial distraction. In fact, though, forests are now a substantial part of the global-warming problem, with deforestation contributing about a quarter of the world's annual carbon dioxide emissions. With corrective action on a global scale, some researchers suggest, forests could instead become 25 to 40 percent of the solution.

Carbon Counting

The beauty of forests in a global-warming context is that they are part of a renewable cycle in which carbon gets released (via burning or decomposition) and reabsorbed (via photosynthesis) repeatedly over time, at least as long as the forests survive to do the reabsorbing. The trouble with fossil fuels, by contrast, is that they release vast quantities of carbon for which there is no adequate means of reabsorption. A single gallon of gasoline contains the compressed energy from 196,000 pounds of primordial plant material, equivalent to the total annual plant production from "40 acres worth of wheat—stalks, roots and all," according to Jeff Dukes, an ecologist at the University of Massachusetts in Boston. Think of it this way: when you fill up a 15-gallon gas tank, you are

CONTINUED on page 8

Yale Adopts Bold Climate Strategy in Midst of Major Expansion

By Richard Conniff

One way to gain perspective on the relative importance of forests in the global warming debate is to consider Yale itself. The university owns and manages nearly 11,000 acres of New England forest, the bulk of it in the Yale-Myers Forest in northeastern Connecticut. These forests removed the equivalent of 6,300 metric tons of carbon dioxide from the atmosphere in 2002, according to a recent study by F&ES students. But the university's total emissions that year added up to about 285,000 metric tons. To offset that much pollution, Yale would need a half-million-acre forest. Think of it as a stand of trees 12 miles deep stretching roughly from New Haven to New York.

In other words, forests will continue to be a part of the carbon portfolio. But for real change to occur, the university will have to pay far more attention to how it produces, procures and consumes energy.

With that in mind, Yale officials led by President Richard Levin announced in October that over the next 15 years the university will reduce its greenhouse gas emissions by 10 percent below 1990 levels. Citing the work of Dean Gus Speth in his book *Red Sky at Morning: America and the Crisis of the Global Environment*, the announcement declared that "addressing CO_2 emissions from fossil fuels must be the bedrock" of a successful climate strategy. The announcement also committed Yale to becoming a "model university" by preparing students for the "pressing" environmental changes ahead.

Speth welcomed the Yale commitment as "a bold and very important initiative," and an example to other universities. But the announcement also elicited criticism. "I apologize for raining on the parade here, but I think the university is bringing up the rear when it is expected to be a leader," said author and environmentalist Paul Hawken in an e-mail to Speth. In his reply, Speth said, "Those institutions taking the lead today to commit to emissions reductions will almost certainly be adopting more demanding measures before long. . . . It's the beginning, not the end, or even the middle."

> "I feel like we're really stepping up to a big challenge."
>
> *Sam Olmstead*

In fact, Yale is one of the first universities in the country to set any greenhouse gas emissions target. (Among other leaders, Cornell and Tufts universities previously committed to reducing greenhouse gas emissions by 7 percent from their 1990 baselines, by 2008 and 2012, respectively.) Moreover, Yale's initial reduction target is likely to prove far more challenging than it sounds. Since 1990, the university has actually increased its greenhouse gas emissions by 55 percent.

The increase is due largely to rapid growth on campus, particularly in energy-intensive science buildings, according to John Bollier, associate vice president for facilities operations. Greater reliance on air conditioning and high-tech equipment has also helped drive up emissions at about double the university's 1.2 percent annual rate of growth in floor space. Moreover, the university expects to increase its rate of expansion at least through 2020. (The plans include a new home for F&ES, which the architects are working to make a model of low-energy consumption.) "But you can't just say, 'We're a growth institution and somebody else has to do it,'" says Bollier. The bottom line: to get 10 percent below 1990 emissions of 163,000 metric tons, the university will have to cut overall emissions by about 44 percent from current levels—in the middle of a major expansion.

How will the university achieve its goals? In announcing the greenhouse gas initiative, university officials challenged the Yale community to reduce energy use by 15 percent in the residential colleges and 10 percent in all other buildings over the next three years. For every 5 percent savings in a college, Yale also promised to purchase offsets (or renewable energy certificates) equal to one-third of the college's remaining electricity budget. Some of the savings will come from adjusting thermostats, replacing incandescent light bulbs with compact fluorescent bulbs and installing sensors to switch off lights in unoccupied areas.

But Yale will never achieve the 10 percent target "just by technical solutions," says Julie Newman, director of Yale's new Office of Sustainability. "You have to get people involved." She's helping lead a campaign to educate members of the Yale community to buy only Energy Star-labeled hardware, turn on the power-save mode—and shut off computers when not in use. Newman says that changing computer use alone could eliminate 935,000 pounds (424 metric tons) of carbon dioxide emissions a year.

The university says it will also tweak its own operating practices. At the suggestion of an hourly worker, for instance, it recently purchased a $20,000 thermal camera to improve monitoring of the 50,000 or so steam traps on campus. When a trap fails, more or less at random, it sends steam literally down the drain. Better monitoring could save about $100,000 in fuel costs annually, according to Bollier, with an equivalent reduction in greenhouse gas emissions. In science buildings, where inside air was being completely replaced by outside air 12 to 15 times per hour, well above the recommended safety level, the university has cut back to about 10 air changes per hour.

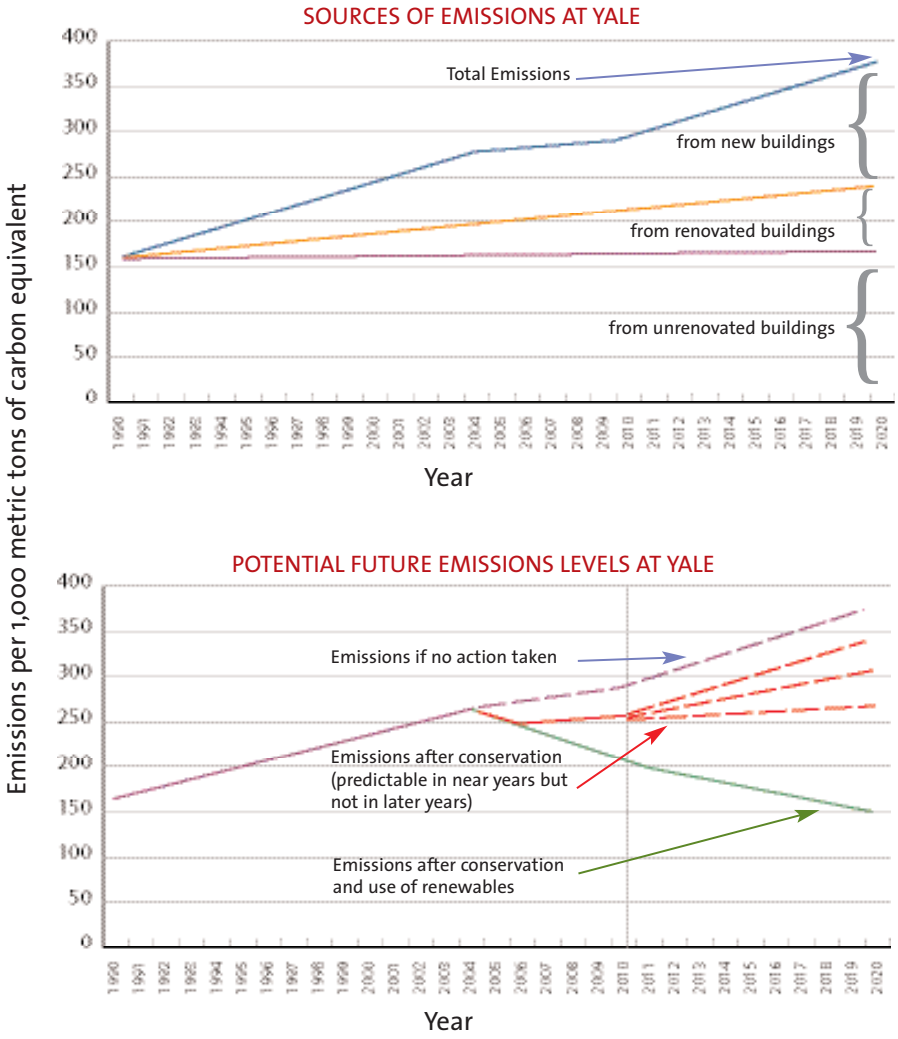
It is also investigating improved technologies to recover thermal energy before air goes out the exhaust.

Among other initiatives in Yale's carbon-neutral portfolio:

❑ A 40-kilowatt solar photovoltaic array will go into operation this year on a residential rooftop at the Divinity School.

❑ The Central Power Plant is testing biodiesel, a soy methyl ester, to fire one of its boilers, as a potential substitute for heating oil. (The university's two power plants currently burn about 80 percent natural gas and 20 percent oil.)

❑ Newman's sustainability office is exploring use of biomass digesters to turn about 1,100 metric tons a year of material—food waste, animal bedding from research facilities and leaves—into fuel and landscaping material.



Source: Yale University Office of Sustainability

Much of the early work to develop a greenhouse gas emissions scorecard for the university came from a team of nine F&ES and Yale School of Management students, known at first as "the energy mafia" and later as The Yale Climate Initiative (YCI). All of them had been through a class in energy systems analysis taught by Arnulf Grübler, a professor in the field of energy and technology at F&ES, who also shepherded the YCI team as they took what they had learned and applied it to the entire university. Members of the team served as interns in Yale's facilities office over the past two summers, doing what Bollier calls "the grunt work of buildings assessment," down to such mundane details as estimating the energy budgets (from the outside dimensions) of the tombs of Yale's secret societies. Before then, Yale had no reliable method of determining its greenhouse gas emissions, nor of saying whether it was doing better or worse from one period to the next.

The bad news in the final YCI report, released early in 2005, is its detailed depiction of the university as a profligate energy consumer. The report describes Yale's emissions from energy use as larger than those of 30 developing countries. Or as Grübler puts it, "This is a single institution, one university and not the biggest university—20,000 people, including students, faculty and staff. And still the total greenhouse gas footprint is comparable to that of millions of people in a country like the Central African Republic."

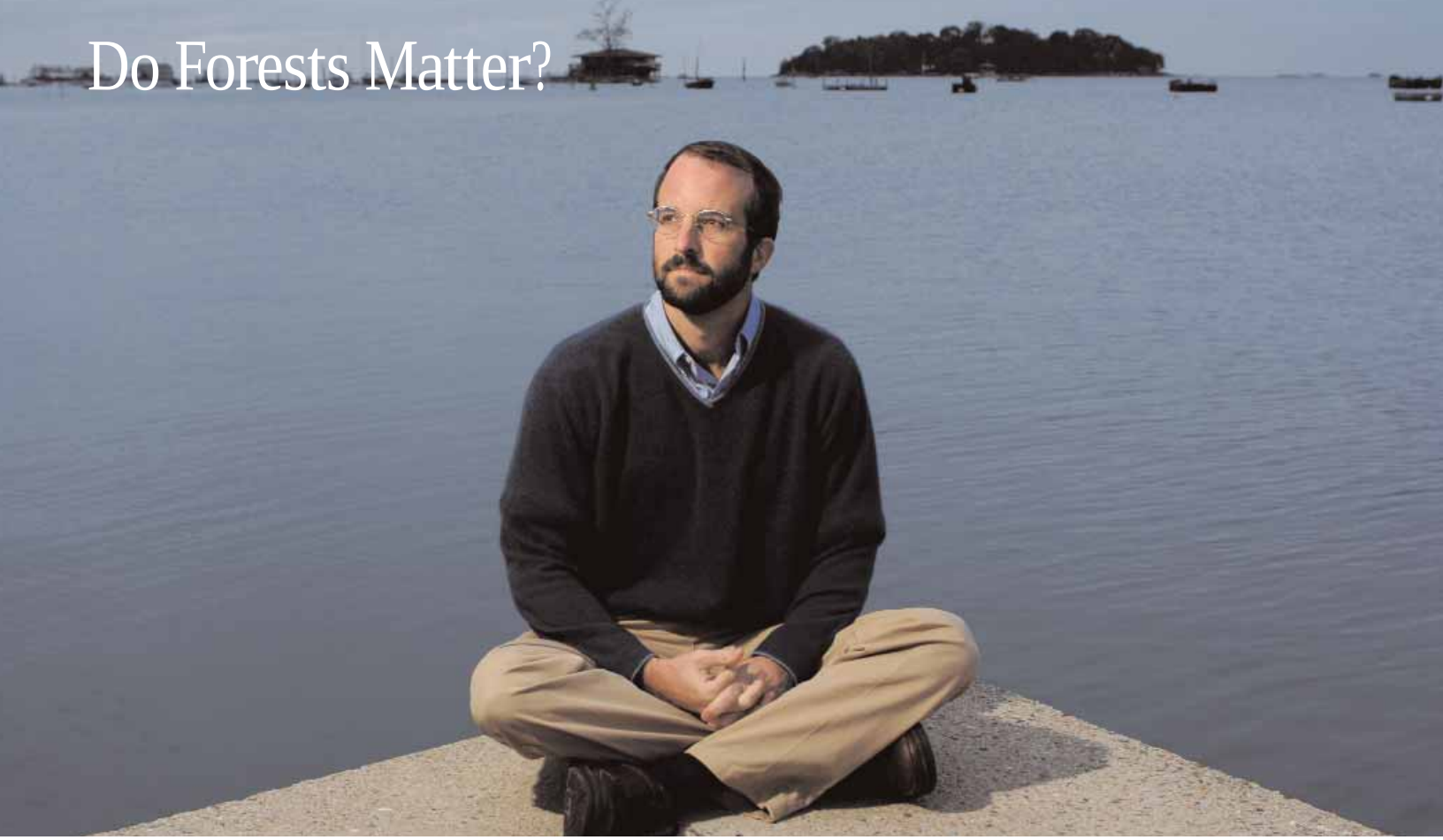
In addition, the YCI report details emissions from commuting, work-related travel, operation of university buses and other sources that are not being included in Yale's initial reductions target. The 1990 baseline data don't exist for most of these emissions, according to Tom Downing, senior energy engineer at Yale. Still, he says, the areas now being targeted—power plants, purchased electricity and buildings—account for about 80 to 85 percent of Yale's total emissions, or 263,000 metric tons in fiscal 2004.

And the good news? Yale has already demonstrated that it can, in fact, reduce its emissions even as it expands, according to Sam Olmstead, associate director of utilities compliance and projects. In fiscal 2005, when two new buildings came online, annual emissions dropped by 3,000 metric tons.

And that leaves … a bit more than 100,000 tons of reductions to go.

"A lot of people make a commitment that they know they can meet easily by doing simple things in conservation," says Olmstead. "But the simple things already got done here in the 1990s. I feel like we're really stepping up to a big challenge." EY

Do Forests Matter?



Peter Raymond, assistant professor of ecosystem ecology

"The complexities are so big that we don't really have the predictive power to say how much sequestration is going to happen in 50, 100, 150 years."

Peter Raymond

CONTINUED from page 5

consuming the output from 600 acres of land. In 1997 alone, fossil fuels enabled humans to burn the equivalent of more than 400 times the total plant matter grown that year throughout the world, including oceanic plankton.

But the living, renewable character of forests, which makes them so attractive as a global-warming remedy, is also what makes them such a challenge for the purposes of accounting. Getting the debits and credits of the carbon balance right is far more difficult than it sounds. In September 1999, for instance, Xuhui Lee, associate professor of forest meteorology and micrometeorology at F&ES, had his monitoring equipment set up in a mixed hardwood/softwood forest in Norfolk, Conn. Using intake tubes at 20 and 30 meters above the forest floor, he was measuring isotopes and eddy covariants, the flow of carbon dioxide between plants and the atmosphere.

"A typical New England forest of that type sequesters 2 metric tons of carbon per hectare per year," says Lee. What was happening at Norfolk looked reasonably stable, with two-thirds of the carbon going into the trees and a third into the soil. Rain might change the dynamic, because it causes carbon to leach out of the soil. But it rains only about 10 percent of the time in New England. So that seemed like a minor factor in the carbon budget calculation.

Then Hurricane Floyd hit, dumping 17 centimeters of rain on the site. "Over a day and a half, the forest lost 20 percent of its annual sequestration," says Lee, and brief, episodic events like that suddenly took on new importance. "Without understanding episodic release," says Lee, "it's very hard to get a handle on the question of whether forests can be used as a sequestration tool."

The list of factors affecting how much carbon a particular forest will sequester over time turns out to be long and dauntingly complex. The variables, says Lee, include species, terrain, microclimate, management practices, droughts, disease, hurricanes, forest fires and a host of other factors. Accounting for the role of forests in a global-warming context is particularly tricky, because global warming itself can drastically change the numbers—and in different ways at different sites.

Peter Raymond, assistant professor of ecosystem ecology at F&ES, uses alkalinity in streams and rivers to measure the export of carbon from a watershed. It's a way of detecting changes that might

not be evident just by looking at what's happening on land. Raymond studied measurements for the Mississippi River from 1950 to 2000, a period when precipitation in the watershed went up by about 10 percent. No one knows for sure whether this increase was a result of global warming. But the surprise was that carbon export shot up by 40 percent over the same period. "It was not a one-to-one relationship," says Raymond. In the Yukon River, on the other hand, Raymond and his co-authors found that carbon export had dropped over the past 25 years—apparently, they theorized, because global warming is causing increased vegetative decomposition and release of carbon dioxide on land.

"The point I was making," says Raymond, "is that this is something that terrestrial folks don't always take into their accounting." It isn't so much that they are missing the ways different regions might respond to global warming. Rather, the whole story of how rivers interact with the terrestrial carbon cycle seldom even enters into the equation.

"These are very complex systems," says Raymond, "and to give out sequestration credits for systems that we don't fully understand yet … The complexities are so big that we don't really have the predictive power to say how much sequestration is going to happen in 50, 100, 150 years. And we're working with a moving target because the climate, which is one of the major drivers, is changing in the midst of this attempt at sequestration."

Beyond the scientific complexities, the idea of using forestry to mitigate global warming also faces major political and economic obstacles. Among the first forestry projects to seek accreditation under the Kyoto Protocol was a eucalyptus plantation in Brazil's Minas Gerais state. The plan was to harvest the wood on a seven-year rotation, turn it into charcoal and use it to fire pig-iron smelters for a steel factory. The company involved, Vallourec & Mannesmann do Brasil, clearly was not trying to sell anybody a warm, fuzzy feeling about forests. It just wanted to sell "carbon-neutral" steel tubes. V&M argued that by using charcoal, which is part of the renewable cycle of carbon release and reabsorption, it could avoid using a nonrenewable fossil fuel—coke—and thus prevent 21 million metric tons of carbon dioxide emissions over the next 21 years. But V&M also said that the only way it could afford to stick with charcoal was by selling 5 million metric tons of carbon reduction credits for about 15 million euros ($18 million). Toyota, the car manufacturer, had committed to buy the credits.

To environmentalists, the project sounded like a parody of the idea of using forests to remedy global warming. The plantation would be "a green desert, and that's doing a disservice to the word 'desert,'" says Jutta Kill of Fern, a nonprofit group monitoring environmental and human rights issues in the European Union. "There's no undergrowth, no diversity, and it's very temporary storage, because after seven years the carbon will be released. It also needs inputs of chemicals and fertilizers, often petrochemical-based and often not considered as relevant to the carbon accounting."

In early 2005, the executive board of the Kyoto Protocol's Clean Development Mechanism (CDM) rejected the project. Under the concept it calls "additionality," the CDM awards offset credits only to projects that actually reduce the amount of greenhouse gases going into the atmosphere—and only if this is in addition to what would have happened in a "business-as-usual" context. V&M's "avoided fuel switch" argument flunked the additionality test. But other plantation forestry projects appear likely to win approval soon.

Kyoto participants opted for the additionality rule as a way to create a credible carbon market and avoid dubious accounting. But it means that there is no incentive for countries to preserve existing forests or reduce deforestation. The Kyoto rules may even work against the interests of natural forests. Because carbon payments accrue only when degraded timberland gets reforested or agricultural land gets afforested, additionality can seem like a mandate for plantation forestry, with nonnative trees grown in orderly rows and harvested on short rotations.

> The thinking among Kyoto participants about protecting existing forests has "come full circle."
>
> *Lisa Curran*

Lisa Curran, associate professor of tropical resources

Robert Mendelsohn, the Edwin Weyerhaeuser Davis Professor of Forest Policy

It's difficult for companies to justify investing in the slower, messier business of restoring and protecting standing forests, according to Bill Stanley '97, director of The Nature Conservancy's Global Climate Change Initiative. The upfront costs are large, it can be years before the trees grow fast enough to sequester significant amounts of carbon, and the additionality rule means such projects might never qualify for carbon payments. The Kyoto nations had what originally seemed like a good reason for denying credits to existing forests, says Stanley. They worried that "cheap forestry credits" would swamp the market, diverting efforts away from fossil fuel reduction and renewable-energy investment.

But the painful reality, says Lisa Curran, associate professor of tropical resources at F&ES, is that deforestation in Brazil and Indonesia alone will wipe out 80 percent of the gains the industrialized nations are now scheduled to achieve under the Kyoto Protocol. The numbers are even worse if you count emissions from forest fires.

"There have been massive changes in the tropics, especially in the last decade," says Curran, who has spent much of her career bushwhacking through the tropics seeking ground truth about the forest carbon cycle. "The Amazon and Indonesia now have the two largest deforestation rates in the world; 21,000 square kilometers are deforested every year in Indonesia, and 25,000 to 26,000 in the Amazon. So part of our work is to figure out how much carbon is stored in standing forests, how much is sequestered annually and what happens when you clear-cut it or turn it into plantations."

Curran works with NASA to develop accurate data for quick-and-dirty satellite monitoring of how much carbon is being either sequestered or emitted at a given site. Indonesia's vast peat swamp forests, for instance, hold more than 10,000 years of carbon in a peat layer down to 20 meters deep. Logging operations have stripped much of the forest cover in these swamps, says Curran, leaving the peat exposed to increasingly intense droughts and wildfires. In 1997-1998, the biggest El Niño year on record, carbon emissions from burning Indonesian peat exceeded all man-made carbon emissions from the entire North American continent. From the local perspective, she says, the peat is wasteland. "You can't farm it, you can't live on it." So there's no incentive for people to protect Indonesia's 300,000 square kilometers of peat swamp forest from going up in flames.

> Forest sequestration is only part of the solution.
>
> *Robert Mendelsohn*

But satellite monitoring could soon make it relatively easy to monitor the status of a remote parcel. And Curran argues that, with this system of verification in place, it could make good sense to pay locals for every year they keep a peat parcel intact by, for instance, building firebreaks. Curran and other scientists also recently proposed a system to reward countries for merely reducing the annual rate of deforestation below recent levels. "Compensated reduction" would be a way to enlist developing nations into the Kyoto process, and ultimately minimize the global-warming damage from fires and deforestation.

Who would pay? What would the return on investment be? How could a company get stockholders to swallow the idea of paying Indonesian peasants to stand guard over 10,000-year-old peat swamps?

Credits for keeping forests intact will eventually be just another product on the carbon trading market, says Curran. The industrialized nations participating in the Kyoto Protocol already face steady, mandatory reductions in their greenhouse gas emissions. A European Union cap-and-trade market system, which opened for business last February, allows companies that exceed their targets to sell carbon offset credits, at a current price of about 20 euros ($24) a metric ton. Companies that can't afford to cut actual fossil fuel emissions can buy offsets instead, giving everyone the flexibility to hit their targets at the least possible cost. (The theory is that the offsets will become more expensive as the mandatory reductions become more stringent, making investment in efficient technologies steadily more attractive.)

Injecting carbon dioxide underground faces unresolved problems of scale and safety, and it cannot match the benefits of forestry projects.

Florencia Montagnini

The impetus to develop economic incentives for keeping forests intact already exists, according to Curran and other observers of the Kyoto process. Rather than being swamped by "cheap forestry credits," global-warming strategists have awakened to the reality that they are being swamped instead by unimaginably vast quantities of carbon being released by tropical deforestation. The thinking among Kyoto participants about protecting existing forests, says Curran, has "come full circle."

Compensation for Sequestration

Fifty or 100 years hence, the world's forests will no doubt look dramatically different. They now cover about 3.5 billion hectares of the Earth's surface. If we do nothing, we will probably lose 430 million hectares of forest over this century, according to a recent paper by Robert Mendelsohn, the Edwin Weyerhaeuser Davis Professor of Forest Policy at F&ES, and co-author Brent Sohngen, Ph.D. '96. That deforestation will release an additional 64 billion metric tons of carbon—equivalent to 10 years of greenhouse gas emissions from all human sources worldwide—at current rates.

On the other hand, Mendelsohn and Sohngen suggest that a global program of monetary incentives could increase forestation by as much as 800 million hectares, locking up an extra 126 billion metric tons of carbon. Those bland numbers include the likely reforestation of the Rocky Mountains and large areas of Latin America, Africa and Southeast Asia. Forests could return to the green hills of England, with carbon subsidies replacing the subsidies that now keep the landscape open for agriculture.

"We only looked at the sequestration that was cheaper than what it would cost to do it with energy," says Mendelsohn. They concluded that the least-cost strategy would be to devote one-quarter of the total global-warming effort to forest sequestration. "It's not enough to take care of this problem by itself. It's only a part of the solution. But it should be part of the solution. We shouldn't try to do it without it."

Florencia Montagnini, professor in the practice of tropical forestry

The Mendelsohn-Sohngen proposal, titled "A Sensitivity Analysis of Forest Carbon Sequestration," bypasses the problem of additionality by compensating people for all forms of sequestration in forests. It addresses the impermanence of forestry sequestration by proposing to pay landowners who maintain their forests an annual "rent" for the carbon thereby kept out of the atmosphere. The proposed system of incentives would have to be global, the two authors argue, to get around another Kyoto problem called "leakage"—fixing the problem in one place, but in a way that makes it worse somewhere else. Thus manufacturers or timber companies can now respond to the Kyoto Protocol by simply shifting production from developed countries to Third World countries that are not subject to restrictions. Since a metric ton of carbon released in one place is just as bad for global warming as a metric ton released someplace else, no piecemeal solution can remedy the problem.

Where to put the forests? Stopping tropical deforestation is the obvious first step. But Mendelsohn and Sohngen also found unexpected geographical areas where carbon sequestration in forests could be attractive. "The cheapest are the boreal forests, because they're remote and slow-growing," says Mendelsohn. "We're talking about a couple of hundred miles into Canada, above the agricultural zone, and also Russia, and a little bit in Scandinavia.

"There are some pretty inexpensive options to extend the rotation length of the trees. In temperate zones, some 15- to 18-year rotations might be extended to 20 years. In the Pacific Northwest, where the rotation for Douglas fir is 55 years, you might push it to 60 or 70 years. That means you would be storing more carbon in the rotation on average." In theory, carbon rental income would make longer rotations economically attractive for landowners.

Reforestation would spread gradually, Mendelsohn suggests, "walking up that cost curve, from very inexpensive places to more expensive ones. But eventually you are going to have to replace valuable farmlands or push cities so they shrink, and it gets very expensive."

'Hell of a Problem on Our Hands'

Reforestation proposals will face considerable competition in the marketplace. Florencia Montagnini, director of the Program in Tropical Forestry at F&ES, serves on a Department of Energy committee funding sequestration research, and she laments the committee's preference for technological solutions. At the moment, injecting carbon dioxide deep underground, already in practice at some oil-drilling sites, looks like the cheapest sequestration methodology. But it faces unresolved problems of scale and safety, says Montagnini, and it cannot match the biodiversity and other collateral benefits of forestry projects.

Technological fixes could also become cheaper than forestry projects, at least in the short term. At a recent global-warming conference at Yale, Ken Newcombe, manager for the World Bank's Prototype Carbon Fund, predicted that a company seeking offsets could upgrade an inefficient, old coal-fired power plant in China on a 10-year contract at a cost of $6 a metric ton. By the time China becomes available as a source of offsets, he added, it will offer enough such opportunities to drive the worldwide price of offsets "almost to zero."

The accounting will also inevitably be easier for such "hard offsets"—that is, for paying someone else to reduce fossil-fuel emissions—than for "soft offsets," like forestry. Moreover, even environmentalists are likely to consider actual reductions philosophically preferable to reforestation as a remedy for global warming. On the other hand, global-warming strategists suggest that the scale of the problem is so large and so imminent that we can hardly afford to overlook a remedy, like forestry, with such vast potential to be either part of the problem or part of the solution.

"My guess," says Dean Speth, "is that by 2010 everybody in the world is going to realize that the goals set by these first efforts to address global warming are too low. People are going to see that we have a hell of a problem on our hands."

But if we wait until something truly alarming captures the public imagination—a rapid climate shift or runaway global warming—to take action, it could be too late for forests, or anything else, to do us much good. EY

The Heart of the Matter

CONTINUED from page 2

Finally, consider that political, technological and social changes take time. We are now in the most important race in human history—the race to change our politics, our technology and our personal consumption choices much faster than the world economy grows. Only unprecedented action taken with a profound sense of urgency can forestall an appalling deterioration of our natural assets. This is the challenge of environmental management.

To prepare for this race, we are building a new academic field, an interdiscipline called "environment." It is the rigorous scientific study of the interactions between human societies and the natural world of the biosphere. Knowledge generated in this new field becomes the basis for environmental management. We need a new generation of professionals trained in environmental management, and we also need the knowledge of environment to infuse the traditional professions—business, law, science and engineering, medicine and so on—and to motivate a revolution in personal choice as each of us carries out daily life as consumer, family member, investor, activist, worshipper, worker and voter. Environmental management thus becomes a civic responsibility of the first order.

It is good that we are now in the midst of a necessary and timely paradigm shift in our thinking about environmental management. In 1970, when the modern era of environmental concern was born, the environmental style was confrontational; business was the enemy. Today, we must try to put collaboration ahead of confrontation. Business must be on board, not overboard. We must all be environmentalists now.

In 1970, we created a separate environmental sector; today, we must make every economic sector an environmental sector. Every government agency must be an environmental protection agency.

In 1970, it was "put the polluters in a straightjacket." Today, it is let them out of the regulatory tangle if they can show they have a solution that is better. Then, our approach was command and control; today, it must also be goals and incentives.

In 1970, we were *against*; today, we must be *for*. Then, we defined problems; today, we must design solutions. Then, we responded; today we must anticipate.

In 1970, technology was the devil that got us into this mess. Today, we know that technology—soft and hard—must get us out of this mess. In 1970 it was end-of-pipe; today we must end the pipe.

In 1970, we saw an unguided market taking us over the cliff. Now, we know that the market can be guided for environmental as well as economic goals. But that guidance requires government action to get the prices right—environmentally honest prices. Antigovernment ideologues would rob us of the power of collective action for our common future.

In 1970, it was environmental protection; today, it is sustainable development—sustainable development in the poorer countries, for we will never sustain the biosphere unless the poorer countries are realizing their development and antipoverty objectives, and sustainable development for the rich, for success at the triple bottom line of environment-economy-society is a more worthy goal than achieving another 3 percent growth in GDP.

In 1970, it was national; today, it is "global." Pollution has gone global, species have gone global—and so must environmental management. Global governance must come to the environment. We need a WEO as strong as the WTO. Environmental diplomacy is not a sideshow; it's the main event. But, in the end, we know that all action is local. Our lives are local lives. The struggle begins locally.

We have pushed atmospheric carbon dioxide up by one-third, says Dean Speth, and started the dangerous process of warming the planet and disrupting climate.

"Despite the daunting projections of environmental decline, we affirm that we will win this struggle for the future."

Dean Speth

In 1970, we took a top-down approach; now, we must encourage innovative bottom-up, grassroots approaches—green jazz that is unscripted, improvisational and creative.

In 1970, we were too elitist. Now we must stress justice and equity: equity among nations, equity within nations, equity between the sexes, all in addition to equity for future generations. We have created wonderful protected areas but sometimes neglected the poor, the minorities, the victims, the indigenous peoples. Let their environmental rights now be asserted.

In 1970, it was species; today it is ecosystems. We should have always known this: human societies are utterly dependent on provisioning by nature's ecosystems. But we forgot it.

We must at long last take Aldo Leopold and his land ethic seriously. "A thing is right," he said, "when it tends to preserve the integrity, stability and beauty of the biotic community." Just as we have rights, the land community does also.

In 1970, we looked for government leadership. Today, we must often do it ourselves, with or without government. Business is often ahead of government; scientists are often ahead of government; consumers and environmentalists are often ahead of government. We should not wait for government. We must push it forward with us. Politicians ride the waves, as everyone knows. Citizens make waves.

In 1970, we were from Mars; today, we must be from Venus. Then, we broke things down to the component parts and laid out rational plans of attack. Now we know the most important resource is human motivation—hope, caring, our feelings about nature and our fellow humans. Today we need the preachers, the philosophers, the psychologists and the poets! In one poem, W.S. Merwin said: "On the last day of the world / I would want to plant a tree." And in another: "I want to tell you what the forests were like / I will have to speak a forgotten language."

"After the final no," Wallace Stevens wrote, "there comes a yes / And on that yes the future world depends." Despite the daunting projections of environmental decline, we affirm that we will win this struggle for the future. Yes.

And here we come full circle, for there is something vital from 1970 that we need to rekindle and rebuild, rather than move beyond, and that is the extraordinary spirit of that moment and the widespread popular demand for far-reaching change. One can hear that demand plainly in the words that citizens of Santa Barbara sent to the U.S. Congress in 1970 shortly after the devastating oil spill there: "We, therefore, resolve to act. We propose a revolution in conduct toward the environment. . . . Today is the first day of the rest of our life on this planet. We will begin anew."

It can seem that we are now a long way from the prosaic subject of environmental management, but we are actually at the heart of the matter. EY

In This Ecological Undercard, the Forest Understory Is the Underdog

By Hannah Fairfield

Dave Ellum reached into the dense grass, ripping at the tangled mats as the sun beat down on a field of grasses and asters in Yale-Myers Forest that had been shaded by a canopy of sugar maples and oaks two years earlier. When his hand felt earth, he parted the matted green stalks, exposing a tiny wild sarsaparilla plant.

"The forest undergrowth is still here in some places," said Ellum, a doctoral student and the forest's coordinator of research and demonstration. "But the cards are stacked against it."

Ellum's research focuses on the ecology of forests, *below* the trees. The species that live in the understory are ecologically sensitive and exhibit the highest plant biodiversity in the forest, but they are also the most vulnerable to change. Common uses of a forest, such as timber production, watershed management and recreation, often result in major changes in the forest canopy. Because of the abrupt ecological shifts that occur when the trees are removed, Ellum believes that the conservation ethic should extend to the nonwoody species—plants that have been previously overlooked in forest management practices.

When a forest stand is logged, the groundcover plants immediately switch from living in deep shade to constant bright sunlight, and most are not able to survive. Sun-loving plants, such as grasses, asters and fireweed, sweep in and crowd out the shade-lovers—ecological underdogs like wild sarsaparilla, Jack in the Pulpit, wild orchids and starflowers.

Keeping the understory plants alive, Ellum said, is an important part of managing a multiuse and sustainable forest. The shade lovers have been shown to be important links in nutrient cycling, helping to keep the trees healthy; this in turn allows a forest to prevent erosion, purify drinking water and sequester greenhouse gases, among other functions. Understory plants also tell the story of the land itself, because their growth patterns can indicate land-use history. And some plants, like American ginseng, wild sarsaparilla's cousin, can be cultivated in the forest understory and harvested to sell.

But in the shadow of the trees, the understory plants have been largely ignored. "We do not yet understand the full role of these plants in maintaining the viable function of forested ecosystems, or the many more tangible benefits they will provide to society in the future," Ellum said.

Efforts toward sustainability have, for the most part, been focused on timber. Regulatory standards for sustainable forestry, as set by the Forest Stewardship Council and the Sustainable Forestry Initiative, recommend that biodiversity be protected, but specific techniques for doing so are not widely available. Ellum's research seeks to change that, to find ways that timber managers can increase the survival rate of many ecologically valuable species, rendering the whole forest more valuable. There is a growing interest in "multitasking" forestland by finding medicinal and horticultural uses for understory plants, like ginseng. Because the Yale-Myers Forest, which covers 7,840 acres in northeastern Connecticut, has earned certification as sustainably managed and is logged periodically, it is the perfect laboratory.

"Timber is an important resource," Ellum said. "But in many instances it is possible to take the timber, as well as conserve plants of interest. We don't have to choose between them."

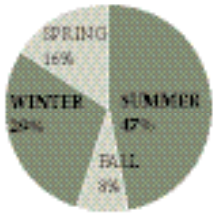
A forest's biodiversity riches are found in the understory; the Yale-Myers Forest has more than 200 species of nonwoody ground plants, but just 28 species of trees. In Connecticut, 40 percent of all plants listed by the state as endangered or of special concern, including all listed wild orchids, live in the forest understory.

Understory plants are vulnerable to ecological stress because they are unable to adapt quickly to changes in exposure to sunlight. They are long-lived—a Jack in the Pulpit may live 25 years—but they grow

Conserving the Forest *Below* the Trees

Most timber harvests occur during the summer and winter when the soil is dry or frozen. David Ellum, a forest ecology doctoral student, demonstrated that in areas where certain understory plants need to be conserved, shifting more harvests to winter can better protect the plants.

Yale-Myers Forest timber harvests, 1978 to 1993



The experiment: Jack in the Pulpit (Arisaema triphyllum), a common understory plant, was grown in pots for a year. Some were moved into direct sun, which simulated canopy removal.

MOVED INTO THE SUN:	RESULTS
Never. The control group remained in the shade.	The control plants were healthy, with large, flat leaves.
In June, after the plants grew leaves.	The leaves became bleached and dried out.
In February, before the plants grew leaves.	**Leaves grown in the sun were smaller and thicker, less likely to dry out.**

Source: David Ellum

David Ellum tends to a downy rattlesnake orchid (*Goodyera pubescens*), one of several understory plants that he is studying at Yale-Myers Forest. In the foreground, at left, is partridge berry (*Mitchella repens*).

"In many instances it is possible to take the timber, as well as conserve plants of interest. We don't have to choose between them."

David Ellum

slowly and reproduce even more slowly. A downy rattlesnake orchid creates one clone a few inches away from itself every three years. A patch of orchids that covers 1 square foot represents many decades of growth.

So when an area of the Yale-Myers Forest is logged, the understory plants are metabolically sucker punched because their exposure to sunlight soars to 100 percent, with no canopy, from about the 1 to 5 percent they have adapted to. Their leaves begin to look burned and desiccated. Their respiration races ahead of their photosynthesis, and they struggle to stay alive. While they are foundering, sun-loving plants parade in, reproducing quickly and choking off the already stressed shade plants. Grasses, asters and fireweed can cover wide swaths of logged land in a few weeks.

Because of the increasing pressure for timber resources, Ellum knows that forest managers need better techniques for preserving biodiversity and conserving rare plant species in areas that are logged.

"I'm not looking for really complex answers," he said. "I want to develop forest management techniques that can be readily applied in the field."

To that end, one of Ellum's experiments focused on the seasonal timing of timber harvests and its effect on nonwoody plants. Nearly half of all the timber harvests at the Yale-Myers Forest between 1978 and 1993 occurred in the summer. But many of the understory plants are dormant in the winter and leaf out in the spring, so their low-sunlight metabolic processes are set by the summer.

Ellum wondered whether, if canopy removal took place in the winter, the plants' metabolism might have time to adapt during leaf development, leading to higher survival rates.

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In Giving to F&ES,

Businessman Prefers Pragmatism to Preaching

Joe Williams, Yale College Class of 1956.

By Stacey Stowe

Joe Williams has little patience with polemicists. True, the man who recently pledged $1 million to the Yale School of Forestry & Environmental Studies is an avowed conservationist, but he's also a businessman and a pragmatist who'd rather find solutions to environmental problems in the middle than retreat, empty-handed, to philosophical corners.

"I had no interest in being a radical environmentalist, but I came to realize that I could not sit on the sidelines and watch our natural world degrade," Williams said, as he reflected recently on bridging the divide between his two worlds, his career in a major natural gas company and his environmental stewardship. "But I developed an acute interest in trying to open dialogues on both sides. We had everything to gain by talking to each other and trying to work out solutions that were constructive and sustaining, not just window dressing."

Four years ago, during a meeting with Dean Gus Speth, Williams said he learned that F&ES wanted to expand environmental course offerings in Yale College. The two also discussed how the graduate school could answer a need, witnessed by Williams in his volunteer conservation efforts, for more and better-trained professionals in nongovernmental organizations (NGOs).

"What if a student with an interest in research management or a number of different things spent three months in the field with an NGO working on a problem?" Williams asked. "It would expand the student's capabilities and also give the NGO the opportunity to have an additional bright, young person working there." Even better, Williams asked, what if the student returned there to work after graduating from F&ES?

> "I had no interest in being a radical environmentalist, but I came to realize that I could not sit on the sidelines and watch our natural world degrade."
>
> *Joe Williams*

His pledge will be split between support for the undergraduate program in environmental studies and funding of internships for F&ES students interested in working with nongovernmental conservation groups.

"Joe's gift will also help us provide a very strong environmental program for Yale College students. It's wonderful to have this new support," Dean Speth said.

Williams, Yale College Class of 1956, has long been a supporter of the university. He was a member of the Yale Corporation from 1977 to 1989 and a member of the Yale Development Board until 1999. In 1984, he with other family members contributed a gift to establish the Williams Brothers Chair at the School of Management. He has been a member of several of his reunion gift committees, and was awarded the Yale Medal for Service to Yale. In 2002, he accepted an invitation to join the School of Forestry & Environmental Studies' Leadership Council.

After graduating from Yale, Williams performed two years of military service in Germany as a platoon leader in a tank battalion. When he returned to the States, he was reluctant to join the family business until a persuasive cousin changed his mind. The Williams Companies (formerly Williams Brothers), headquartered in Oklahoma, produce, gather, process and transport natural gas. The job initially took Williams abroad for almost a decade, including seven years in Iran, where he was involved in building pipelines and installing oilfield facilities.

Early on, he said he believed that industry had the best resources to address large-scale environmental problems, but for one obstacle—the yawning divide between environmentalists and those in the business community.

He cites resource allocation as something "right at the core of the kinds of curriculum Yale is working on."

"You can't just lock up land, but you also can't turn developers loose," he said. "I come out as a centrist here."

During the summer, Williams lives 4,000 feet up a mountain in North Carolina in Southern Appalachia, and it is there that he began volunteering with a local environmental group on land preservation. In the early 1980s, he joined The Nature Conservancy, which he greatly admires and whose board of governors he would later chair.

He was further engaged with the conservancy when living and working in Oklahoma, where he led the effort to raise $15 million to buy 30,000 acres and establish the Tallgrass Prairie Preserve in northeastern Oklahoma. He was the first chair of the Oklahoma chapter of The Nature Conservancy.

"At the end of summer, if you ride a horse through it, you're right up to your chest in the tall grass," he said, in a soft drawl, as he sat in a hotel lobby, far from the rippling fields, during a recent visit to Manhattan with his wife, Terry.

His own environmental streak surfaced as a boy, bird and duck hunting in and around his family's land near Camden, S.C. He laughed about being lured to St. Paul's School in Concord, N.H., by the promise of woods and ponds, only to discover that the water began freezing at the end of October and stayed that way through part of April.

When it came time to raising his boys, the woods, the fields and the water largely defined family life.

"The entire recreational side of our life as a family was spent hunting, fishing, camping and hiking in the outdoors," he said. "There wasn't a whole lot of preaching about it; it just naturally occurred."

These outdoor pursuits were the foundation for the careers of all three of Williams' sons: Joe Jr. is an evolutionary biologist on the faculty of the University of Tennessee; Peter, a former wildlife biologist at the University of Vermont, is an environmental consultant; and Jamie '89, Yale College Class of 1985, is executive director of the Montana program of The Nature Conservancy.

Williams' pledge to F&ES is aimed at those who are launching environmental careers. But he is mindful of the value of broadcasting the message of conservation early on. At his home on Spring Island, S.C., north of Savannah, Ga., Williams is involved with a land trust that does water pollution studies, runs educational programs and conducts a natural history program for every fifth grader in Jasper and Beaufort counties.

"I won't be around to see the harvest, if there is one, but I just have to feel if these kids in fifth grade are exposed to environmental thinking and nature's beauty, hopefully they'll develop an interest in protecting the natural world," he said, adding, "That's pretty idealistic stuff, but imagine if it works out?" EY

In This Ecological Undercard, the Forest Understory Is the Underdog

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He devised an experiment for four nonwoody forest plants—wild sarsaparilla, Jack in the Pulpit, starflower and Canada mayflower—grown in pots. After a year of being grown in the shade, the plants were divided into three groups: one group was moved to full sunlight in February before the plants had grown leaves; a second group was moved to full sun in June after the plants had grown leaves; and a third group, the control, remained in the shade.

He expected that the plants grown under the full canopy would prosper and that the ones exposed to full sun in June would wither, but the big question was how the plants exposed to full sunlight in February would react. Ellum predicted that they would show a greater ability to adapt to the sun—and he was right. The plants exposed to full sunlight in February—three months before the plant produced leaves—grew extraordinarily well. Their leaves were thicker and smaller and, therefore, less likely to dry out in the bright sun than the shaded control group. And they were healthy and fully able to photosynthesize, unlike the plants that were moved to sunlight in June, which died.

Ellum's conclusion: if forest owners shifted more harvest operations to the winter, the exposed understory might be able to compete with the asters and grasses.

"Can most small, private landowners wait six months to log? Probably, said Ellum."

Changing the timing of logging is one technique that forest landowners can use to wisely manage the timber while preserving biodiversity. Another proposal to promote the survival of native species is modifying the shape of the harvested area. Forest understory plants have a higher survival rate near the edges of a timber cut, where they are still shaded by trees. So oval- or rectangle-shaped timber cuts, which have longer perimeters than a circular one of the same area, could provide increased refuge at the edges, where forest understory plants can set the stage for recolonization of a future forest stand.

Ellum's holistic view of forest management grew out of his deep involvement with the forest. In addition to his doctoral research, he coordinates faculty and student research projects in the forest, and lives there for several months of the year. He also hosts about 100 incoming master's students every summer, demonstrating for them the principles of field ecology and his love for the forest.

"I think it's important to become part of the place you study and to see it through many seasons," he said. "I've been lucky to have this opportunity, and I hope to do this for the rest of my life." EY

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F&ES Conference Generates Agenda to Address Science-Action Gap on Climate Change

By Daniel Abbasi
Associate Dean

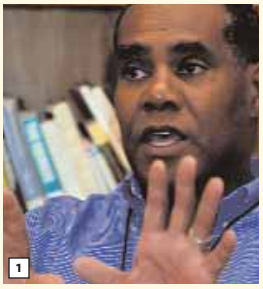
The Yale School of Forestry & Environmental Studies exercised its convening capacity in early October on one of the great intellectual and practical challenges of our time: the gap between science and action with respect to the high-stakes issue of climate change.

Despite credible forecasts and warnings from the scientific community about climate change for over two decades, greenhouse gas emissions have continued to grow, signals of human-induced climate change have begun to emerge and scientists studying the issue project increasingly adverse consequences unless stronger actions are taken. Public opinion polls, meanwhile, reflect significant awareness of climate change, but also a striking lack of civic engagement and urgency to undertake meaningful action. Nor has the official governmental response been commensurate with the scientific indicators.

Against this backdrop, F&ES drew 120 top leaders and thinkers to Aspen, Colo., from October 6 to 8 to engage in a set of candid, intensive and not-for-attribution dialogues designed to diagnose the reasons for the science-action gap and to fashion an action plan to help narrow it. The event drew high marks from the attendees for its innovative working-group format and its unusually diverse mix of participants, including former Vice President Al Gore; U.S. Congressman Jim Leach (R-Iowa); Reverend Richard Cizik of the National Association of Evangelicals; Jim Rogers, chair, president and CEO of Cinergy and incoming chair of the Edison Electric Institute; Dick Wirthlin, former President Reagan's chief strategist; Cornelia Dean, *New York Times* reporter; Jane Lubchenco and Stephen Schneider, prominent scientists; Reverend Barrett Duke of the Southern Baptist Convention; U.S. Senator John Kerry (D-Mass.); Frances Beinecke, executive director of the Natural Resources Defense Council; Peter Seligmann, chair and CEO of Conservation International; and the presidents of many of the nation's other major environmental organizations.

In addition, 11 F&ES faculty members participated in pivotal roles such as working-group chairs, and nearly as many current and former students served as skilled rapporteurs to help distill and report on the findings.

Each participant was assigned to one of eight working groups based on their professional background: Science; News Media; Religion & Ethics; Politics; Entertainment & Advertising; Education; Business & Finance; and Environmentalists & Civil Society. On the first full day,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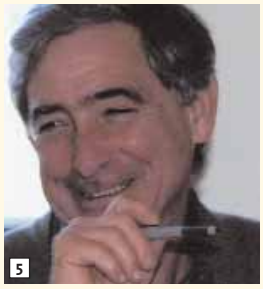
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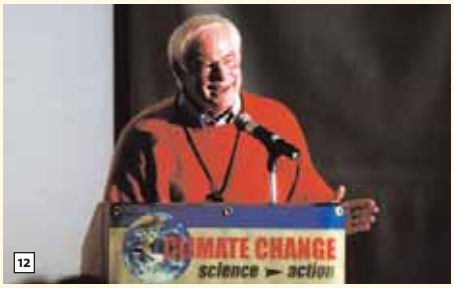

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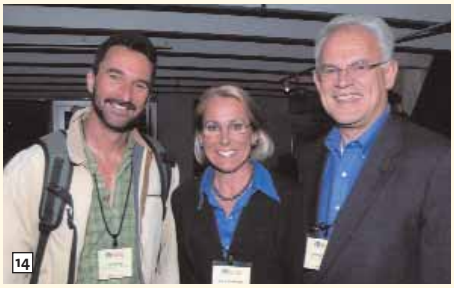
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conferees were asked to diagnose how the norms, incentives and institutional constraints operating in their respective professions have shaped their responses to the climate-change issue and, in turn, have contributed to the science-action gap. Scientists, for example, identified strong risks to career and reputation that tend to inhibit their outspoken engagement in the public realm on controversial issues like climate change.

Participants then proceeded to generate dozens of ideas and initiatives to help close the gap, both through action within their respective professions and through new or enhanced collaborations across these boundaries. On the second full day, the participants were shuffled into new, mixed groups and asked to further refine and extend the action items from the prior day.

Overarching themes included the recognition that communicating scientific facts is not enough to motivate a societal response. Abstract issues like climate change need narrative packaging and often a human face. Conferees explored, with the aid of leading social scientists such as Jon Krosnick and Arthur Lupia, how cultural and religious values, partisanship and other filters affect the way individuals interpret and often discount scientific information on climate change. This becomes especially crucial regarding the complex and technical matters surrounding climate change, where people necessarily rely on the testimonials of others; in such cases, whom do they trust as messengers and why? Many conferees argued that climate change would only generate a societal response once it was recast from a scientific issue to a moral or energy issue. Others underscored how important it is to recruit new, nonenvironmentalist messengers and to strike new alliances on the issue, for example between religious and business leaders.

F&ES is evaluating what role it might play in advancing the recommended actions, which were sparked by the diversity of views expressed at the meeting rather than by a full consensus. They included the following:

❒ The Science group recommended the creation of a new bridging institution that would seek out business, religious, political and civic leaders and the media to deliver independent, reliable, comprehensible and credible scientific information about climate change, unassociated with any advocacy agenda. The group also called for research priorities on climate change to be reoriented so as to be more responsive to decision-making needs, with special emphasis on the timing of projected impacts and related solutions.

❒ The News Media group recommended orchestration of a series of meetings and conferences whereby respected journalists and editors informed on climate change would speak to their peer editors. The group members believe that this peer-to-peer approach would be more effective than communications conducted by scientists or environmentalists, since fellow editors could talk more credibly about story ideas and their craft and thereby provide guidance on how to cover climate change with appropriate urgency, context and journalistic integrity.

❒ The Religion & Ethics group called on their fellow religious leaders to acknowledge the scale and urgency of the climate-change problem and to reach deep into their membership to communicate the vital moral imperative of addressing it. In particular, they urged that seminaries and other religious-training institutions incorporate climate change into their curricula for new religious leaders and provide similar, ongoing education to current clergy.

❒ The Education group recommended incorporation of climate-change content into K-12 curricula and teacher-certification standards (using the occasion of the 2007 review of the National Science Education Standards), as well as into instructional technologies, devices and software products, including video games and educational simulations such as SimCity.

CONTINUED on page 26

F&ES Conference

❒ The Business & Finance group composed an eight-principle framework and urged its dissemination to trade associations and individual business leaders. These principles include analyzing and disclosing financial risks and opportunities related to climate change; developing a companywide plan to address climate-change risks and opportunities; convening board-level sessions to inform and educate executives and members on climate change; requiring major suppliers to adopt principles for corporate engagement on climate change; and engaging in policy dialogue at the state, regional and national levels in support of market-based, long-term reductions in greenhouse gas emissions, while limiting manipulation of scientific information.

To request notification when the full report of recommendations is released, visit www.yale.edu/environment/aspen.


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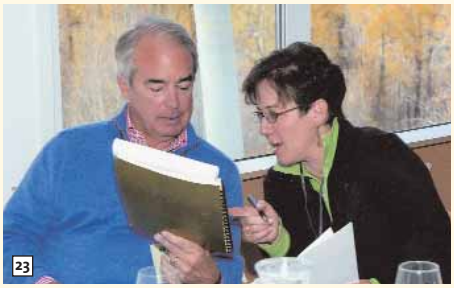
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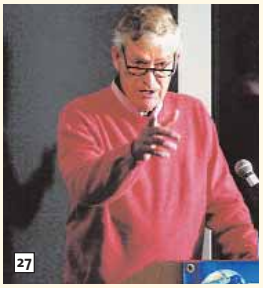
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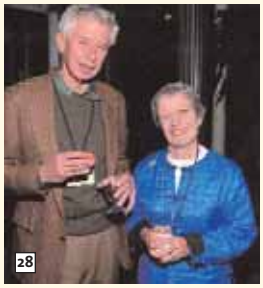
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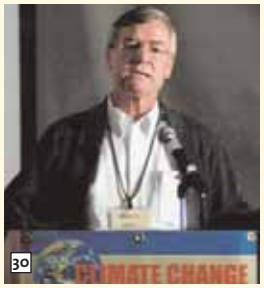

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1 Steve Curwood, executive producer and host of National Public Radio's *Living on Earth* program

2 Richard Wirthlin, principal of Wirthlin Worldwide and pollster and strategist for former President Ronald Reagan

3 Ellen Futter, president of the American Museum of Natural History

4 Edward Skloot, executive director of the Surdna Foundation

5 Stephen Kellert, F&ES Tweedy/Ordway Professor of Social Ecology

6 Conferees during an hour-long hike; the Rockies are in the background.

7 Auden Schendler, director of environmental affairs at the Aspen Skiing Company; Brad Gentry, F&ES senior lecturer in sustainable investments; and Os Schmitz, F&ES professor of population and community ecology

8 David Fenton, founder of the public relations firm Fenton Communications; Kathy Katz; Judy Hill; Randall Katz, president and CEO of Milestone Entertainment; and Jeff Burnside, a producer and reporter for WTVJ NBC 6 in Miami

9 Strachan Donnelley, president of the Center for Humans and Nature; Rick Kroon, former managing partner of the Sprout Group venture capital fund; and Fred Danforth, managing partner of Sustainable Land Ventures

10 Arthur Lupia, professor of political science at the University of Michigan; Jon Krosnick, Frederic O. Glover Professor in Humanities and Social Sciences at Stanford University; and Lisa Curran, F&ES associate professor of tropical resources

11 Martin Kaplan, an attorney with Wilmer Cutler Pickering Hale and Dorr LLP, and Eileen Claussen, president of the Pew Center on Global Climate Change and Strategies for the Global Environment

12 U.S. Congressman James Leach (R-Iowa)

13 Linda Shi, an F&ES student rapporteur; John Wargo, F&ES professor of environmental risk analysis and policy; and Kelly Levin, a rapporteur and F&ES doctoral candidate

14 Hal Harvey, environment program director at the William and Flora Hewlett Foundation; Clara Schweiger; and Larry Schweiger, president and CEO of the National Wildlife Federation

15 Mark Schwartz, former president and CEO of Soros Fund Management, and Mindy Lubber, president of Ceres (Coalition for Environmentally Responsible Economies)

16 Virginia Lacey, F&ES student rapporteur; Betsy Fink; Ann Grodnik, F&ES student rapporteur; Daniel Esty, F&ES professor of environmental law and policy; and Jesse Fink, president and CEO of Marshall Street Management

17 Ellen Susman, producer and host of the weekly Houston PBS program *Superwoman Central*; Stephen Susman, founder of the law firm Susman Godfrey; Cynthia Brill, general counsel for Verified Identity Pass; and Steven Brill, founder and CEO of Verified Identity Pass

18 U.S. Senator John Kerry gives a talk at the Pine Creek Cookhouse.

19 Marian Chertow, F&ES assistant professor of industrial environmental management, and Dean Speth

20 Edward Bass (center), philanthropist

21 Former Vice President Al Gore and Carl Knobloch, president and CEO of West Hill Investors

22 Eugene Linden, freelance journalist and author; Jeff Burnside, a producer and reporter for WTVJ NBC 6 in Miami; Jon Krosnick, the Frederic O. Glover Professor in Humanities and Social Sciences at Stanford University; and Dean Speth were part of the News Media working group.

23 James Rogers, chair, president and CEO of Cinergy Corp., and Mindy Lubber

24 Jessica Catto, president of Crockett Street Management; Dean Speth; Teresa Heinz, chair of the Howard Heinz Endowment and the Heinz Family Philanthropies; and Associate Dean Daniel Abbasi

25 Adam Wolfensohn, a New York-based producer of environmental documentaries; Peter Seligmann, chair and CEO of Conservation International; Frances Beinecke, executive director of the Natural Resources Defense Council; and Susan Crown, principal of Henry Crown and Company

26 John Scurci, principal of J. Scurci Co., and his daughter, Vanessa

27 Timothy Wirth, president of the United Nations Foundation and Better World Fund

28 Robert Repetto, F&ES professor in the practice of economics and sustainable development, and Emily Knobloch

29 Al Franken, host of *The Al Franken Show* on Air America Radio

30 Robert Edgar, general secretary of the National Council of the Churches of Christ in the USA

31 William Ellis, an F&ES senior visiting fellow

Habitat Conservation Plans a Tonic for an *Endangered* Endangered Species Act

By David Skelly
Professor of Ecology

David Skelly

During more than three decades, the Endangered Species Act (ESA) has been heralded as a revolutionary success and derided as ineffective or worse. While Americans are divided over this controversial law, it is difficult to find anyone who wants to reauthorize it in its present form. In 1998, then-Interior Secretary Bruce Babbitt came to speak at Yale. His visit coincided with the last time that Congress was considering revising the law, and so I posed the question to him, "How would you change the Endangered Species Act?" Babbitt responded that he wouldn't change a thing. At that time, as at the present, criticism of the ESA was widely reported in the media, and there were calls to reduce protections. Babbitt believed that the law contained enough latitude so that he could reform the way the Department of the Interior did business in ways that many thought would require radical legislative revision.

Babbitt's efforts succeeded in supplanting a large regulatory hammer encased in the ESA with an incentive-oriented initiative known as Habitat Conservation Plans (HCPs). HCPs are, in the simplest terms, contracts. Rather than being handed down by federal officials, they are written by those affected by the law: landowners, corporations and local and state governments. These entities are offered the opportunity to propose solutions that can allow commerce, development and other activities to coexist with conservation efforts. Planning is encouraged for any and all species, regardless of their conservation status. Once the federal government approves an HCP, it is bound to its terms. If a revision to the plan is deemed expedient, then the government must pay for it.

Reform in the administration of the ESA has led to a groundswell of large-scale planning initiatives all over the United States. From the pine forests of the Southeast to the deserts surrounding San Diego, communities are taking proactive steps to create innovative plans that have local support. Even better, results from the earliest HCPs show that they work. International Paper crafted an HCP for its Southlands Forest in Bainbridge, Ga. In just five years, the population of red-cockaded woodpeckers, an endangered species, has increased from 5 to 50, all because the agreement removed the disincentive to let pine stands grow until they were colonized by the birds. Comparable successes are being repeated all around the country.

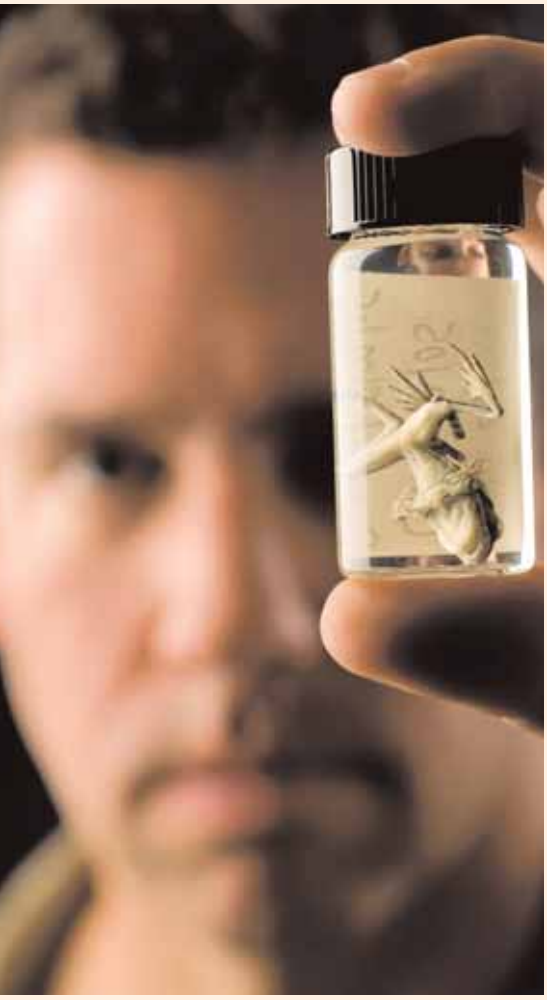
While we can credit Babbitt's Department of the Interior with great foresight, in truth they overhauled administration of the ESA partly because they had little choice. It was becoming increasingly difficult, even then, to list new species and even harder to enforce measures for previously listed species. To many people, endangered-species conservation was beginning to look like just another form of government bullying. Today, even though much of the public believes that federal actions to conserve species and ecosystems are needed and important, they also want local input and control. Environmental groups can gnash their teeth at these sentiments, but they are a fact of our society. It is clear that a functioning ESA will have to devolve some of the decision making responsibility to local interests.

The success of HCPs shows that decentralization of planning, intelligently conceived, can work well. Continuing controversy surrounding the ESA concerns not HCP planning processes, but rather species listing, critical habitat designation and recovery planning. Together, these elements form the bedrock of the original ESA, providing an "emergency room" for species on the brink. However, there are good reasons to revise these processes and, importantly, to change their relationship to large-scale planning efforts like HCPs, which are aimed at avoiding listing rather than waiting for the inevitable to occur. Most biologists agree that measures to avoid endangerment are more cost-efficient than efforts at recovery. One explicit goal of a new ESA should be to provide incentives to further initiatives, like HCPs, that will prevent the need to list species as threatened or endangered. It is also apparent that a new listing and recovery planning process will be needed to break the paralysis-by-lawsuit that has plagued endangered-species conservation during the last decade.

Clearly, there is ample room for constructive debate and creative thinking. The way forward is not, however, to gut the ESA. There is broad support for conservation in the United States. People want effective and efficient mechanisms that can allow flexibility in reaching an agreed-upon goal. All constituencies can agree that an ESA that provides incentives to avoid listing species and does not penalize responsible citizens is preferable to one that steps in only at the last moment and fails to prevent native species, elements of our national heritage, from disappearing. We are fortunate that in the last 20 years professionals and the public have been working together to create better ways to reach conservation goals. Now is the time to put that newly gained understanding to work. EY

Research Points to Land Use
as Likely Culprit of Frog Deformities

By Marc Wortman



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David Skelly, professor of ecology, holds a vial containing a frog with three hind legs.

"I care about frogs, but the real issue is human health."

David Skelly

In 1996, Vermonters began seeing something unnerving in the ponds and wetlands near Lake Champlain. Large numbers of frogs were missing limbs and hopping about in circles. Surveys found that one in 10—and at some sites as many as four in 10—frogs within the 120-mile-long watershed were missing limbs. A team of Yale scientists went wading through the streams, ponds and swamps to collect thousands of the frogs, searching for the cause of the problem. They now worry that not only are large portions of the frog population struggling to survive, but also that the developmental abnormalities could be an early warning sign of environmental hazards that may eventually prove harmful to humans.

In the most exhaustive study ever undertaken of developmental malformations in amphibians, the Yale team's findings point to chemical runoff from nearby agricultural lands as the likeliest source of the problem. The study's findings, published in the journal *Environmental Health Perspectives* in November, contradict previous findings about the causes of amphibian developmental abnormalities now being seen around the country. The study also raises concerns that the amphibians may be "animal sentinels," much like the canaries that coal miners carried with them as living sensors of rising carbon monoxide levels in the mines.

Around for more than one hundred million years before dinosaurs first appeared, amphibians, including the 230 species in the United States, are among evolution's hardiest vertebrates, having survived numerous cataclysmic geological events. Amphibians reproduce in toxic stews that few other vertebrates can tolerate, even in sewers and septic systems, and as long as water can be found, they can make it through the hottest summers and coldest winters. "Unlike canaries, frogs are pretty much bulletproof," said David Skelly, professor of ecology at F&ES, who led the team that collected and the Vermont frogs. "Amphibians are not acutely sensitive to environmental insult." And that is what worries him.

Amphibians afflicted with developmental abnormalities have now been spotted in 44 states and Canada, according to NARCAM, the North American Reporting Center for Amphibian Malformation, which is now managed by the National Biological Information Infrastructure. After the first important outbreak was seen in Minnesota in 1995, biologists concluded that a waterborne trematode parasite, *Ribeiroia ondatrae*, not known to harm humans, appeared to be the likeliest culprit. Armed with a $2.1 million, five-year grant from the National Institutes of Health and the National Science Foundation, Skelly led a team that began collecting frogs at some 40 sites within the Lake Champlain watershed in western Vermont, starting an hour and a half from New Haven and extending northward nearly to the Canadian border.

"We found deformities up and down the state," he said. What they did not find was *Ribeiroia*.

Bringing Epidemiology to the Swamp

The study of the frogs forged an unusual Yale collaboration between Skelly, "the muddy-boots-go-out-and-get-the-frogs guy," as he described himself, and Peter Rabinowitz, a physician "with the stethoscope hanging on the door." Rabinowitz, an associate professor of medicine in the Occupational and Environmental Medicine section of the School of Medicine's Department of Internal Medicine, spends most of his time investigating human health problems associated with the workplace environment. However, he has also been studying animal die-offs and abnormalities as precursors to impending human health problems.

Rabinowitz has developed an online database to collect studies linking animal health to human health (www.canarydatabase.org). The fast-accumulating studies indicate the growing interest in animal sentinels, such as the dead crows that have presaged human cases of neurologic encephalitis

Peter Rabinowitz, associate professor of medicine in the Yale School of Medicine.

from West Nile virus. And there are growing concerns about avian influenza viruses found in chickens that are spreading to humans. "We pay more attention now because of infectious diseases," he said, "but there are lots of past examples related to toxins."

One of the most famous animal sentinel cases preceded the rash of horrific human birth defects in Japan resulting from the consumption of mercury-laced fish from the Minamata Bay in the 1950s and 1960s. People disregarded the large numbers of fish-consuming cats that became ill well before human birth defects began to appear. "There's always a danger in not paying enough attention to what these events are telling us," Rabinowitz contended, "and also in overreacting. But it's worth spending adequate resources to study them because they may be important for animal *and* human health."

With Brynn Taylor, a student in the joint master's degree program in environmental management and public health, the team applied epidemiological techniques to the study of possible risk factors associated with malformations being seen in the Vermont frog population. Skelly's lab systematically collected frogs, a total of nearly 6,000 specimens. The team also used geological and land-use maps to survey the surroundings for houses, farms, lawn and agricultural chemical applications and septic systems within 200 meters that could be contaminating water at the collection sites.

Their approach included epidemiological statistical methods that Rabinowitz would typically apply to public health studies. They sorted through and weighed the many environmental and biological variables that might play a role in the developmental malformations.

Because predators can mutilate frog limbs, any animal with evidence of trauma was immediately eliminated from the study. They then considered the most widely held hypothesis, the presence of *Ribeiroia*, which can prevent the formation of or truncate limbs by blocking their development. The group examined the skins of the remaining frogs for cysts, and dissected the animals for other evidence of *Ribeiroia*. None was found. Additionally, snails known to serve as a host for part of the trematode's life cycle were collected from the ponds and studied. Again, *Ribeiroia* was not found. "The parasite," said Skelly, "simply isn't part of the picture. It has to be something else."

"We're not sure what the exact source of the problem could be."
Peter Rabinowitz

Looking for a Cause

After all the variables were studied individually and together, Skelly said, "The only thing that popped out was the presence of agriculture." Further research is needed to identify what chemicals might be included in the agricultural runoff, but pesticides are widely applied on the cornfields that are a staple of Vermont dairy farms. The scientists also cannot yet explain why the amphibian developmental abnormalities arise in Lake Champlain watershed areas adjacent to agricultural lands but not in other New England areas similarly situated.

"We're not sure what the exact source of the problem could be," said Rabinowitz, "but the toxin hypothesis should continue to be explored."

Richard Levey, an aquatic biologist charged by the Vermont Agency of Natural Resources to oversee frog abnormality studies, said other factors might be affecting the developing frogs' environment, including water pockets with varying temperatures and nutrient levels that can affect frog skeletal development.

The potential for any future public health risk remains uncertain. Levey said the sites where the frogs have been found are not near human water supply sources or where people swim. Skelly hopes to study possible genetic factors underlying the malformed limbs. "If we know which genes are involved," he said, "perhaps we can figure out if they're being influenced by environmental exposure to toxins."

For now, the research team does not know if the frog limb malformations are merely a tragedy for the amphibians and a threat to biodiversity, or if they might be a canary in a water-filled coal mine. "I care about frogs," said Skelly, "but for most of the public, the real issue is human health." EY

At The School

Yale Study Examines Criteria Used to Set Global Conservation Agenda

A study that examines the scientific criteria used by conservation organizations to set global forest conservation priorities has been published by researchers at the Yale Global Institute of Sustainable Forestry.

The report, *Protecting Biodiversity: A Guide to Criteria Used by Global Conservation Organizations*, examines the global conservation planning approaches utilized by five conservation organizations, including Conservation International, the World Wildlife Fund and The Nature Conservancy. Its aim is to enable industry, policy makers, environmental nongovernmental organizations, scientists and others to work together with greater understanding, and to guide decisions about which areas to prioritize for conservation.

"This report is going to serve as an excellent resource for land managers as they develop local strategies to conserve biodiversity on their land," said Dean Speth. "The fact that we were asked to conduct the study suggests that industry is interested in working collaboratively with the conservation community. It is encouraging from the standpoint of sustainability."

The F&ES researchers found that while the various approaches are distinct, they share many scientific underpinnings, techniques and recommendations, such as the need to focus on vulnerable and unique areas. Furthermore, a significant level of collaboration exists among the organizations, resulting in many of the same global regions being identified as high priority: the Tropical Andes, the Atlantic forest region of eastern Brazil, Mesoamerican forests, the Philippines, Madagascar and most of Indonesia.

In response to high worldwide deforestation rates and dramatic species decline, conservationists have been joined by a broad array of stakeholders in stressing the importance of protecting habitats, including forests, to maintain biological diversity, preserve ecological functions and ensure sustainable forest management. "The forest products industry, in particular, has taken a growing interest in integrating ecological factors into management decisions and placing increasing emphasis on scientifically based and ecologically sensitive forest management," according to the report's authors, Mary Tyrrell, executive director of the Global Institute of Sustainable Forestry, Elizabeth Gordon, program director for the Yale Program on Forest Certification, and Oscar Franco, a candidate for a master's degree in environmental management.

The study was commissioned by the American Forest & Paper Association, the National Council for Air and Stream Improvement and the Forest Products Association of Canada. The full report is part of the F&ES Publication Series, which is edited by Assistant Dean Jane Coppock, and is available at www.yale.edu/forestry/publications, as well as www.yale.edu/gisf.

Moore Foundation Grant to Develop Environmental Leadership in Amazon

The Gordon and Betty Moore Foundation has awarded the Yale Environment Management Center a $1.5 million grant to support the joint master's degree program of the Yale School of Management and the Yale School of Forestry & Environmental Studies.

The joint master's degree is a three-year program through which students earn both an M.B.A. and a master of environmental management degree. The program prepares students to be adept at working in the increasingly interconnected realms of business and environment by combining training in environmental science with traditional leadership and management skills. Established in 1982, it is the oldest program of its kind in the country.

The Gordon and Betty Moore Foundation funds organizations whose work supports global environmental conservation, science and the San Francisco Bay area. The grant received by the Yale Environment Management Center is part of the foundation's Andes-Amazon Initiative within its environment program. The initiative finances and coordinates activities that contribute to biodiversity conservation in the Andes-Amazon region.

The grant will fund tuition, fees, stipends and summer fellowships for six joint-degree students. Students who receive these scholarships will commit to working in the biodiversity conservation field in South America for at least three years following graduation. The grant will also support visiting scholars or practitioners from the Andes-Amazon region who are engaged in environment or biodiversity conservation issues. Their work at Yale will help them develop short courses and joint-degree programs in environmental management when they return home.

"The students and faculty who benefit from this grant will leave Yale with the skills to make a difference in a region that contains some of the most critical ecosystems in the world," said Garry Brewer, Ph.D. '70, director of the Yale Environment Management Center and the Frederick K. Weyerhaeuser Professor of Resource Policy and Management. "Whether they conduct scientific research in protected habitats, manage an area nongovernmental organization or create a local education program, their efforts will have a global impact."

The grant will be administered over five years beginning in the 2006-2007 academic year. For more information on the joint master's degree program, visit http://emc.som.yale.edu/description.html. For information about the Gordon and Betty Moore Foundation and their Andes-Amazon Initiative, visit www.moore.org.

At The School

F&ES Professor Receives Research Award

Pete Raymond, assistant professor of ecosystem ecology, has received the Estuarine Research Federation's 2005 Cronin Award for Early Achievement for significant career accomplishments.

"The Cronin Award is awarded to an estuarine scientist who has shown great promise in his or her work that is carried out six years after obtaining a doctorate," said Linda Schaffner, president of the Estuarine Research Federation. "We are pleased to recognize and honor the breadth and interdisciplinary nature of Professor Raymond's research interests, the quality of his publications, his teaching accomplishments and the impact he has had on the field of coastal ecology."

Raymond's research examines how climate and land-use change affect the amount of carbon transferred to rivers from the continents. This work will be an important step toward allowing researchers to close the carbon budget in rivers, estuaries and the coastal ocean worldwide. Raymond currently works on East Coast and Arctic rivers and estuaries; his research is funded by the Hudson River Foundation and the National Science Foundation.

Raymond has been involved in many studies designed to establish the role of rivers and estuaries in the carbon budget of coastal ecosystems. His Ph.D. and postdoctoral work on the York River in Virginia and the Parker River in Massachusetts were some of the first to use ^{14}C, a radioactive isotope used for carbon dating, to determine the major flows of carbon in East Coast estuaries.

Since arriving at Yale, he has been working to determine how old river carbon is, and if there is a relationship between the age of carbon and its availability to riverine bacteria. He has also has been collaborating with researchers at the Lamont-Doherty Earth Observatory at Columbia University to develop methods to accurately measure the air-water exchange of carbon dioxide in rivers and estuaries.

Raymond has authored or co-authored 16 papers, with one published in *Science*, one in *Nature* and three in *Estuaries*. A 2003 study, conducted by Raymond and researchers at the Institute of Ecosystem Studies in Millbrook, N.Y., and published in *Science*, suggested that inorganic carbon export from agricultural lands might offset some of the proposed carbon sequestration due to reforestation.

Raymond holds a doctorate from the Virginia Institute of Marine Science, College of William and Mary. He joined the faculty of the Yale School of Forestry & Environmental Studies in 2002, after completing postdoctoral fellowships at the Marine Biological Laboratory's Ecosystems Center and the Woods Hole Oceanographic Institution.

Journal of Industrial Ecology Special Issue Focuses on Consumption

The environmental impact of what we buy and use, which is increasingly drawing the attention of businesses, governments and consumers, is analyzed in new and important ways in a special issue of the *Journal of Industrial Ecology*.

"The research in this special issue is a striking advance," said Dean Speth. "It takes the understanding of consumption and the environment well beyond the platitudes and bromides that have dominated previous discussions by exploring the role of consumption in a systematic and quantitative way."

Articles in the special issue examine the ways in which everyday decisions about diet, work, housing size, leisure and quality of life can significantly alter consumption patterns at the household, city and national levels. The resulting environmental impact of these consumption patterns is analyzed using the tools of industrial ecology.

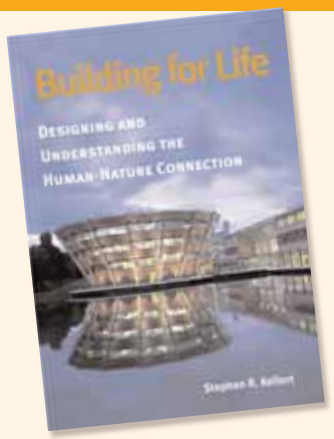
"This special issue demonstrates the power of industrial ecology," said Reid Lifset, editor in chief of the journal. "Techniques that lie at the core of this field, such as materials flow analysis, lifecycle assessment and input-output analysis, help us to understand much better the pivotal role consumption plays in shaping the quality of our environment."

Using these techniques, journal contributors analyzed water use in China, energy use in Sweden and the "export" of environmental impacts in the Netherlands. Other articles examine the strategies used by advocacy groups to influence global production and consumption, the risks to consumers from exposure to scented products and the consequences of the "rebound effect"—the possibility that reduced purchase of one set of products can lead to increased consumption of other goods and services, with their attendant environmental effects.

The research represents a broadening of the scope of environmental concern, which has traditionally focused on the impact of production-related activities such as emissions from factory smokestacks.

Edgar Hertwich, professor in the Department of Energy and Process Engineering and director of the Industrial Ecology Programme at the Norwegian University of Science and Technology, served as guest editor. The Garfield Foundation and the United Nations Environment Programme provided funding for the issue. The articles in the special issue are available for free download at http://mitpress.mit.edu/JIE/consumption. EY

BookShelf



Building for Life

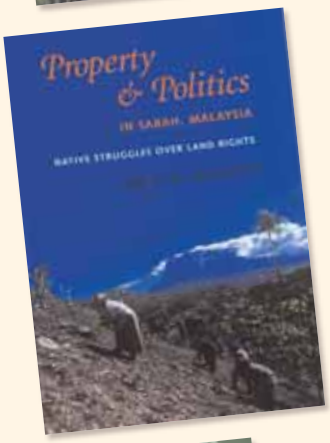
In *Building for Life: Designing and Understanding the Human-Nature Connection*, Stephen Kellert, Ph.D. '71, Tweedy/Ordway Professor of Social Ecology, asserts that interaction with nature is critically important to human well-being and development, but that contemporary society has become confused about the role of the natural environment in people's physical and mental lives, and has tended to impoverish this connection, especially in the urban-built environment. Many believe, he writes, that the progress of civilization depends on subjugating and converting, if not conquering, the natural world. The book explores and defends the view that nature, even in our modern urban society, remains indispensable and irreplaceable for human fulfillment, and addresses how through deliberate design of the built environment we may restore the basis for a more compatible relationship with nature. He advocates an innovative approach to sustainable design that both minimizes adverse impacts on the natural environment and promotes human health and well-being by fostering positive connections between people and nature.

Island Press published the book. To purchase a copy, visit www.islandpress.org.

Crops and Environmental Change

Changes in climate and the chemical composition of Earth's atmosphere are among the most significant environmental issues of the day, and could affect the most fundamental of human endeavors—agriculture. *Crops and Environmental Change* provides a scientific introduction to the influence of these global environmental changes on the structure, functioning and yield of major crops. The book provides an in-depth look at the effects of climatic change, air pollution and soil salinization on crop-plant biology, and a balanced assessment of the ramifications of these ongoing environmental changes for present and future crop production and food supply.

Seth Pritchard of the College of Charleston and Jeff Amthor '82, Ph.D. '87, a program manager in the U.S. Department of Energy's Office of Science (Climate Change Research Division), wrote the book. *Crops and Environmental Change* was published by Haworth Press. To purchase a copy, visit www.haworthpress.com.



Property & Politics in Sabah, Malaysia

In *Property & Politics in Sabah, Malaysia: Native Struggles Over Land Rights*, Amity Doolittle '94, Ph.D. '99, program director of the Tropical Resources Institute at F&ES, draws on anthropology, political science, environmental history and political ecology to examine how control over resources has been defined, negotiated and contested by colonial state agents, the postcolonial Malaysian state and native peoples.

The book is grounded in methodological and theoretical advances in the field of political ecology, and examines environmental conflicts in terms of place, culture and history. Using a political ecology perspective allows Doolittle to focus on the root cause of environmental degradation, exposing the underlying political, economic and social forces at work.

Property & Politics in Sabah, Malaysia is part of the Culture, Place, and Nature: Studies in Anthropology and the Environment series and is published by the University of Washington Press. To purchase a copy, visit www.washington.edu/uwpress.

Tropical Forest Ecology

In *Tropical Forest Ecology: The Basis for Conservation and Management*, Florencia Montagnini, professor in the practice of tropical forestry at F&ES, and co-author Carl Jordan, senior research scientist at the Institute of Ecology at the University of Georgia, take a multidisciplinary approach to increasing the understanding of tropical forest ecology, as a necessary step to developing knowledge on adequate strategies for conservation and management. Tropical forestry is confronted with the task of finding strategies to alleviate pressure on remaining forests and techniques to enhance forest regeneration and restore abandoned lands, using productive alternatives that can be attractive to local human populations. In addition, sustainable forestry in tropical countries must be supported by adequate policies to promote and maintain specific activities at local and regional levels.

Springer published the book. To purchase a copy, visit www.springeronline.com.

ClassNotes

1942
Class Secretary:
Hamlin Williston
williston@watervalley.net

S. Gayley Atkinson continues to play golf and take the courses necessary to maintain his status as a Pennsylvania certified forester.

Mel Chalfen enjoys the piano and painting, but says he has virtually retired. He is ever-willing to talk of the good old days of his youth, some of which were spent in the forests of northern Idaho and the piney woods around Crossett, Ark.

Ben Eggeman did not finish all the course work needed for a degree in forestry, but had a career as a Naval Officer, retiring with the rank of captain. He recalls with fondness his days spent with the class in the woods at Union, Conn., in the summer of 1940, and the Wednesday field trips with Pop Hawley.

John Gray moved into an assisted living facility on September 1. He has a new address and phone number that are available through the F&ES Alumni Affairs office.

Bill Guttentag reports from Florida that with air conditioning, they no longer need to go north for the summer.

Dick Jorgensen reported that he has had a hip replacement, and thoroughly recommends the procedure.

Bonnie MacKnight, who was married to **Sid MacKnight** for 62 years, passed away on February 28. Sid continues to live in Skylake, Ga., where he can call upon his extended family of 44.

Bob Martin says he is in poor health, and has just had a pig valve substituted in his heart.

Dick West was the recipient of the Sal Vuocolo Award presented by the New Jersey Forestry Association for outstanding contributions to forestry in New Jersey. Dick was a driving force in the organization and development of the association, serving on its board for many years and as president from 1986 through 1993. Dick also remains active in the Monroe County Shade Tree Commission as chair of the finance and landscape committees.

In May, **Ham Williston** suffered a mild heart attack. Despite this, Ham and Elizabeth went to New Hampshire in July to celebrate their 60th wedding anniversary with all four of their children and their spouses, and six of the grandchildren.

1946 60th Year Reunion
Class Secretaries:
Paul Burns pyburns@lycos.com
David Smith david.m.smith@yale.edu

Paul Burns writes from Baton Rouge, La.:
"I survived Hurricane Katrina, with little damage to my home. I am hosting two refugees from New Orleans. **Dave Smith, Ph.D. '50**, and I, along with **Ed Adelberg, Ph.D. '43**, have exchanged World War II memoirs. We three were in the first year of a two-year M.F. program at Yale when World War II began, and in March 1942 we enrolled in an Army weather officer training program at New York University. After brief service in the United States, each of us went overseas to different locations—Dave to North Africa and Italy, Ed to the Pacific Theater, and I to England and the Continent. Ed became a major and was the inspector for the entire Pacific area; Dave was promoted to captain and served in Italy as staff weather officer in the headquarters of the 15th Air Force and for the 370th Fighter Group; and I was a captain at the end of the war. We were delighted to be released from active military duty and to resume our studies at Yale: Dave and I in forestry and Ed in microbiology."

Carl Hupman, who died in 2003, was memorialized by the Center for Sustainable Forestry at Pack Forest at the University of Washington—4,300 acres of green-certified, working forestland located at the foot of Mount Rainier—with the naming of Hupman Creek. The announcement appeared in the center's May/June 2005 newsletter, with a map of Hupman Creek's course through the forest.

1947
Class Secretary:
Evert Johnson
swede-doc@mindspring.com

1948
Class Secretary:
Francis Clifton fhcpbyfor@webtv.net

George Hindmarsh writes: "Still a trail and boat guide volunteer for Charlotte Harbor. Just back from Georgia and family reunion to see grandson, Dannie, who is in Air Force Para Rescue, marry his high school sweetheart. It was great to see all five kids, plus most of the grandchildren. Best regards."

Hap Mason writes: "I have been working with Bill Hull of Hull Forest Products in Pomfret Center, Conn., on establishing a biomass generating plant, burning only virgin wood in my town, Russell, Mass. Unfortunately an element of the environmental community has been opposing the operation on the grounds that it will greatly pollute the atmosphere. If any alumni have thoughts or hard evidence on the subject, we would be happy to have them."

1949
Class Secretary:
Frank Armstrong
farmst1037@aol.com

1950
Class Secretary:
Kenneth Carvell kencarvell@aol.com

1951 55th Year Reunion
Class Secretary:
Peter Arnold arnoldp@nccn.net

Lester Bradford has retired to Mt. Vernon, Wash., from his long career as an agricultural missionary in Africa and the Ukraine. Recently he attended a family reunion in Maine and met his classmate and brother-in-law, **Jerry Fitzgerald**.

1952
Class Secretary:
Milton Hartley
redheded@olympus.net

1953
Class Secretary:
Stanley Goodrich slmygood2@cox.net

1954
Class Secretary:
Richard Chase RAChase@aol.com

1956 50th Year Reunion
Class Secretary:
Jack Rose jackrose@iopener.net

1958
Class Secretary:
Ernest Kurmes
ernest.kurmes@nau.edu

1959
Class Secretary:
Hans Bergey hberg16@aol.com

1960
Class Secretary:
John Hammer jgham@bulloch.com

Greg Brown writes: "I retired from Virginia Tech University in late October 2004 as dean of the College of Natural Resources, and am now living in Fairview (a suburb of Asheville), N.C. My wife and I are enjoying the natural beauty of the area and the many available activities. Since receiving my doctorate from Duke University in 1963, I have worked at the Oak Ridge National Lab and five universities, having been in academic administration during the last couple decades of my career. I have five children and eight grandchildren, and my wife, Laura, has two children and three grandchildren. This gives us a birthday on the average of once every three weeks. I'm currently retaining some professional involvement with the Friends of the Blue Ridge Parkway Board, the USFS,

ClassNotes

the USDA-CSREES and some private boards. Some of these activities provide me an excuse to get away from home renovation and landscaping projects shared with my wife. I have returned to Yale on occasion for a visit, particularly when I was at the University of Maine."

Peter Huberth is a consulting forester in Juneau, Alaska.

1961 45th Year Reunion

Class Secretary:
Roger Graham

1962

Class Secretaries:
James Lowe Jr.
Larry Safford
lsaffordnh@earthlink.net

1963

Class Secretary:
James Boyle jim.boyle@orst.edu

1965

Class Secretary:
James Howard jhoward@sfasu.edu

1966 40th Year Reunion

Class Secretary:
Howard Dickinson Jr.

1967

Class Secretary:
Robert Hintze bclues@aol.com

1968

Class Secretary:
Gerald Gagne
Gerald.gagne@sympatico.ca

1969

Class Secretary:
Davis Cherington cheringvt@aol.com

1970

Class Secretary:
Whitney Beals wbeals@neforestry.org

Bill Lansing has written a well-illustrated book, *Seeing the Forest for the Trees*, about the history and evolution of the Menasha Forest Products Corp., which started in Wisconsin in 1850 and has been in Coos Bay, Ore., since 1905. Bill became a field forester for the company after Yale, and is now its president and CEO. It has now spun off most of its mills that were concerned almost exclusively with the intensive management of its 100,000 acres of forests in Oregon and Washington.

F&ES Professors **Chad Oliver '70, Ph.D. '75**, and Florencia Montagnini participated in the XXII World Congress of the International Union of Forest Research Organizations (IUFRO), "Forests in the Balance: Linking Tradition and Technology," in August in Brisbane, Queensland, Australia, with over 2,500 scientists from all over the world, including many F&ES alumni. At this congress, **Jeff Burley '62, Ph.D. '65**, received honorary membership in IUFRO. Among his many services, Jeff had been on the board of directors of IUFRO for the past 25 years. As Jeff put it, "Can you believe they gave me this award just to get me off the board?"

Chad gave a presentation on "A Working Definition of Sustainable Forestry and Means of Achieving It at Different Spatial Scales," while Florencia presented collaborative research on two topics: "Environmental Benefits of Agroforestry Systems: Carbon Sequestration," with P. K. R. Nair, and "Diversifying Functions of Planted Forests and Forests in the Global Balance—Changing Paradigms," with M. Varmola, D. Gautier, D. Lee and J. Saramäki. On the third day of the congress, Chad and Florencia held an F&ES alumni reception attended by **Keith Jennings** along with, among others, **Jeff Burley**; **Matt Kelty '81, Ph.D. '84**; **Heidi Asbjornsen '93, D.F.E.S. '99**; **Toral Patel '92, D.F.E.S. '01**; **Gerard Schreuder, Ph.D. '68**; **Richard Guldin '76, Ph.D. '79**; **Jan Volney '72**; **Ian Ferguson '63, Ph.D. '67**; and **Laura Snook '80, D.F. '93**.

Prior to the congress **Bryan Petit '03** and Florencia participated in a workshop at Southern Cross University in Lismore, New South Wales, where they presented an article on their work in La Selva, Costa Rica: "Productivity in Pure and Mixed Native Species Plantations in Central America." After the congress, Chad met with **Ron Wilson '71** in Brisbane and gave a presentation at the annual dinner at the New South Wales Division of the Institute of Foresters of Australia. The talk was titled "Short Rotation Forestry: A Great Investment or Another Enron?"

1971 35th Year Reunion

Class Secretary:
Harold Nygren tnygren@juno.com

1972

Class Secretary:
Ruth Hamilton Allen
ruth.allen@aehinstitute.com

Gary Drobnack had an impromptu reunion in Seattle early in May when **Keshab Pradhan '68** visited from Sikkim. The other alums who attended were **Sandy Bill '67**, **Gordon Enk '67**, **Bob Ellis '68** and **Katherine Bill '00** (a third-generation F&ES alum), as well as family members. Many of the attendees, including Katherine, had a much-earlier reunion in Sikkim at the foot of Mt. Kachenjunga in the Himalayas, when Gary and Bob worked for Weyerhaeuser in Indonesia.

Paul H.S. Van Zyl reported in from South Africa, where he is a medical practitioner and has three children—Paul Jr., Brand and Luna. He was appointed a professional officer in the Department of Forestry, serving in the Ministry of Water Affairs and Forestry, the wood utilization section (managing sawmills), the nature conservation section (demarcating wilderness areas) and the forest recreation section (planning the National Hiking Way System). drphvanzyl@gpnet.net

1973

Class Secretary:
Lauren Brown leb481@aol.com

Clyde Cremer writes: "I am still in the log home business. The economy has been slow since the 9/11 attack, but it will surely get better. The family is fine, with both children in college. Gail and I are working to keep up our end of the tuition payments, books, cars, etc. Gail teaches in a youth prison, so she will never be without a captive audience! In March 2004, I traveled to Europe with two other history buffs to visit the battlefields. On our way out from the Paris airport, we visited **Melos Jovic** and his wife, Ellen. Melos gave us the tour of the Aga Khan's high-value estate near Chantilly, France. It was a great tour of this land, which is under intensive silvicultural practices. After lunch at a great restaurant on the Oise River, we traveled to the Argonne Forest with a metal detector. We uncovered two H.E. Howitzer projectiles from World War I, and managed not to get turned into pink mist! My grandmother's cousin was killed in Argonne and I am doing research on him for a possible book. I might add that this type of hands-on research is 90 percent boredom and 10 percent sheer terror!"

Dix Leeson has left the development staff at the Harvard Business School to become senior development officer at Babson College, a highly ranked undergraduate and graduate business school in Wellesley, Mass.

1974

Liz Mikols writes: "Our class lost a dear friend and the school one of its biggest boosters with the passing of **Jim Rogers** on October 22 (see obituary, page 48). Having graduated from Yale College the year before he came to the school, Jim exposed us to Greater Yale and enriched our experience in New Haven. His life's work combined economics with the environment, the social with the hard sciences, and ethics with productivity. He traveled to far-flung outposts: Eastern Europe, the Galapagos and China, as well as Love Canal and the brownfields of New Jersey, to heal damaged local environments. We will miss you, Jim, and your ability to bring out the best in us and to spur us to action, your infectious belly laugh, your encyclopedic knowledge of philosophy to phylogeny, the lyrics to all those Irish songs, your boundless enthusiasm and love for people. You never knew a stranger, and you brought all of us into your circle of light and

ClassNotes

optimism. True to the end, Jim asked that, in lieu of flowers for his funeral service, people send contributions to the Yale School of Forestry & Environmental Studies. Boola, Boola, dear friend. Several of us are working to set up a memorial scholarship fund in Jim's name.
For more information, visit http://rememberingjim.blogspot.com."

1975

Audrey Hoffer writes: "I had a fabulous time at the reunion and thank you for making it such a special affair. I had a great time with my '75 friends. Never before have I experienced the sensation or emotions of seeing people I once knew but hadn't seen in 30 years. It was incredible! I loved the sessions and talks. Dinner conversation at the Class of 1975 and Friends table was great, and the field trip was out of this world. That alone brought my time there back to mind and reminded my why I went to F&ES in the first place. Though it's not my actual profession, I'm still really interested in knowing the names of all those towering trees and tiny flowers that form a carpet underfoot, and how and why the white pine stand was pruned. Thanks very much for everything. Hope to see you again soon."

1976 30th Year Reunion

Sven Hultman writes: "I retired as manager of the Uppland Foundation for Nature Conservation and Outdoor Recreation in Uppsala, Sweden. Since then I have been happily busy doing consultant work on two of my old favorite issues: interpretation and health through nature contact. For the Swedish Environmental Protection Agency, I produced a report called *A Path to Nature*, which gives advice to the agency on how it should act to develop better environmental/nature interpretation. Now I am busy with issues concerning health and nature—specifically, advising the regional county council on how to introduce therapeutic horticulture, and more generally, using nature contact to improve health. I was a member (and chair for a period) of Uppsala's first carpool. It has existed for some 10 years and works well. Our National Highway Authority is now involved in spreading information on how to start and run carpools. All federal agencies are obliged to work in their sector of interest to reach the national environmental goals set by Congress. The National Association for Interpretation has arranged its first international conference for May 1 to 5 in San Juan, Puerto Rico. Heritage interpretation has been one of my main interests for some decades, so it would be fun to take part."

1977

Class Secretary:
James Guldin jguldin@prodigy.net

1978

Class Secretaries:
Susan Curnan curnan@brandeis.edu
Marie Magleby lomamag@aol.com
Regina Rochefort regina_rochefort@nps.gov

Jeff Cassis writes: "I've shifted a bit from environmental engineering and science after leaving Camp Dresser and McKee in 1986, and moved into the semiconductor software automation industry. My daughter, Caitlin, is 23, just graduated from Colby College, and is now at Harvard. My son, Connor, is studying biomechanical engineering at Tufts, and my wife keeps busy with clinical social work and volunteer work in the Boston area. I have worked for Brooks Automation in the software division for the past 12 years and have enjoyed setting up our operations in China this past year. My real passion is the 20-year restoration project on my 1815 Federal Colonial home in the Boston area. I still play soccer in an over-the-hill men's league—the body is still holding together." jeff.cassis@brooks.com

Luke Umeh writes: "On retirement from the African Development Bank, I set up a consulting agriculture/environmental firm. Since all the members of my family are in the United States, I visit at least twice a year. I plan to come to part of the alumni weekend if I know the dates. Very warm regards." ifyumeh@hotmail.com

1979

Class Secretary:
John Carey carey@aya.yale.edu

1980

Class Secretary:
Sara Schreiner-Kendall sara.kendall@weyerhaeuser.com

Ken Olson addressed the 33rd Commencement of College of the Atlantic, Bar Harbor, Maine, on June 4 after receiving an honorary M.Phil. degree in human ecology for his contributions to conservation. Of Olson's 30 years in nonprofits, he served 20 as chief executive of three natural-resource organizations—The Nature Conservancy of Connecticut, American Rivers and Friends of Acadia. He will enter a working retirement in early 2006.

Laura Snook was at Oxford early this year working up the results of her recent studies in tropical forests. In May, she went to Rome to start as the new director of the Programme for Understanding and Managing Biodiversity of the International Plant Genetic Resources Institute.

1981 25th Year Reunion

Class Secretaries:
Fred Hadley Mrm@evansville.net
Carol Youell envstew@snet.net

Ann H. Clarke, D.F.E.S. '92, writes: "I have been the executive officer to NASA's chief scientist for the past year. Due to a reorganization and downsizing in response to the new Vision for Space Exploration and plans for returning to the Moon and traveling to Mars, I am moving into strategic investments, which oversees preparation of the NASA strategic plan to carry out the vision. A new discipline, called discovery science, is in the President's science advisor's priorities. Discovery science involves flexibility in research design and infrastructure, so that as we explore space (through human and robotic means) and discover new information, we can adjust research plans to delve deeper into the particular topic while on a mission."

Mark Plotkin was named one of 35 "People Who Have Made a Difference" in the November issue of *Smithsonian* magazine. Also included on the list are David Attenborough, Bill Gates, Wynton Marsalis, Sally Ride and Steven Spielberg, among others. Mark was cited for his work as an ethnobotanist with shamans—tribal elders who use plants for healing—in Suriname in spreading the practice of herbal medicine among rainforest inhabitants. Convinced that rainforest conservation wasn't going to succeed without the full participation of indigenous people, he and his wife, Liliana Madrigal, founded the Amazon Conservation Team (ACT), a nongovernmental organization headquartered in Arlington, Va., to create such partnerships. ACT has started a program, Shamans and Apprentices, which helps healers share medicinal knowledge with tribal members of the next generation.

1982

Class Secretaries:
Barbara Hanson ForestsRUs@aol.com
Kenneth Osborn forstman@fidalgo.net

Barb Hanson reports: "Jim Colla and I are still in Coeur d'Alene. Jim is with a forestry consulting firm, and I'm still with the Forest Service. We seem to be in Connecticut quite a bit for family affairs, and now our oldest son is at the Coast Guard Academy. Our daughter just started high school, and our youngest boy is in fourth grade. We see **Rick Weyerhaeuser '83** periodically, and **Sandy Blinstrubas** and I try to get together regularly, but it's usually way too long between visits."

Tom Jacob is returning to the West Coast with DuPont. "As of September 1, I have begun a transition from managing DuPont's relations with the incredibly dynamic world of intergovernmental policy to a new role managing DuPont's relations with what many regard as the most dynamic government in the United States—California. I will be responsible for

ClassNotes

establishing a new DuPont government affairs office in Sacramento, with responsibility for state government affairs in California and nine other western U.S. states. Daughters Kristin and Erin are now grown and living in Seattle, Wash., and Chesapeake City, Md., respectively." Tom and Sue Ellen are moving to the Sacramento area in November from Wilmington, Del. tom.jacob@usa.dupont.com

Bob Krumenaker, National Park Service superintendent of Apostle Islands National Lakeshore in northern Wisconsin, writes that he had the honor of hosting the dedication ceremony for the nation's newest wilderness area on August 8. After 10,000 public comments over the past three years and a formal study written largely by **Michael Rees '78**, with an unprecedented 99 percent public support, Congress established the Gaylord Nelson Wilderness last December. The wilderness area covers 80 percent of the land area of the national lakeshore, and is named for the former Wisconsin senator and governor, who was the father of Earth Day. Unfortunately, Senator Nelson died just five weeks before the ceremony at age 89. His daughter, Tia Nelson, spoke eloquently of her father's legacy and his tears of joy when he learned that the wilderness bill had passed. The dedication, attended by well over 300 people, became a poignant celebration of Senator Nelson's life, and was probably the biggest event in the park's history. Wisconsin Governor Jim Doyle, U.S. Senator Russ Feingold, Congressman Dave Obey and Yale environmental historian **William Cronon, Ph.D. '90**, also spoke at the event. "The passion, commitment and pride were tangible. This was no doubt the proudest moment of my career," Bob writes. An outstanding essay by Bill Cronon on the paradox and opportunity of wilderness in the Apostles, a richly historical as well as natural landscape, is at www.oriononline.org/pages/om/03-3om/Cronon.html. Bob can be reached at krumenaker@aya.yale.edu.

Kent Wommack and **Gro Flatebo** are living in Brisbane, Australia, where Kent is the director of The Nature Conservancy's Australia Program. They're learning Aussie-speak and adjusting to urban wildlife that includes huge fruit bats, cockatoos and even a 7-foot-long python at the trash bin. Their boys attend an English-style school with hideous uniforms and straw boater hats—quite a change from Maine. Their daughter attends Carleton College. They'll be back in Maine in 2006.

1983

Class Secretary:
Stephen Broker lkbroker@snet.net

1984

Class Secretaries:
Therese Feng
Therese_feng@yahoo.com
Roberta Tabell Jordan
rjordan@clinic.net

1985

Class Secretaries:
Alex Brash alex.brash@parks.nyc.gov
Margaret King the5kings@attbi.com

After eight years with Conservation International, **Ed Backus** moved to Portland and, with **Randy Hagenstein '84**, started Interrain Pacific in the early 1990s, a conservation GIS consulting group, which then merged with **Spencer Beebe**'s Ecotrust in 1998. Six years ago, Ed finally married Jessica, a Ph.D. marine biologist and best scuba diving and fly-fishing partner ever.

Helen Ballew is enjoying life in San Antonio with husband, David, an ecologist and chair of the biology department at Trinity University, and her kids. They are heading to Mexico for a six-month sabbatical in July, and then to Africa for another six months. Helen is deeply involved in her kids' inner-city dual-language public school, where she's launched a green team outdoor classroom project in which kids grow veggies and other things. Helen is also on the boards of two environmental organizations, the Bamberger Ranch Preserve and the Aquifer Guardians in Urban Areas, an advocacy group for Edwards Aquifer protection.

Dorie Bolze writes that she finally dragged her family out of NYC and ended up in Nashville, Tenn., where they have been in the "buckle of the Bible belt since Spring 1999." Their two kids are now 11 and 8. She notes that she finally got married, and that her family has a foundling dog, hamsters and aquariums. She is still interested in river conservation, creating a bit of a monster in Tennessee with a new conservation organization.

From **Alex Brash**: "Our 20th reunion was indeed a splendid event in the great Woolsey Hall, though tempered by the presence of a portrait of George Bush above the podium. Attendees included such illustrious classmates as **Mark Ashton, Ph.D. '90**, **Richard Boyce**, **Ian Cameron '99**, **Mark Duda**, **Eunshik Kim** and **Jonathon Nute**. After some light cocktails (no TGIF—no geologists or nurses either), we settled at our table, chattered a bit, then listened to stirring presentations by Dean Speth regarding the great work of Professor Graeme Berlyn; recognition of the great growth and character of **Joyce Berry, Ph.D. '00**, dean at Colorado State University (and learned there is port stashed in the dean's office); and then watched the Class of 1980 pat themselves on the back in a grandiose display and implicitly goad us into greater alumni giving. Last, former Dean John Gordon, who had roused himself from the quiet woods of New Hampshire, was very warmly treated throughout the evening and even inducted as an honorary alumnus. And as he stood looking quizzically about, we stood to a person at our table and accepted him as one of our own! Finally, sneaking in late, like really late—well, actually, for Sunday brunch—came **Dave Gagnon**, **Shelley Dresser** (aka Mrs. Gagnon) and their two kids." Worn out from reintroducing bald eagles in the Big Apple and supervising concerts in Central Park, Alex finally left the New York City Parks Department. This past summer, he opened a regional office for the National Parks Conservation Association in New York City, but now thoroughly enjoys trips farther afield than the Bronx. In fact, he just "whupped" some trout near Estes Park. Married to Jane, a former vice president in marketing, they have two children, Ian, 14, and Emily, 10, and live in Greenwich, Conn. They also built a log cabin a few years ago near Jane's family place, which is near Algonquin Park in Canada.

Louise de Montigny writes from the British Columbia Ministry of Forests in Victoria that she would have loved to attend the reunion, but it was just too far away. But she did convince **Ian Cameron** to kindly take photos. Maybe he'll share . . . .

Jeff Diehl of Albion Environmental in Santa Cruz, Calif., writes to express his regrets about not "joining everyone in New Haven," and claimed that he would one day "venture back to Sage."

Jay and **Lynne Espy** are living in Freeport, Maine, with three children (Hannah is 17, Adele is 14 and Josh is 10), as well as a black lab and a cat. Jay is president of Maine Coast Heritage Trust, and Lynne, after retiring (early!) from working as a hydro-geologist, is volunteering—she's president of the board—for the Waldorf School that their kids attend in Freeport. The Espys also run into **Henry Whittemore** at ski events their kids compete in, **Caroline Norden '86** (whose daughter goes to the Waldorf School), **Caroline Elliot** (who lives just 30 minutes north) and **Brent Bailey** and family. They used to see **Jock Conyngham**, before he moved out West to save the salmon and get paid to blow up dams for the Army Corps.

Deborah Fleischer started Green Impact Environmental Consulting. She lives north of San Francisco. She is focused mostly on land conservation and sustainability issues, but has dabbled a little in international work. She's also working on her Spanish, and has visited Cuba three times over the past two years. If you want to see her smiling face, check out www.greenimpact.com.

J.B. and **Katie Friday** get back to New England occasionally, and went fishing with **Henry W.** last summer in Maine. J.B. is doing extension work in Hawaii and working on a project in East Timor. Not to be outdone, Katie is headed to Guam to run a workshop on fruit-tree propagation and fire control. Their daughter, Hilda, just turned 6, and son, Nathanael, is 11.

Steve Lowe writes: "Neither Jane nor I can make the reunion. We have plans, although it would be fun to catch up with everyone."

Molly Harriss Olson writes: "I want you to know that I was really keen to come to the festivities, as I was out of Australia for the first time in ages. I was in Boston and D.C., but I was traveling with my two

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small kids (4 and 6 years old) and had to get to the West Coast for sick parents as soon as I could. So the timing just didn't work."

Whitney Tilt moved to Bozeman, Mont., four years ago. While the move meant giving up being director of conservation with the National Fish and Wildlife Foundation, he prefers his new work on community-based collaborative conservation with the Sonoran Institute and consulting for NFWF and the U.S. Fish and Wildlife Service. His lovely wife, Stuart, is busy with real estate and serving on the Gallatin Land Trust board. His son, Mac, is heading to the University of Colorado this fall to study aerospace engineering, and daughter, Allison, started Bozeman High School in September.

Henry Whittemore, the director of the governor's forest certification initiative, is deep in Maine. He said he is trying not to become a bureaucrat now that he is back in public service. Henry and Darcy's youngsters, Katie, 17, and Sam, 14, are great kids. Henry notes they are starting to look at colleges with Katie, and he and Sam are building a boat together. And keeping pace, Darcy is working three-quarters time at the arboretum in Augusta, teaching environmental science and ecology.

Ruth Yanai, Ph.D. '90, is an associate professor at the SUNY College of Environmental Science and Forestry. Noting that she never took silviculture and didn't get an accredited degree, she teaches forest ecology to majors after many years of teaching soil science to nonmajors. Mostly, Ruth does research, and has undertaken projects with, among others, **Mary Arthur '84** and **Steve Hamburg '77, Ph.D. '84**, and still sees **Therese Feng '84, Ph.D. '98**, **Guillermo Castilleja '83, Ph.D. '91**, and sometimes **Shelly Dresser** and **Dave Gagnon**. Ruth also has been single-handedly raising a daughter, now 7.

1986 20th Year Reunion

Class Secretary:

Caroline Norden
cnorden@maine.rr.com

1987

Class Secretaries:

Christie Coon cacoon7@aol.com
Melissa Paly mpaly@aol.com

Christopher DeForest writes: "Life is busy and full. I'm running the Inland Northwest Land Trust (inlandnwlandtrust.org), involved in old-house renovation projects with my wife, **Caroline Woodwell '86**, and teaching Terre Eco 101 to our 2-year-old son, John Elliott DeForest. I also have a sideline as minister-for-hire, and had the fun of marrying off my best friend, **Kirk Johnson** (beach housemate and geology grad student while we were at F&ES), to my cousin, Chase DeForest, whom he met at my wedding to Caroline in April 2001."

Kevin L. Griffin writes: "My family and I are in New Zealand for the year. I am on sabbatical, and have a visiting Erskine Fellowship at the University of Canterbury in Christchurch. During my stay here, I will conduct research on respiratory temperature acclimation in mast-seeding snow tussocks. New Zealand is a beautiful country, and we are enjoying being outside and seeing the sights."

Robert T. Lester writes: "I've been in Guatemala for about three years now, after having started my own consulting company dedicated to providing environmental and corporate responsibility advisory services. Happy to meet with any alums coming through town for work or pleasure."

1988

Class Secretaries:

Diane Stark dsstark@comcast.net
Philip Voorhees pvoorhees@ncpa.org

Jenny Allen writes: "I've been in Portland, Ore., since 1997, originally with Ecotrust, then with the State of Oregon as sustainable business liaison, and now with Portland State University to develop a Center for Sustainable Processes and Practices. My household consists of my Canadian husband, Wayne, dogs Argus and Jasper, and Kitty the cat. I also moved my 81-year-old parents from New Hampshire to Portland this summer, where they seem to be very happily settling in. This is a welcoming place, and it is wonderful to have family here at last."

Jeff Campbell writes: "I ran into **Brian Lockhart** at an F&ES get-together at the International Union of Forestry Research Organizations conference in Brisbane, Australia. He is doing well, working on bottom-land hardwoods in Arkansas with the U.S. Forest Service Research Station. I am the senior program manager for environment and development at the Ford Foundation." During the last five years, Jeff has directed a $25 million program to finance community forests and promote locally controlled multiple-use forestry on the lands being set aside.

Martin Christ writes: "I am in Morgantown, W.Va., where I work for a watershed organization and do miscellaneous other consulting jobs on water quality and environmental issues. Kathy and I live in the country, with cows for neighbors on three sides and a family of llamas not far away. A feral emu passed by once."

Anne Buckelew Cumming writes: "I work for the U.S. Forest Service in the Urban and Community Forestry (UCF) Program. My husband, Jack, is chair of the biology department at West Virginia University, and our daughter, Margot, has just started middle school. I work with a bunch of Yalies from many classes. **Chris Donnelly '85** is the UCF coordinator for Connecticut—he used to frequent our TGIFs."

Eric Jay Dolin writes: "I'm living in Marblehead, Mass., with my wife, Jennifer, and two children, Lily, 8, and Harry, 5. I am a policy analyst with the National Marine Fisheries Service in Gloucester. My book on Boston Harbor, *Political Waters* (see Fall 2004 Bookshelf), was recently chosen by the American Library Association as 'One of the Best of the Best from the University Presses: Books You Should Know About' for 2004. I just published *The Ph.D. Survival Guide*, and am working on a history of whaling in America for W.W. Norton publishing. I can be reached at ericjayd@aol.com."

Betsy Greer Edwards writes: "I am in Seattle and am the executive director of a nonprofit, raising funds for the national parks. I moved into the nonprofit sector two years ago after almost 20 years in the private sector, but may have to go back as the alternative energy market heats up. We have three redheaded kids (8, 7 and 4) and are trying to get back into some serious skiing (skating) and running with arthritic 40-plus joints. I saw **Holly Welles** most recently in San Francisco, shortly after she got married. I saw **Phil Voorhees** in Washington, D.C.; he lost his wife to an illness recently. I did a five-day trek across Olympic National Park via the Elwha River with **Betsy Carlson '89**."

Heidi McAllister writes: "I need to toot another F&ES grad's horn for her. **Lily Whiteman**, who got joint masters degrees from F&ES and Public Health, just published a book on how to get a job in the federal government, *Get Hired! How to Land the Ideal Federal Job and Negotiate a Top Salary*. You can find more about the book at www.fpmisolutions.com/shopcart/publications.asp (scroll down to Get Hired!)."

Holly Welles writes: "I live in Mill Valley, Calif., just across the Golden Gate Bridge. I'm working in the environmental policy group at Pacific Gas and Electric, where I've worked since completing a long and arduous Ph.D. at Berkeley in 2000. I married a great guy, Rob Thomas, originally from Pennsylvania. The ocean is close and so is wine country."

1989

Class Secretaries:

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

C.J. May has entered his 15th year working as Yale's recycling coordinator. Yale has now hired a sustainability director (www.yale.edu/sustainability), approved a set of environmental principles and has become aggressive about reducing its ecological footprint. On the home front, Ella Fionnuala May was born on August 20. C.J. continues to tell Celtic stories as a part of the Celtic Learning Project (www.celtlearn.org).

ClassNotes

1990

Class Secretaries:
Judy Olson Hicks
Carolyn Anne Pilling
capilling@gds.org

Seema Bhatt writes: "I am an independent consultant on biodiversity issues, focusing mainly on India and other South Asian countries. It's been an exciting time since I started consulting five years ago. My work has ranged from medicinal-plant issues to people-park-related issues. I was also part of the technical and policy core group that coordinated the formulation of India's national biodiversity strategy action plan."

Ann Camp writes: "I'm still teaching at Yale and having a great time. This past spring, I organized or participated in three field trips with students: the Southern trip to Alabama; a trip to Alaska for the Alpine, Arctic and Boreal Ecosystems course I co-teach with Graeme Berlyn; and the University of Munich trip to Germany and France. This year I'm heading to China for an invasive-species and global-trade summit. I went to the reunion and had a great time visiting with **Seema Bhatt**, who came over from India, and **Leslie Hudson**, who came from Maine. It was also fun seeing some from the class of 1990 whom I haven't kept up with over the years. My daughter, Caitlin, is now 18 and just left for her freshman year in college! Sure makes me feel older (and poorer)."

Melissa Grigione writes: "I am an assistant professor in wildlife ecology at the University of South Florida. I study mostly endangered cats and other carnivores in parts of Mexico, Bolivia and Patagonia. In Florida, my husband and I study burrowing owls and coyotes. We have a 2-year-old son, Marcus, who is in training to attend F&ES!"

Nick Simmons writes: "After working for the Miami-Dade Department of Environmental Resources Management for a few years (first doing field inspections, and then supervising the remediation of industrial and residential properties contaminated with hazardous waste), I decided to go to law school. I graduated from Columbia Law School in 1998, and have been practicing in California. I am working as the general in-house counsel for a medical diagnostic/biotech company called Specialty Laboratories. We do testing for doctors and hospitals to help them diagnose and treat patients, and we do a lot of genetic testing for things like resistance to therapeutic drugs. I enjoy my job and like the people I work with. My partner, Matt, and I just celebrated our 10-year anniversary, and we live in a great house in Sherman Oaks, Calif., with two sweet dogs, Jake and Polly, that we rescued last year."

Susannah Troner writes: "I am a project manager with my county's environmental agency. Mostly I spend time working on a large urban canopy restoration project in which we organize large events to give away free trees to residential homeowners. I also organize an annual coastal cleanup event involving approximately 8,000 people. In between, I work on environmental education and sustainability issues. I just resigned from sitting on our local League of Women Voters board. Now I am serving as a member of the Citizens Independent Transportation Trust, which is more environmentally related. It is a mass transit board, which reviews all spending in the county related to a half-penny sales tax that is used as a dedicated source of funding for transit projects. I am reviewing contracts and proposals for hundreds of millions of dollars. John is still great, and we have two wonderful girls, Chiara, 7, and Rachael (although we call her Ruby—long story), 3." Susannah would also like to try to organize a reunion for our group in the future, since many people did not make it to the official school reunion. If anyone knows of a neat ecotourism place, solar-powered lodge, etc., let her know. Finally, Susannah would love to know the whereabouts of **Eirik Steifhorne**. Contact her at j.ricisak@worldnet.att.net.

1991 15th Year Reunion

Class Secretaries:
Dorothy Beardsley DEBPDC@aol.com
Kristin Ramstad
kramstad@odf.state.or.us

1992

Class Secretary:
Katherine Kearse Farhadian
farhadian@aya.yale.edu

1993

Class Secretaries:
Dean Gibson deang@duke.edu
Molly Goodyear
mandm4@mindspring.com
Heather Merbs hmerbs@aol.com

Bill Mott writes: "I will be phasing out of my work with SeaWeb and ramping up my time with The Ocean Project. My new initiative will include the launching of *Seas the Day*, a new education-and-action initiative that will build strong connections between individuals and aquatic and ocean conservation." billmott@aya.yale.edu

1994

Class Secretaries:
Cynthia W. Henshaw
chenshaw@newenglandforestry.org
Jane Whitehill
janewhitehill@hotmail.com

Nicole Wilson Alsarraf tells us she's enjoying life in Boston, working with her husband, Ramsey, Yale School of Medicine Class of 1994, and spending a lot of time at hockey rinks with their 7-year-old son, Max. Nicole continues environmental projects through volunteer work with the Massachusetts Horticultural Society and the Boston Public Garden, as well as other nonprofit organizations in the area. mail@thenewburycenter.com

Jeff Andrews finished law school in May and is working in the intellectual property litigation group of Locke Liddell & Sapp LLP in Houston. jeffrey.a.andrews@gmail.com

Jane Calvin is potty training her 3-year-old son and waiting for her 10-month-old son to cut teeth. jcalvin@prospeed.net

Eileen Cates writes: "After 10 fabulous years of working at AES (an energy company), I am now a free woman, enjoying more time at home, volunteering in my community, focusing on promoting local foods and land conservation, riding horses, playing with my dogs and loving my husband and 18-month-old son. We are living in Charlton, N.Y., a small rural town 20 minutes southwest of Saratoga Springs." ecates@nycap.rr.com

Anne Downey is director of Sugar Maple Music Together (www.sugarmaplemusic.com). Her program is for parents and their children from birth through preschool. The curriculum teaches that all children will develop basic musical competence given a friendly, stimulating musical environment, and she guarantees no performance pressure. anne.downey@valley.net

Tad Gallion tells us life is fine in Bethesda, Md., with his wife and two daughters. Claire is nearly 2, and Emma is in third grade. Kristen started at Georgetown University, where she practices medicine and teaches medical residents. Tad has worked with the House Appropriations Committee for about a year and a half—about 10 months on EPA's appropriation as part of the VA/HUD subcommittee (now dissolved) and now the Homeland Security subcommittee (go figure!). He says he felt a bit like a duck in a wine shop (sure, Tad), but is enthusiastic about his colleagues. Tad still loves astronomy and has continued to take out his telescopes for public astronomy activities when work, weather and wife permit. tad.gallion@mail.house.gov

David Goldblatt has returned with his family to Zurich. They are now five—a third daughter, Cilla Elena, was born in February. David's book, *Sustainable Energy Consumption and Society* (see Spring 2005 Bookshelf), was published last January, and he plans to build on that work in further research with the Swiss Federal Institute of Technology, where he got his doctorate in 2002. He's also running an English editing/translating firm in Zurich, and suggests that any good freelancers interested in doing some distance editing and/or translating contact him by email. goldblatt.david@gmail.com

Steve Harrington and his wife, Shirl, and their children, Sionann and Oisin, are living on the Beara Peninsula in southwestern Ireland. He says that he looked up from the bottom of a waterfall, where he

ClassNotes

stood with his children, to see a dude walking by with an F&ES hat on his head. scribes1963@yahoo.com

Alexis Harte writes that he lives in Berkeley, Calif., with his wife, Anna, and their daughter, Mia, who looks just like him. Alexis directs the urban forest program for San Francisco's Department of Environment. He also writes and performs music, touring on occasion. alexis@alexisharte.com; www.alexisharte.com

Cynthia Wood Henshaw, director of community forest programs for the New England Forestry Foundation (www.newenglandforestry.org) in Littleton, Mass., has been blessed with a healthy baby girl, Gabriella Henshaw, born July 6. chenshaw@newenglandforestry.org

Dave Moffat joined TNC New Hampshire this summer and is learning all the dirt roads and best swimming ponds in the state. **Wendy Taggart '98** is across the hall at TNC. Carol and Dave have a new puppy ruling their lives. Dave was elected vice president of the F&ES Alumni Association Executive Council in the balloting held this summer. He has enjoyed becoming active in alumni activities and would welcome hearing from any alums who would also like to get involved. dmoffat@aya.yale.edu

Nicky Robins writes: "I continue to train, dance and work as a Sangoma (African traditional healer), and my learning in this tradition has led me to a framework for sustainability that has been around for millennia. It makes sense to me and apparently to the various corporate clients I have been testing it out with. I am a founding member of the consulting company Incite Sustainability, with a particular focus on sustainability coaching." nicky@incite.co.za

Ken Snyder writes: "I have had a great couple of years building my nonprofit, PlaceMatters.com. This year, I merged with the Orton Family Foundation, a small operational foundation headquartered in Vermont. I represent their Rocky Mountain office, heading up their planning tools program."

Will Stevenson writes: "Working in Waltham, Mass., to bring automation and efficiency to managing commercial real estate. Two kids—3 and 5—which is where most of my time goes."

Diana Wheeler writes: "On September 20, 2004, Don and I flew to Durban, South Africa, to adopt our 8-month-old daughter, Katherine Sinethemba Wheeler Redmond. As far as I know, she's the only native Zulu living in our neighborhood in Austin. She's now 19 months old and I can't believe we've had her for over a year. The three dogs are still in the process of adjusting, especially now that she's completely mobile. I'd also like to put a plug in for supporting the Environmental Foundation Ltd. (www.efl.lk). **Cynthia Caron** has been associated with them since 1995. In addition to work on preventing coral reef dynamiting, they are also involved in the campaign against the Sethusamundran canal, which India plans to dig in the Palk Strait (between Tamilnadu and Sri Lanka's western coast). It will have significant impacts on the marine life in the Gulf of Mannar. Anyone interested in donating can contact me (dwheeler@aya.yale.edu) or Cindy (cmc41@cornell.edu), who's now living and working in Sri Lanka."

Jane Whitehill writes: "I have a new and even better job translating science into English. Lyman is living in Chicago and writing computer programs. I continue to work in support of sustainable policies for the environment and the citizenry." janewhitehill@hotmail.com

1995

Class Secretaries:

Marie Gunning
mjgunning@aol.com

Ciara O'Connell
ciaramoconnell@aol.com

Laura Meyerson, Ph.D. '00, and **Fred Meyerson, Ph.D. '00**, left Washington, D.C., this summer after four years inside the Beltway. They write: "Laura's time at the Heinz Center has been fun and interesting. It has focused primarily on national-level indicators of nonnative species, but Laura has also focused on ecosystem services and indicators for urban systems. Laura worked for Tom Lovejoy and with **Anne Marsh '91, Ph.D. '96**, and also saw **Ryan Valdez '96** with some regularity." Laura and Fred will join the faculty of the University of Rhode Island in South Kingston. Laura will continue the work she started at the Heinz Center on ecological indicators, and also undertake fieldwork related to invasive species and restoration ecology. Fred will continue his work on human population and the environment, and will finish a book on American population policy. Both Laura and Fred will teach various ecology courses, including Terre Eco. Malcolm, 7, and Cortlandt, 3, will miss their friends in Washington. meyerson@heinzctr.org

Ricardo Tarifa is a forest specialist with the Amazon rainforest program at the World Bank office in Brasilia. He travels to the Amazon often and, in his spare time, enjoys biking throughout various parts of Brazil. Recent travels included a visit to Spain's Andalucia, where he visited the village where his grandmother was born.

Maria Uriarte and her husband, Gustavo Azenha, welcomed the arrival of their son, Lucas Uribe Azenha, in early June. They are living in New York City, where Maria is an assistant professor in the Department of Ecology, Evolution and Environmental Biology at Columbia University.

1996 10th Year Reunion

Class Secretaries:

Kathryn Pipkin kate@goodisp.com
Julie Rothrock jarothrock@juno.com

Saleem Ali, who is on the faculty of the University of Vermont, recently got a grant from the Tiffany Foundation to study the environmental and social impacts of gemstone mining in Brazil, Madgascar and Burma/Myanmar.

Deron Chang is teaching at Choate Rosemary Hall (a boarding school 20 miles north of Sage Hall). He and his wife, Penny, were expecting their second child in October. Their first child, Abigail, 4, loves to go hiking in the woods! See the F&ES website for a photo of Abbie admiring a piece of Mother Earth.

Ronnie Cherry is working with Levi's Asia-Pacific, and has moved from Singapore to Hong Kong. He and his wife celebrated the birth of their daughter, Bailey, in May. Ronnie has ferried Starbucks coffee to **Cindy Caron '94** on frequent visits to Sri Lanka. rcherry@levi.com

Michele Dash writes: "I have been assigned to the Department of Energy's office in Moscow for two years." mdash@doe.ru

Warning G8 leaders that the only way to avert climate catastrophe is by holding corporations accountable, while securing environmental justice and political stability, were **Michael Dorsey**, professor of environmental studies at Dartmouth University and former Sierra Club director, along with Ken Wiwa, son of slain Nigerian activist Ken Saro-Wiwa, Noreena Hertz, Steve Kretzman and Stephen Mills, who discussed "Achieving Environmental Justice and Political Stability in a Changing World" on July 3 in Edinburgh, Scotland.

Andi Eicher writes: "Sheba and I are working in Thane (part of the Greater Mumbai urban sprawl) with a program called Jeevan Sahara Kendra, which helps people and families affected by HIV/AIDS through home-based care. We have two adorable kids—Asha, 4, and Enoch, 2, who enjoy going to nursery school. Though we live next to the Sanjay Gandhi National Park, we don't venture in much because some of the leopards seem to have developed a taste for humans when they can't get normal prey or dogs. We are active in our local church, and find our work quite challenging, especially when it comes to terminal care. Our apartment is a blessing because we only have a two-minute walk to work—an absolute rarity in Mumbai." andi@aya.yale.edu

Jared Hardner recently moved from Palo Alto, Calif., to Amherst, N.H., where he is settling into a new home with his wife, Shaye, and twin daughters. He continues to manage Hardner & Gullison Associates, LLC. Work has recently been taking him across the U.S. West for the National Fish and Wildlife Foundation and to the Galapagos Islands for Conservation International.

ClassNotes

David Newman writes: "Benjamin Merrill Newman was born on December 29, 2004. He gets along well with our golden retriever, Cody. I'm with Millipore, a bioscience company. In addition to being environment, health and safety director, I am plant manager for the facility in Bedford, Mass."

Katie Genshlea Paris writes: "I'm a part-time consultant for a green buildings developer—the Windmill Development Group—helping to raise financing for green building projects in Canada. My daughter, Julia, 5, is in first grade, and Simon, 3, is starting preschool. I'm officially a soccer mom, now that Julia plays soccer. I'm still having fun as an American in Canada, getting used to winter and loving skating and canoe trips."

Jennifer Pett-Ridge writes: "I was married last September to another environmental scientist, Logan Hennessy, whom I met while doing my Ph.D. at UC-Berkeley. We got married at the Mendocino Woodlands Camp in California. **Derek Halberg** and Christy Johnston, **Whendee Silver '87, Ph.D. '92**, and Steve Beissinger attended. In May, I finished my Ph.D.; my studies were of redox effects on soil microbiology and N isotopes in Puerto Rican soils. I'm working as a postdoc at Lawrence Livermore National Lab, doing nanoscale mass spectrometry to study bacterial metabolism and soil chemistry."

Kate Pipkin is in the Raleigh, N.C., area working part-time for a state agency, the Wildlife Resources Commission, on rules/regulations and special projects. More important, she is excited to be watching Taylor Elliott Pipkin, born in early 2005, grow and get into everything!

Lloyd Raleigh writes: "I am a contractor for WWF-China in northwestern Yunnan Province, and am traveling around China and elsewhere. I am working on several film projects for them, as well as ecotourism and forest management plans for Tibetan villages. Prior to that, I lived on Martha's Vineyard for eight years, working for The Trustees of Reservations, enjoying beach volleyball and island life." lloydraleigh@yahoo.com; keeps a travelog at www.travelpod.com/members/lraleigh

Anne Reynolds writes: "In March, my husband and I had a baby girl, Hannah Kerry, much loved by her older brother, Tim. I love being a mom of two, and still enjoy working at Environmental Advocates of New York."

Kath Schomaker won a seat on the legislative council in her hometown of Hamden, Conn. She writes: "I've been there for 11 years now, and it's time for more involvement. There are a lot of development pressures on the remaining 20 percent of the town's open space. I also sit on the board of the town's all-volunteer land trust."

Lara (Nachiem) Swenson writes: "Our daughter, Emma Jane Rose, was born on Mother's Day (May 8). Jack and I are busy—Joseph is now 9 years old, Jamie turned 2 in October, and Emma Jane is 6 months. I'm temporarily a full-time homemaker, a job that's much more exhausting than my math/science teaching position."

1997

Class Secretary:

Paul Calzada pcalz@metro2000.net

Nancy Alderman, president of Environment and Human Health (EHHI), received the Public Health Award for contributions in the area of environment and human health from the New England Public Health Association in 2001. EHHI (www.ehhi.org) has published a series of studies, many concerning schoolchildren and their exposures, including *Children's Exposure to Diesel Exhaust on School Buses, A Survey of Asthma Prevalence in Elementary School Children* and, recently, *The State of Nutrition and Physical Activity in Our Schools*. EHHI, founded by Alderman in 1997, is a nonprofit organization dedicated to protecting human health from environmental harms through research, education and promotion of sound public policy.

1998

Class Secretaries:

Nadine Block
nadineblock@alumni.williams.edu

Claire Corcoran
Corcoran_Claire@hotmail.com

Jeff Adams reports that he and **Kirsten Prettyman Adams '99** had their first daughter, Lily, on July 27.

Kim Baymiller writes: "My husband and I are going to relocate to Shanghai, China, within the next several months. While we are both employed by International Paper, his job is being transferred and I am looking to see what opportunities may exist in Shanghai. In 2004, I took a role in our sustainable forestry and forest policy group, managing water policy issues for the forest resources group. This involved development of a wetlands mitigation banking enterprise, structuring a team framework of policy representatives, and so on."

Nadine Block is living and working in the Washington, D.C. area. She and her husband, Patrick, just bought a home in Falls Church, Va., and are quickly discovering the joys and despairs of home ownership. She recently met with **Sarah Whitney** and her husband, Steve, for a fun weekend of hiking and camping at Cunningham Falls State Park in Maryland.

Pascal Collotte is a civil servant with the European Commission, dealing more and more with high-tech and less and less with the environment. He is in charge of the operations (projects cycle) providing funding for the deployment of new e-services to the European market. www.europa.eu.int/eten

Andrea Cristofani married Mark Geurts, who graduated from the Yale School of Management in 1998, in Mendocino, Calif. **Stephanie Campbell** and **Lila Gil '99** attended the wedding. Andrea and her husband went to South Africa for their honeymoon, which she said, "is an amazingly wild and pristine country with miles of undeveloped beach and coastal forest." They are living in San Francisco, where they have reconnected with many F&ES and SOM graduates.

Antonio del Monaco has been working at the Global Environment Facility's Office of Evaluation since 2002. His work has contributed to improving the monitoring and evaluation of GEF projects. In 2005, he also joined a program at Georgetown University to become a certified financial planner to assist individuals in achieving their financial objectives through proper planning in the areas of investments, taxes, retirement, estate and insurance.

After five great years as the land protection coordinator with the Land Trust of Napa County in California, **Vanessa Johnson** went to Ecuador on September 1 for a year of teaching English to ecotourism students. She is volunteering for WorldTeach, a nonprofit based at Harvard's Center for International Development, and is living in Riobamba, a small city at the base of Ecuador's largest volcano (now extinct).

Indah "Indi" Kusuma got her Ph.D. in forestry from Louisiana State University last summer. She is married to a Baton Rougean with one son (18 months), and lives in Louisiana. Indi has kept in touch with **Paul Gagnon**, who is still working on his Ph.D. in biology at Louisiana State University. He is married to Heather Passmore (from North Carolina), a colleague in the same department.

Lisa Mastny is senior editor of the magazine and other publications at the Worldwatch Institute. She is telecommuting from Durango, Colo., where she loves being able to take midday hikes in the mountains or go rafting on the river. In August, she had a nice visit from **Jennifer (Yelin) Kefer**, her husband, Josh, and their 14-month-old son, Ari, who live in Silver Spring, Md.

Keely Maxwell, Ph.D. '05, writes: "I am a new homeowner with a new job (tenure track!). I am an assistant professor of environmental studies at Franklin and Marshall College in Lancaster, Pa., and loving it so far. It's lovely here—I take long bike rides through Amish country. Went to Peru for two weeks." kmaxwell@fandm.edu

Tobgay S. Namgyal writes to tell us that his brother, Sonam Wangchuck, is part of the incoming F&ES class for fall 2005. Sonam brought his family with him, including a son in 9th grade, another son in 5th grade, and a daughter in 2nd grade.

Chris Williams and his wife, Amy, had a second child, Madeline Grace, on April 20, the day before her big brother, Noah, turned 2.

ClassNotes

1999

Class Secretaries:

Jocelyn Forbush jforbush@ttor.org
Jennifer Garrison jennifermgarrison@yahoo.com
Christiana Jones christiana@aya.yale.edu

Bryan de Ponce writes: "All is well here in Seattle. We recently returned from a yearlong trip throughout Asia. We quit our jobs, rented a house and hit the road. **Deborah (Swander) de Ponce** has started an immigration law firm. I am attempting to enter the green building industry. In the meantime, I am doing program management consulting work for Microsoft."

2000

Class Secretaries:

Erica Shaub schaube@battelle.org
Zikun Yu yuzikun2001@yahoo.com

Thu Ba writes: "I am working at the UNDP office in Hanoi. I was also offered another job at the World Bank in Hanoi, but I chose the UNDP job. My job is GEF program development. It is very interesting and challenging, but I still need to learn a lot. My husband, Lam, has resumed his work at Siemens with a slightly different role, heading a mobile network unit. Lam Nhi, our daughter, is going to an International Childcare Center in Hanoi and having a hard time adjusting to the weather and everything here. Lam Nhi has been sick three times since we came back. I am looking for contacts with GEF programs either global or regional (in any country office where GEF portfolios are well-developed), so I can gain some practical knowledge about GEF portfolio development. The GEF portfolio in Vietnam is relatively small (as compared to China, India, Malaysia and other Asian countries), and our bosses here are very keen on making it grow. I have to admit that I miss Yale and New Haven a lot. I hope to get a chance to visit the school, the professors and friends."

Katherine Bill works for the Methow Conservancy in north central Washington, and also does a lot of mountain climbing.

Linus Chen is a first-year law student at Emory University.

Connecticut Clean Energy Fund staffer **Bryan Garcia** was in the "Staff Member Spotlight" in the April/May issue of *Clean Energy Today*, published by CCEF. The article read, in part: "As director of energy market initiatives, Bryan Garcia oversees the strategic direction and management of the fund's voluntary clean energy market initiatives, public awareness, monitoring and evaluation of program effectiveness. Encouraging voluntary purchases of clean energy is Bryan's prime focus. He plays a key role in several programs, including the clean energy communities program and SmartPower's 20 percent by 2010 campaign."

Tony Rodolakis writes: "In April and May, I took five weeks off from work to participate in an exchange program to Argentina. We were way up near the border of Chile and Bolivia—what a beautiful country! Anyway, it turns out that one of the people I met there has come to Yale for six weeks as part of the English Language Institute."

Sylvia Stone writes: "I've finally left the Wildlife Conservation Society after four years, and after seeing many other F&ES alumni join the team—**Yemi Megenasa '02**, **Abby Weinberg '03** and **Daniela Vizcaino '04**. It was a wonderful experience working there, and I would be happy to direct more alumni their way. I'm in the San Francisco Bay area, and seeking a new job with a medium to large national conservation organization in program management. I have applied for several positions, and one of them was with The Nature Conservancy in San Francisco."

After five years as a mediator of environmental conflicts, **Becky Turner** has returned as a student at the Vermont Law School. She looks forward to reconnecting with her East Coast classmates.

Zikun Yu writes: "I moved to New York City and am manager of the purchasing department in the New York branch of a recycled material import/export company called Genius AA Corp."

2001 5th Year Reunion

Class Secretaries:

Leigh Cash leigh@cultureearth.com
Adam Chambers adam_chambers@nrel.gov
Jennifer Grimm jwgrimm@earthlink.net

Bruce Cabarle '83, director of the Global Forest Program, writes: "As of July 1, **Kerry Cesareo** is director of the Global Forest Program's North American Forest and Trade Network. Kerry will oversee development of the forest program's relations with U.S.-based forest product companies, which are potential members of the North American Forest and Trade Network. The goal of the network is to catalyze North American businesses to adopt and execute purchasing policies that shift trade in forest products from illegal or poorly managed forests to known, well-managed and credibly certified forests."

Adam Chambers writes: "I will soon be leaving National Renewable Energy Lab to work for IIASA in Vienna, Austria, where Arnulf Grübler works when he is not teaching about energy and the environment at F&ES. I'll be there for two years working on post-Kyoto analysis that will hopefully bring China and India to the table." achambers@aya.yale.edu

Matt Hollamby is working with the Wyss Foundation, and attended weddings for **Margie Huang** (in New York) and **Smita Malpani** (in Vermont) last summer.

Quint Newcomer defended his dissertation last November. He is station director and resident scientist for the Ecolodge San Luis and Research Station in Costa Rica, operated by the University of Georgia in Athens.

Jennifer Osha (Jenosha) is working in West Virginia on creative projects to raise awareness about a form of coal mining called "mountaintop removal." The first project, a CD compilation of songs written about the impacts of mountaintop removal, along with interviews from coalfield residents, was released in the spring of 2004. The second project is a novel titled *The Green River Coalfish*, focusing on a small town in West Virginia that begins to fight against mountaintop removal. In October 2003, Jenosha gave birth to a son, Elijah Storm Wellings-Osha.

Diane Russell writes: "It has been a wonderful four years at ICRAF and in Kenya, as well as Cameroon. I will miss my ICRAF friends very much and hope to see you in the United States or when I return to Africa. I am joining USAID's biodiversity team based in Washington, D.C. I look forward to continued collaboration on issues related to conservation, agroforestry and livelihoods."

Mariana Upmeyer married Peter Du Brul in July. Mariana is the conservation planning associate at the Pine Barrens program of The Nature Conservancy in Browns Mills, N.J.

2002

Class Secretaries:

Catherine Bottrill and Roberto Frau-Rodriguez Sageboy02@yahoo.com

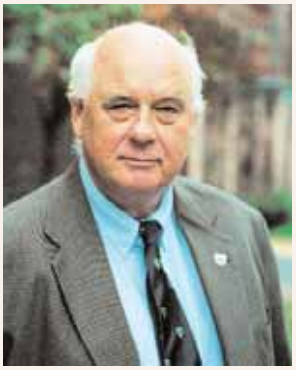
Nissa Mardiah is working as head of a subdivision, providing further analysis to the assistant minister for agriculture and forestry at the Indonesian Environmental Ministry.

Kim Thurlow married doctoral student Mark Stern in late June.

Madeleine Weil, policy analyst for Environment Northeast, said she is thrilled that the Connecticut House of Representatives approved the Connecticut Clean Diesel Plan bill (S.B. 920), which will reduce health risks from diesel pollution in the state. "The bill directs the Connecticut Department of Environmental Protection to report back to the legislature with a comprehensive strategy for minimizing emissions of toxic diesel soot. . . . We are thrilled to see that the strategy will include specific recommendations for achieving near-term reductions from school buses, transit buses and state-funded construction diesels." mweil@env-ne.org

ClassNotes

Former F&ES Dean Receives Pinchot Medal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John Gordon

Former F&ES Dean John Gordon is known by some of his colleagues as the "statesman of the forestry profession." His long history of leadership on difficult issues regarding the management and biodiversity on public lands, as well as his accomplishments as a scientist, teacher, dean and advisor has had a significant effect on the forestry profession and the development of natural resources policy.

At the 2005 Society of American Foresters (SAF) national convention in Fort Worth, Texas, in October, Gordon's contributions were recognized with conferral of the Gifford Pinchot Medal, for outstanding contributions in the administration, practice and professional development of North American forestry.

Gordon, Pinchot Professor Emeritus of Forestry and Environmental Studies, began his forestry career as a plant physiologist with the USDA Forest Service and then joined the faculty at Iowa State University, where he was instrumental in bringing together teams of scientists to study the biological processes that limit tree and stand productivity. Gordon has also served as chair and professor of forest science at Oregon State University, where he established two forestry research cooperatives, and then as F&ES dean from 1983 to 1992, where he helped to increase the number of female faculty and staff. In 1996, he founded Interforest LLC, a forestry consulting firm in Branford, Conn., that brings national and international forestry experts together to develop integrated solutions for the forest products industry and forestland management agencies.

Gordon, an SAF member since 1961, has played a leadership role on several important panels created by SAF, the U.S. Congress, the National Academy of Sciences and the Intertribal Timber commissions. He also is the senior editor of the primary book on biological nitrogen fixation in temperate forest ecosystems, and the author or co-author of more than 100 publications.

2003

Class Secretaries:

Brian Goldberg
brian@fieldoperations.net

Scott Threadgill
Michael.threadgill@aya.yale.edu

Elizabeth Allison writes: "I traveled to Mussoorie, India, in the Garhwal Himalaya to present a paper at an ecotourism conference, and visited my brother in Chennai, south India, on the same trip. I never would've guessed that Madison, Wis., would be a hotbed of South Asian languages and cultures, but that's where I spent the summer learning Tibetan for use in my fieldwork in the Himalayas. I ran into **Naoko Nakagawa**, who was a couple years ahead of us at F&ES and was studying Thai. On the way back to Cali from Madison, I stopped in to see **Kate Hammond**—Che is as wiggly as ever—and **Ted Lanzano** in Denver."

Ryan Bennett writes: "I'm pricing manager for the Americas and Asia for GE Energy's wind business. I moved back to California from Canada, and strangely enough I drink less beer and watch less hockey these days."

Chuck Brunton writes: "I am working at the World Bank, applying quite a bit of the M.E.M degree, and am still excited about applying more in the international environmental management capacity. I'm helping the National University develop a class curriculum for a master's of environmental management degree that they are eager to create. In other news, I've been in touch with Maleye Diop (Senegalese UNDP official) about a job opportunity. I am looking for immediate full-time opportunities in the international environmental sector where I can use my Spanish or work in Bhutan."

Melanie Cutler writes: "I'm teaching biology and environmental science at Andover High School in Massachusetts. The big news is that Mark and I are expecting a little Cutler at the end of February!"

Lydia A. Dixon writes: "I bought a townhouse in Jackson. I have been volunteering a couple of days a week on the U.S. Fish and Wildlife Service Wyoming Wolf Project. I am also still working for NRCC, with **Jason Wilmot**, **Dylan Taylor '02** and **Dave Cherney '05**."

Alison Forrestel writes: "I get to go off and make maps of wildfires. The last fire involved breakfast and dinner served by convicts. And I still miss everyone and think they should move to the Bay Area."

Brian Goldberg writes: "I enjoyed spending time in New York City with **Jay Shepherd, Dani Simons '04** and **Steve Dettman** this past spring. After two years with the landscape architecture firm Field Operations, I'm moving to Bangkok, Thailand, where I'll join my girlfriend, Akiko, and work with the UNDP on its poverty and environment initiative."

Carlos Gonzalez, Ph.D., writes: "I am the Mexico Desk Officer with the Foreign Agricultural Service. In addition, I have also moved to a different office." carlos.gonzalez@fas.usda.gov

Elizabeth Gordon, **Oscar Franco** and **Mary Tyrrell '97** have published a new study, which provides a comprehensive examination of the scientific criteria used by conservation organizations in setting global forest conservation priorities. The complete report, *Protecting Biodiversity: A Guide to Criteria Used by Global Conservation Organizations*, is available at www.yale.edu/forestry/publications/index.html. The study examines the global conservation planning approaches utilized by five conservation organizations, including Conservation International, the World Wildlife Fund and The Nature Conservancy.

J. Bishop Grewell writes: "I'm entering my last year of law school at Northwestern and checking into federal clerkships for next year. I could end up anywhere in the country, but I'm pretty sure there will be an F&ESer wherever I go. So be prepared for my phone call."

Kate Hammond is still plugging away for the National Park Service and loving Colorado!

Krithi K. Karanth is in India most of 2005-2006 doing fieldwork for the Ph.D.

Pete Land went on a 10-day camping trip in Spain.

Cherie Lim writes: "I am an environmental assessor for JMK Environmental Solutions, where I provide environmental due diligence services for commercial real estate."

Christopher Menone is a studio manager for a video artist and a collaborator in environmental art and design projects.

ClassNotes

Terry Miller writes: "Kate and I have a new addition to the family: Ms. Rubinator Blue Miller (aka Ruby). No, we didn't name a baby that...it's our mutt dog!"

Karen Murray writes: "I have a new e-mail address and a new name—Karen Hardigg." karen.hardigg@comcast.net

Tim Northrop is the Connecticut state director for The Trust for Public Land.

Kabir G. Peay writes: "I passed my qualifying exam and have been elevated from ignominious 'graduate student' to 'doctoral candidate.' Despite the newfound sense of respect I feel emanating from the people around me, I still get funny looks when I cut to the front of the movie line."

Soni M. Pradhanang writes: "I am doing a Ph.D. at the State University of New York, College of Environmental Sciences and Forestry. The good news is I am a mother of a beautiful baby boy. … he is already 13 months."

Marni Rapoport is a project manager at PPM Energy.

Liz Roberts writes: "I am cycling across the Golden Gate Bridge most days to commute to work, saving the world one fan or sustainable civil society organization at a time (www.paxfan.com and www.naturalcapital.org). I am also assimilating somewhat, and I might even be developing a fondness for baseball."

Curtis Robinhold is working on the strategy for British Petroleum's renewables business, and got married in September to Angela Uherbelau.

Laura Ruiz is a biology teacher at Whittier High School; she lives in Gardena, Calif.

Abdalla S. Shah writes: "I am a national project coordinator for the Nile Transboundary Environmental Action Project."

Liz Shapiro is a doctoral student at UC Berkeley. She started her year of field research in southern Mexico this October.

Jay Shepherd writes: "I am with a D.C.-based brownfield/urban infill redeveloper for Weston Solutions. My family is healthy and my daughter, Camille, will be 3 years old in March. I will also partner with nonprofits to build green office space in supply-constrained markets."

Ninian Stein writes: "Still working on my dissertation. I am teaching an undergraduate seminar of my own design in Brown's environmental studies department, called 'New England Environmental History.'"

Laura Tam writes: "I'm still working at the EPA-OIG in San Francisco, evaluating EPA's water programs. I was just recently promoted to 'real employee' from the rank of intern. In my free time, I'm training for the Nike Women's Marathon here in October to raise money for the Leukemia and Lymphoma Society."

Scott Threadgill writes: "We love NOVA/DC, although I'll never forgive **Bill Finnegan** and Flo for sucking me into coming up here and then abandoning me in favor of **Pete Hill** and Vermont."

Toru Uemachi is a program coordinator for the China Office of Japan International Cooperation Agency (JICA). He is preparing a project for improving the rural pension insurance system of the People's Republic of China.

Nicole Vickey writes: "I am the Alabama coastal program director for The Nature Conservancy, focused on oyster restoration, longleaf pine restoration and migratory bird habitat protection. Baby Elle is 9 months old and growing like a weed."

2004

Class Secretaries:

Keith Bisson
keith.bisson@aya.yale.edu

Daniela Vizcaino
danielavizcaino@aya.yale.edu

Jennifer Vogel jenvogel@yale.edu

Laura Wooley laura.wooley@yale.edu

Philippe Amstislavski is an urban planner for the Environmental Simulation Center in New York, where they use the latest GIS and real-time 3D modeling technology to provide communities, planners and local governments with interactive, hands-on tools to model health, social, demographic and environmental impacts of different planning decisions in cities.

Misa Andriamihaja writes: "I am a program officer in energy and environment for the UNDP multicountry office based in Apia, Samoa, where I manage and develop a portfolio of regional and national programs for Pacific Islands countries."

Leigh Baker writes: "I got married in Jackson, Wyo. I am a conservation associate for the Southern Environmental Law Center in Chapel Hill, N.C., involved in endangered-species research and GIS analysis for environmental law cases. We just won a big case against the U.S. Navy in our effort to protect a national wildlife refuge from development of an outlying landing field." www.southernenvironment.org; leigh_work@yahoo.com

Jessie Barnes writes: "I am starting the second year of a Ph.D. in sustainable development at Columbia. During the summer, I went to Syria, where I will be doing my research on water management and environmental change. I am living in Brooklyn with **Sarah Vogel '03**."

Keith Bisson is working on community development and rural water policy in Washington, D.C. He looks forward to working in the forests of Maine soon.

Marco Buttazzoni and **Valerie Craig** are engaged, and plan to be married in April. Valerie works for a marine NGO called SeaWeb, dealing with issues of sustainable seafood. yfes-dc-owner@yahoogroups.com

Avery Cohn is a student in the environmental studies Ph.D. program at the University of California, Santa Cruz. His work focuses on agriculture, trade and the environment in the Americas.

Kyla Dahlin writes: "I am living in the Presidio in San Francisco and working for the Golden Gate National Parks Conservancy in the Site Stewardship Program. We do community-based restoration in the Golden Gate National Recreation Area. In my spare time, I've been doing lots of freelance GPS/GIS work and hanging out with F&ESers."

Alvaro del Campo writes: "I am director of operations for a Peruvian NGO, CIMA. As a direct support to the National Institute of Natural Resources of Peru, CIMA is responsible for the implementation of all activities within the 1.35-million-hectare Cordillera Azul National Park (shared by four Peruvian regions: Loreto, San Martin, Ucayali and Huanuco) and its 2-million-hectare buffer zone. This enormous park plays a key role in the economic, political, environmental and geographic landscape of the region."

Michela De Palo completed a master's degree in finance at the London Business School, and is working for Climate Change Capital, London, U.K., providing financial services and products to organizations affected by the convergence of laws and policies on energy and the environment.

Ona Ferguson is an associate at the Consensus Building Institute in Cambridge, Mass. "We give trainings on consensus building skills, help mediate environmental conflicts like Superfund site cleanups, facilitate policy dialogues and do research on alternative dispute resolution."

Alex Finkral '97, Ph.D. '05, and **Liz Kalies** were married on June 27 on Cape Cod. Liz writes: "We left New Haven and moved to Flagstaff, Ariz., where Alex started his job as assistant professor at Northern Arizona University's School of Forestry, and I begin my Ph.D. in wildlife ecology."

Betony Jones is natural resources program officer for the Sierra Business Council in Truckee, Calif. "I'm working on two programs: the Sierra Nevada Conservancy, which is a new state agency with a sustainability focus, and a new forestry program to implement best management practices in the region."

Cindy Kushner writes: "I've recently moved to East Timor to lead a U.N. community development project focused on rural water and energy. I'm excited to get back to this beautiful, fascinating little corner of the world."

Ery Largay is Northeast regional vegetation ecologist for NatureServe in Boston, identifying and mapping native vegetation communities in protected conservation areas in accordance with the national vegetation classification system throughout the Northeast.

Woon Kwong Liew is corporate safety and environmental operations specialist with Honeywell

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International in Morristown, N.J. He married Liang Sze on July 9 in Singapore. **Chris Mahendra** was on hand for the wedding. woonkwong.liew@aya.yale.edu

Katherine Lin writes: "I was a legal intern last summer with the Environmental Integrity Project, a nonprofit group in Washington, D.C., that targets environmental issues, primarily air pollution concerns."

Liz Martin writes: "I'm still living in D.C. and working for ICF Consulting on climate change and ozone issues. This year I got to do projects with the European Union, UNEP and EPA. I'm also still celebrating being a newlywed! I was married on May 14. We were so happy to have many F&ESers attend and be there in spirit. We honeymooned in Thailand and Europe."

Susan Matambo writes: "Muta and I are still in Bethesda. I have been working for the GEF in Washington, D.C., for a year now."

Neha Menon got married and is now Neha Sami. She writes: "After working for a year at the Boston Redevelopment Authority, I am starting my Ph.D. in urban planning at the University of Michigan. My husband, Rahul, is moving there, too, to start work at the School of Information as an assistant professor." neha.menon@aya.yale.edu

Kim Mortimer is a wildlife biologist for the Florida Fish and Wildlife Conservation Commission in Panama City, writing management plans for private landowners in the panhandle.

Beth Owen writes that she is a bit more than halfway through her one-year Dean John A. Knauss Marine Policy Fellowship in Washington, D.C. She is working at the Silver Spring, Md., office of the National Estuarine Research Reserve Program of the National Oceanic and Atmospheric Administration. beth.owen@noaa.gov

Christopher Riely writes: "One year in the Ozarks turned out to be enough, but I've gained some nuts-and-bolts field experience and I'm proud that I helped our little four-employee business gain FSC certification. I'll be getting dirty for TNC in an invasive species assault/ecological restoration project on Cape Cod."

Nalin Sahni is working for the Environment and Energy Project at the Brookings Institution in Washington, D.C.

Erica Schroeder is residential program associate with the Consortium for Energy Efficiency in Boston. She writes: "The Consortium for Energy Efficiency, a nonprofit public benefits corporation, develops national initiatives to promote the manufacture and purchase of energy-efficient products and services. Its goal is to induce lasting structural and behavioral changes in the marketplace, resulting in the increased adoption of energy-efficient technologies." erica.schroeder@aya.yale.edu

Alison Van Gorp is green Seattle project manager for the Cascade Land Conservancy in Seattle. She manages the Green Seattle Partnership, a public-private partnership between Cascade Land Conservancy and the city of Seattle to restore forested parklands and greenways throughout the city.

Maria Vargas is executive director of the Natura Bolivia Foundation in Santa Cruz, Bolivia. She writes: "I'm leading a conservation and development organization, an NGO that focuses on developing markets for environmental services or other incentives that move people in the direction of sustainable management." mteresavargas@naturabolivia.org

Daniela Vizcaino writes: "I am working for the Wildlife Conservation Society in the Bronx Zoo as program manager for their Latin America program."

Marty Walters writes: "I'm managing environmental due diligence (and a fair amount of cleanup work) for very large real estate transactions around the world for GE Real Estate, which followed on my internship in 2003 and has put me back on track with a well-compensated career doing good for the environment. I'm also lucky enough to be working remotely from Quincy, Calif. (population 5,000), where much of my family lives and where my kids and I have re-established in an absolutely beautiful environment. Although I am still working primarily on industrial and land-use issues, I have become involved in various community initiatives, including a long-term effort to integrate forestry, timber industry, water resources and climate change issues in the northern Sierra Nevada."

Jeremy West is the program director at the Great Basin Institute in Reno, Nev. "I run the forestry program for a large, environmental nonprofit. We work with government agencies and local fire districts to implement fuels management and community development projects to make communities at the wildland-urban interface more fire-safe."

Hillary Young is the associate regional scientist for southeastern Massachusetts with the Massachusetts Audubon Society, based in Cambridge. She keeps busy compiling inventory information on birds and amphibians and researching effectiveness of warm season grassland restoration projects. She has been accepted into a Ph.D. program in ecology and evolutionary biology at Stanford.

Zhizhou Zhang writes: "I am working as an assistant industry analyst for CEB Monitor Group. The company is helping foreign fund managers find investment opportunities in China."

2005

Class Secretaries:

David Cherney
david@nrcooperative.org

Dora Cudjoe
dora.cudjoe@aya.yale.edu

Virginia Lacy
virginia.lacy@yale.edu

Benjamin Urquhart
benjamin.urquhart@yale.edu

Lauren Baker writes: "Over the summer I taught high school in New Haven, including doing some advocacy and environmental justice work with the students. I am working on community-based property rights with the Center for International Environmental Law, and have started a stint in Washington, D.C."

David Cherney is working with the Northern Rockies Conservation Cooperative in Jackson, Wyo., with **Dylan Taylor '02**, **Jason Wilmot '03** and **Lydia Dixon '03**.

Jamie Fergusson writes: "Got married in July in Toronto and went on a honeymoon to Costa Rica. I am now in D.C. working at the IFC on environmental finance (looking at wind farms in Mongolia), and have just bought a house. All very exciting, but missing Sage Boy!"

Beatrice Huang writes: "I've moved to Bethesda, Md. I am a research coordinator at the Physicians Committee for Responsible Medicine."

Po-Yi Hung writes: "I'm now a Ph.D. student in geography at the University of Wisconsin-Madison, and will focus my research on political ecology and cultural geography."

Thu Ba Huynh writes: "I am taking care of Global Environment Facility (GEF) program development at the UNDP Office in Vietnam."

Andrea Johnson writes: "I was in Kalimantan, Sumatra and Java until October, conducting a small comparative study of field research stations."

Amy Kimball married Graham Dodds in early July. Amy began a Fulbright fellowship in Montreal at McGill University to study the city's parks.

David Kneas writes: "I am in Ecuador as an international human rights observer in the communities that are opposing plans to open the area (the Intag region) to large-scale mining. I am working with a former professor from DePauw and a few other friends to get the observer project more established. We have a video camera here and have been filming everything, including a recent meeting between the CEO of the mining company and the local environmental organizer. The previous video I made is now on the Tropical Resources Institute website."

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Mary Alice and **Rob Lamb** and **Megan Sutton** are hoping to do great things for land protection in the Southern Appalachians. Rob is doing stewardship work at Carolina Mountain Land Conservancy in Hendersonville, N.C., while Mary Alice and Megan are working together at the Southern Appalachian Highlands Conservancy in Asheville. Mary Alice is working on public outreach and Megan on conservation planning and stewardship for Western North Carolina.

Maura Leahy writes: "I'm working for the Harvard Green Campus Initiative and will coordinate a campus energy reduction program. The premise is that people will be more likely to change their behavior if they're presented with concrete ways to do so in interesting ways (www.greencampus.harvard.edu)." maura_leahy@harvard.edu

Virginia Lorne writes: "I'm back in Tahoe working on land acquisition and public access projects for the California Tahoe Conservancy. I have been running into **Betony Jones '04**. My husband, Matt, and I are expecting a little Lorne in mid-December. And Mot, the dog, is happy to have his paws back in Lake Tahoe, his favorite swimming hole."

Joe MacDougald writes: "I'm working as my company's chief operating officer, and am chair of my town's planning and zoning commission. In the spring, I'll teach an advanced land-use law course as an adjunct law professor."

Sarah Matheson writes: "I am doing environmental sustainability work for the World Bank and reside in Arlington, Va."

Alex McIntosh spent the summer creating an energy conservation program for Yale College, working for John Pepper, vice president for finance and administration. Now Alex is interviewing with The Nature Conservancy for conservation jobs in three states and had hoped to have something lined up by end of September. He also volunteered in Louisiana with the American Red Cross to help the victims of the hurricanes (see story on page 49). alexmcintosh@aya.yale.edu

Rolando Mendez-Treneman writes: "I designed and implemented an applied ecology workshop for a high school ecology class. The students learned and practiced cross-country navigation (use of compass, aerial photography, topographic maps), forest measurement methodology (use of relascope, angle gauge, clinometer, Spencer tape) and teamwork."

Azalea Mitch writes: "I'm still looking into the causes of marsh loss along the Connecticut coast with Shimi Anisfeld. My husband and I just came back from our first Engineers Without Borders assignment in Honduras. We stomped and hacked our way through subtropical wet forests with a machete, looking for water sources that we could tap into to help some of the local villages in central Honduras."

Matt Muspratt writes: "I've just finished my first term of law school at the University of Michigan. I've had one visitor, **Sharon Gulick**."

Justin Pollard writes: "Since graduation I have been living in Portland, Maine, where I have been a builder, and founded a sustainable building and design company called Pollard Builders. I volunteered with the Red Cross in the Hurricane Katrina relief effort in Montgomery, Ala."

Rebecca Reider writes: "I have been wandering around Ecuador and Peru. For a month, I mothered 18 goofy gringo teenagers around Ecuador as a trip leader for Global Routes. I also spent some time in the rainforest with the communities where I did my master's research last summer, visiting Kichwa friends, trying to support their battle for title to their ancestral territories and living the good jungle lifestyle eating roasted ants and caterpillar soup."

Michael Ritger writes: "I am a financial analyst for a small research and investment firm in New York, specializing in natural resources companies."

Amy Shatzkin is a transportation planner in Seattle.

Emily Shelton writes: "I am a global sustainability analyst with Mattel (Barbie, Hot Wheels, Fisher Price), based in Los Angeles. My work deals with environmental and social performance of licensee manufacturing facilities worldwide." emily.shelton@aya.yale.edu

Dan Stonington writes: "I've had a great summer in the Pacific Northwest. After graduation, I drove back to Seattle via Colorado, Utah and California, stopping to visit relatives and F&ESers along the way. I'm hoping to get a position in Olympia, either working for the legislature or staffing an environmental advisory council to the governor."

Jonathan Strunin writes: "I'm interning at the Association of Bay Area Governments (ABAG), a regional governmental planning organization. I am developing and writing a report updating the existing land-use map for the entire region, which will be used in ABAG's regional projections that they put out every few years to help local governments make planning decisions. I'm also assisting in the preparation of the multijurisdictional local hazard mitigation plan (always a huge issue in California) by writing a piece on past, present and future land-use development in hazard areas."

Hannah Stutzman writes: "I spent the summer at the David and Lucile Packard Foundation in Los Altos, Calif., doing research on marine ecosystem-based management initiatives. It was fun to spend the summer on the West Coast, and now I'm looking for a full-time position in Colombia." hannah.stutzman@aya.yale.edu

Victoria Thompson writes: "Earlier this summer, I met briefly with **Alex Pannock** and **Kyla Dahlin** in San Francisco, and made some 'educational' visits to Napa Valley wineries. I started my new job at ICF Consulting in D.C. on August 1, and have been spending my time settling into my new apartment with **Lisa Patel** and going to various office social events. **Liz Martin** works in the same office as me."

Jennifer Vogel writes: "I am communications coordinator for Rainforest Alliance in New York. My work is mostly writing, editing and media outreach. I've also started a small business, marketing wild African silk as an NTFP."

Huiyan Zhao writes: "I am in Rhode Island, and am happy to be an environmental analyst for the next few years."

Kate Zyla writes: "Brian and I got married in October in New York. I'm living in D.C. and working at the Pew Center on Global Climate Change. We're taking our honeymoon in Hawaii!"

From Kathleen Schomaker '96, Director of Alumni/ae Affairs:

Thank you for your submissions to Class Notes—we hope you enjoy reading this section of the magazine, along with all the rest of *Environment:Yale*.

Please note the following procedures for Class Notes: Class secretaries try to contact classmates, generally in February and August, to remind you to send notes. If you do not hear from a secretary, we may no longer have your e-mail address or other contact information. Please update your information at www.alumniconnections.com/yale or alumni.fes@yale.edu or by calling 203-432-5108.

If your note misses the deadline, we will save it for the next issue. Should you choose to update your note before the following issue, simply let us know.

We publish e-mail and website addresses as part of Class Notes, but we do not publish mailing addresses or phone numbers. However, we appreciate receiving your mail and phone updates as well.

As always, we enjoy hearing from you!

Obituaries

J. Willcox (Will) Brown '41 came from Delaware, and was a 1937 graduate of Dartmouth. He died on August 18 in Concord, N.H., at 90. Brown was an assistant forester for the Society for the Protection of New Hampshire Forests and was once the governor's representative to the National Commission on Public Land Review. He met his wife, Natale, Yale School of Nursing Class of 1941, while they were both in college. Brown was a forester in New York, California, Pennsylvania and Michigan before settling to work in New Hampshire in 1955. In 1959, he became a private natural resources consultant. A longtime resident of Dunbarton, N.H., Brown served the town as a selectman and town moderator. In 1999, he and Natale donated 159 acres of forest to the town, permanently preserving the hilltop that leads to Dunbarton's center. In 2001, he and Natale were jointly awarded the Granite State Award from the University of New Hampshire for their service to the state. At that time, the president of the Audubon Society of New Hampshire, Richard Moore, noted three issues Brown fought for: he opposed building a four-lane interstate highway through Franconia Notch; he favored acid-rain research that eventually led to federal legislation to address the problem; and he opposed the Seabrook nuclear power plant because of its proximity to a salt marsh. At Brown's death, New Hampshire Gov. John Lynch issued a statement that praised him for his accomplishments and acknowledged that he was a friend and advisor to state senators, representatives, governors and presidential candidates, as well as a mentor to young people interested in public service. Gov. Lynch also said, "The beautiful open spaces and forests that we enjoy today in New Hampshire—and that our children will be able to enjoy in the future—are due in no small part to the work and dedication of Will Brown." He is survived by Natale, who lives in Concord.

Richard J. Campana '47, Ph.D. '52, was from Everett, Mass., and graduated with a degree in forestry from the University of Idaho in 1943. During World War II, he served in the Army in Europe and was awarded the Bronze Star. After his first stay at Yale, he was a forestry instructor at Pennsylvania State University and North Carolina State University. After doctoral study at Yale, he spent several years as a forest pathologist for the U.S. Department of Agriculture and the Illinois Natural History Survey at Urbana. In 1958, he became head of the Department of Botany and Plant Pathology at the University of Maine at Orono, and spent the rest of his career as a professor there. He and Jean, his wife of 60 years, stayed in Orono after he retired. He died there on April 1 at 87.

Laura (Laurie) Beth Cuoco '05 came from Flushing, N.Y., and was a 1997 graduate of U.C. Berkeley. From 1998 to 2000, she served in El Salvador with the Peace Corps as an agroforestry volunteer and environment educator. Following the Peace Corps, she remained in El Salvador another year, joining the American Red Cross as a water/sanitation project coordinator in disaster relief efforts in the wake of two major earthquakes. She relocated to Panama to work with school systems before applying to F&ES, where she wanted to learn more about the interplay between politics, economics and the environment, and to work with the Tropical Resources Institute. She died on May 10, two weeks before graduation, from complications of a brain hemorrhage. She is survived by her parents and her many friends in the Class of 2005.

Ronald Gale '49 was from New York City and was a 1947 forestry graduate of SUNY-Syracuse. He was an expert in wood technology and a consultant to a variety of entities concerned with forest products in New York state and throughout New England, including private-sector manufacturers, the U.S. Navy, Norwich University and the New York Lumber Trade Association. In 1970, he joined the Pennsylvania Department of Forests and Waters in a similar capacity. He was 78 when he died in Harrisburg, Pa., where his wife, Judith, is among his survivors.

Marilyn Griffith '77 was from Boston and was a 1975 graduate of Mount Holyoke. She died on February 19 in Waterloo, Ontario, from complications of a stroke, leaving her husband, Tim Thorne, her parents and a brother and sister. After receiving her M.F.S. from F&ES, Griffith completed her Ph.D. in plant physiology from the University of Minnesota in 1981. She was a Killam Postdoctoral Fellow at the Department of Botany, University of British Columbia, then a postdoctoral fellow with Norm Huner in the Department of Plant Sciences at the University of Western Ontario, where she worked from 1982 to 1984. From 1984 to 1987, she was an assistant professor at the Agricultural and Forestry Experiment Station at the University of Alaska-Fairbanks. In 1987, she moved south to become an assistant professor in the Department of Biology at the University of Waterloo, where she was promoted to full professor in 2000. In 2003, she was named a Killam Research Fellow, a prestigious title she held at the time of her death. Griffith gained international recognition for her research on cold hardiness in plants, particularly winter rye and, more recently, *Thellungiella*. Her discovery of plant antifreeze proteins led to successful collaborations with scientists in many disciplines. The focus and integrity she brought to her work resulted in a collection of highly cited publications and a cadre of well-trained students and postdoctoral fellows. Her colleagues respected her knowledgeable, honest and principled opinions. Griffith authored or co-authored more than 80 research publications, and her research led to four patents relating to cold tolerance in plants. She was the founder and a member of the board of directors of Ice Biotech. In addition, she served on the grant selection committee in plant biology, Natural Resources and Engineering Research Council of Canada (2000 to 2003); as associate editor of the *Canadian Journal of Botany* (2005); and as eastern regional director (1994 to 1996) and senior director (2003 to 2005) of the Canadian Society of Plant Physiologists.

John Sloane Griswold Sr., Yale College Class of 1937, of Greenwich and Hobe Sound, Fla., former chair of the board of trustees of the

Children's Aid Society and founding partner of Griswold, Heckel and Kaiser, an industrial design firm in New York, died July 30 at the age of 91. He was a Whiffenpoof and president of the Yale Glee Club. He had a keen interest in the environment and believed strongly in the importance of supporting scholarship assistance. He established two scholarships at F&ES, and had been instrumental in encouraging others to fund scholarships. He thoroughly enjoyed meeting and getting to know his students. He attended Harvard Business School before joining his family's firm, W&J Sloane, in New York City. During World War II, he managed the firm's shipbuilding contract with the U.S. Navy in Wilmington, N.C., fitting the interiors of Liberty Ships for the North Carolina Shipbuilding Company. Following the war, he enrolled at Pratt Institute in Brooklyn, where he studied and later taught industrial design before forming his own design firm. His clients included General Motors and RCA, among others. He served on many boards of charitable organizations, including The Boys & Girls Clubs of America, where he was recently honored with its highest national award for his 65 years of service as a national trustee. He also served on the boards of The Boys & Girls Clubs of Greenwich, Pomfret School and International College in Beirut, Lebanon. An avid golfer, he was a member of numerous clubs and associations in Connecticut, Florida and Scotland. He was also a member of The New York Yacht Club and the Yale Club of New York. He was predeceased by his first wife, Anna Lauder Griswold, and is survived by their six children, S. Shelby Schavoir of Savannah, Ga., Ursula LaMotte of Bedford, N.Y., John Griswold Jr., Yale College Class of 1967, of Greenwich, Evan Griswold '75 of Old Lyme, Conn., Edward Griswold of Friday Harbor, Wash., and Charles Griswold of Ojai, Calif., and 13 grandchildren and nine great-grandchildren. He is also survived by his wife, MaryElla (DeeDee) Griswold, and her four children.

Peter Kaminsky '89 died on September 14 at home in Branford, Conn., after a long illness. He was born in New Haven in 1945 and attended Colgate University before coming to Yale. He was the retail manager for Pete's Hearth & Home in Old Saybrook. He was a member of the Branford Yacht Club and the Branford Garden Club, as well as the Branford Environmental Commission. He was an avid gardener and outdoorsman. A devoted F&ES alumnus, he was adopted by the Class of 1980, and until 2003 managed the Class of 1980 Fund, providing annual awards for creative projects to students. He is survived by his wife, Sandra Konopka Kaminsky; his stepsons, Jeffrey Rizzo and James Rizzo Jr., both of Rhode Island; and his siblings, Barbara Ford and John Kaminsky of Branford and Frank Kaminsky of Nantucket. Members and friends of the Class of 1980 are making contributions to the fund in his memory. Contact the F&ES Office of Alumni Affairs, 203-432-5108.

Andrew Richard Kroon, a Latin American studies major at Yale College, member of Berkeley College and admitted student to the master's degree program, died in April at 24 from complications of a congenital heart defect. He was a great friend to F&ES and a committed environmentalist interested in sustainable forestry in the Amazon region. As a Yale College student, he helped create a sustainable food initiative; co-authored a study on university energy use; spoke at the 2002 United Nations World Summit in Johannesburg, South Africa; and was the co-president of the Yale Student Environmental Coalition. He studied in Spain and Brazil and was fluent in Spanish and Portuguese. Prior to coming to Yale College, he graduated from Deerfield Academy. He is survived by his parents, Mary Jane and Rick; his siblings, David, Sarah Kroon Chiles, Molly, Stephen and Michael; and his grandmother, Helen. The Andrew Kroon Environmental Fund at Yale has been established to honor Andrew's memory. The fund could be used to support a range of causes and projects that Andrew was interested in, such as planting trees across the country and relandscaping of the south court of Berkeley College with plants that are drought-tolerant and will not require unnecessary chemical fertilizers.

Arthur E. MacGregor '36 died on August 26 at Havenwood Nursing Home in Concord, N.H., at 93. He was born in Providence, R.I., and received his bachelor's degree at Dartmouth College before coming to Yale. He also completed graduate studies at Harvard University. He owned the Sunset Farm in Hanson, Mass., for 25 years. He also worked for the New Hampshire Fish and Wildlife Services. He was a member of the Dartmouth Outing Club, the Appalachian Club Hutman's Association and Trout Unlimited. He loved hiking and camping, and was an avid trout fisherman. One daughter predeceased him in 1997. His surviving family includes his wife of 65 years, Beatrice; a son, Douglas, of Alaska; a daughter, Ellen, of London, Ontario; six grandchildren; and three great-grandchildren.

Carl E. Ostrom '41, Ph.D. '44, was from the Philadelphia area. He started a lifelong career in research with the U.S. Forest Service after graduation from Pennsylvania State University in 1933. His first assignments were around Pennsylvania and in naval stores research in Lake City, Fla. In 1950, he conducted research at the Southern Forest Experiment Station in Louisiana, and from 1965 to 1976 he was deputy chief for research in the USFS national office. Prior to his retirement, he was director of science programs for the Society of American Foresters. He retired to Prescott, Ariz., where he died on March 22 at 92. Laura, his wife of 64 years, is among his survivors.

John W. Parsons '50, a forestry graduate of the University of the South, died on January 29, 2005, in Palmerton, Pa., at 78. His wife, Mary, survives him.

Harold A. Paulsen '51 was from Minneapolis and obtained a B.S. in forestry from Iowa State University, following his military service. He had a long career in range management research at the Rocky Mountain Forest & Range Experiment Station, where he became assistant director in 1970. He remained in Fort Collins, Colo., after he retired in 1978. He died on or about April 28 at 83. At least one son in Vashon, Wash., survives him.

Kim (Casey) Pflueger '78 was a 1976 graduate of the University of California at Irvine. He was born in Ortonville, Minn., and died at the age of 51 in Seattle on April 8, while riding his motor scooter. Following his time at Yale, he pursued a J.D. at the University of Washington School of Law. He was a senior partner with Floyd & Pflueger. A devoted husband and father, he leaves Virginia, his wife of 25 years; his sons, Max and Nathan; as well as his mother, sister, brother and two nieces. He will be remembered for his endless enthusiasm for the little joys of life—music, his garden, his wine cellar and riding his Vespa on a sunny day.

Obituaries

Jesse G. Ralston '40 died on April 28 in El Dorado, Ark., at 89. He was from Pennsylvania and received a B.S.F. from Penn State in 1939. During World War II, he served in the Atlantic and Pacific as a Navy lieutenant pilot and was awarded the Distinguished Flying Cross. He was a forester for Pomeroy & McGowin in Arkansas for two years before starting a long career managing a quarter-million acres for Deltic Farm and Timber of El Dorado. In 1960, he became the company's president. He remained in El Dorado after retiring in 1980. He is survived by Miriam, his wife of 63 years.

James Rogers '74 died on October 22 at age 55. A resident of Ridgewood, N.J., he was a consultant for Homeland Energy Resources Development, a developer of alternative energy/conservation projects and a marketing representative for American Honda's alternative-fuel vehicle program in New York and New England. At his death, he was managing New York state and renewable New Jersey projects. He was a graduate of the Yale College Class of 1972 and a member of the alumni association (AYA). Rogers was an early supporter and promoter of the F&ES Industrial Environmental Management (IEM) program. He was a member of the AYA board of governors, having been elected as an at-large representative and having helped organize Yale's first AYA assembly with an environmental theme; a past president of the F&ES Alumni Association; member and chair of the F&ES strategic advisory committee under former Dean Jared Cohon; co-chair of the F&ES centennial celebration in 2000; founding chair of the F&ES Sand County Society; and F&ES 1974 class secretary. He is survived by a daughter, Vaughn Curran Rogers, and friend, Karen Nilsson; his parents, James A. Jr. and Kathleen M. Rogers; his brothers and sisters-in-law, Matthew and Lisa Rogers, and Liam and Laurie Rogers; a sister and brother-in-law, Nancy and Peter Bontempo; and several nieces and nephews. He was predeceased by a younger brother, Thomas A. Rogers. Visit http://rememberingjim.blogspot.com.

Walter H. Schaefer '37 was from Seattle and was a 1936 forestry graduate of the University of Washington. During World War II, he was a lieutenant colonel in the Coast Guard Artillery. Then he taught forestry at Colorado State University. In 1952, he received a Ph.D. from the University of Washington and joined its forestry faculty. He remained in Seattle for the rest of his career. He was 89 when he died in Ocean Shores, Wash., on November 16, 2002.

Frederick F. Wangaard died on April 10 in Fort Collins, Colo., at 94. He came from Minneapolis and was a forestry graduate of the University of Minnesota. After receiving a Ph.D. from SUNY-Syracuse, he was an instructor at the University of Washington. He did wartime research and development at the U.S. Forest Products Laboratory from 1942 to 1945. Then he embarked on a distinguished career, heading wood science at the Yale School of Forestry from 1945 to 1967. Graduates from those decades will recall the U.S. Navy tropical woods research project. He directed the work of 120 master's and 20 doctoral students in wood science research. From 1967 to 1976, he headed the forestry program at Colorado State University. His research, and that of his students, was recognized by many national and international honors. He was active in the Society of Wood Science and Technology and the Forest Products Research Society, serving terms as president of both. His wife, Laurie, died in 1991, and his eldest son, Fred, died soon after. He is survived by two sons and a special companion, Elaine Freeman, as well as many grandchildren and great-grandchildren.

Recent Graduate Reaches Out to Hurricane Victims

Alex McIntosh '05

By Dave DeFusco
Editor

Alex McIntosh '05 remembers watching the disturbing images of disaster and the chaotic relief effort in New Orleans caused by Hurricane Katrina playing out on TV. "I thought, 'Our country can do better.'"

He was so troubled that he called the Red Cross to assist in relief efforts. After two days of training at the Danbury chapter, Alex was deployed to Baton Rouge on September 16—nearly three weeks after Katrina made landfall. In less than three hours, he was registered for a two-week assignment, given $200 for gas and handed the keys to a 14-foot Budget rental truck. With another volunteer from Iowa, Alex set out on a six-hour drive to a shelter in the town of Monroe in the northeastern corner of Louisiana.

The Monroe shelter served approximately 2,000 evacuees at its peak, including families displaced by Hurricane Rita, and was located in an unoccupied 275,000-square-foot office building. To accommodate the evacuees, a bank, post office, Head Start program, cafeteria, sleeping quarters, medical offices, showers and supply stores were established and staffed by over 200 social workers, national guardsmen, local police and Red Cross volunteers.

In his first week, Alex and 10 other volunteers drove Red Cross Emergency Response Vehicles (ERV) loaded with food, water and emergency supplies to hurricane victims at churches, campgrounds, hotels and shelters in 100-degree heat and humidity. In seven days, he delivered 3,500 meals, 14,000 bottles of water, 4,200 snacks and 2,100 care kits, which included shavers, toothpaste, shampoo and other personal care items. When they were available, he delivered ice, diapers and baby food, diabetic supplies and stuffed animals.

A regular shift was from 8:30 a.m. to 7 p.m., but during one run, which Alex called a "nail-biter," it took him six hours to travel 70 miles on backcountry roads through Rita's tornadoes to bring food and water to 40 families who had found refuge in an isolated church in the countryside. In his second week, he put in 14-hour days supervising the ERV team and supporting the development of the shelter.

"The hardest part was watching incoming evacuee families wait for hours to be registered at the shelter, knowing everything they had been through. Many of the families and individuals had been displaced and evacuated two, three and even four times since Katrina struck," said Alex. "I felt I was letting them down. On the flip side, I got good advice from another volunteer, who advised me to find a family or person who needed help and to stick with them until they got it."

One of those in need of support was a New Orleans woman who had lost her uninsured house and personal belongings in the flooding. To make matters worse, she had just been diagnosed with glaucoma and didn't have the money for surgery or medicine to stop the disease's progression. She will go blind in a few years. After his shifts were done, Alex helped her arrange for FEMA (Federal Emergency Management Agency) busing back to her hometown and fill out the paperwork for two types of financial aid. "She told me," said Alex, "that her 'heart was heavy,' but that I had given her the strength to go on."

Despite the stress, there were lighter moments. An older female evacuee hadn't had any sleep for almost two days during a long and difficult bus ride to the shelter from Port Arthur, Texas. Rita destroyed her home. The check-in on the evening she arrived was slow, and Alex was helping staff escort new evacuees into the increasingly crowded shelter. When the woman got to Alex, she collapsed into the chair in front of him. Alex told her that he didn't think the shelter had any more room for her in the single women's section of the shelter. At that, she started to get upset, but he respectfully interjected that he did have room for her in the single *good-looking* women's section. "She burst out laughing and said to me: 'Honey, you keep up that sweet talk and I'd be happy to sleep on a cot in the parking lot.'"

Alex said that while many evacuees were frustrated by the slow pace of initial relief efforts, the vast majority he encountered were grateful for the assistance. "After spending two weeks as a volunteer, I feel much more conscious of the less fortunate in our society," he said. "I appreciate what I have and that one person can make a significant difference even in the largest of disasters." EY

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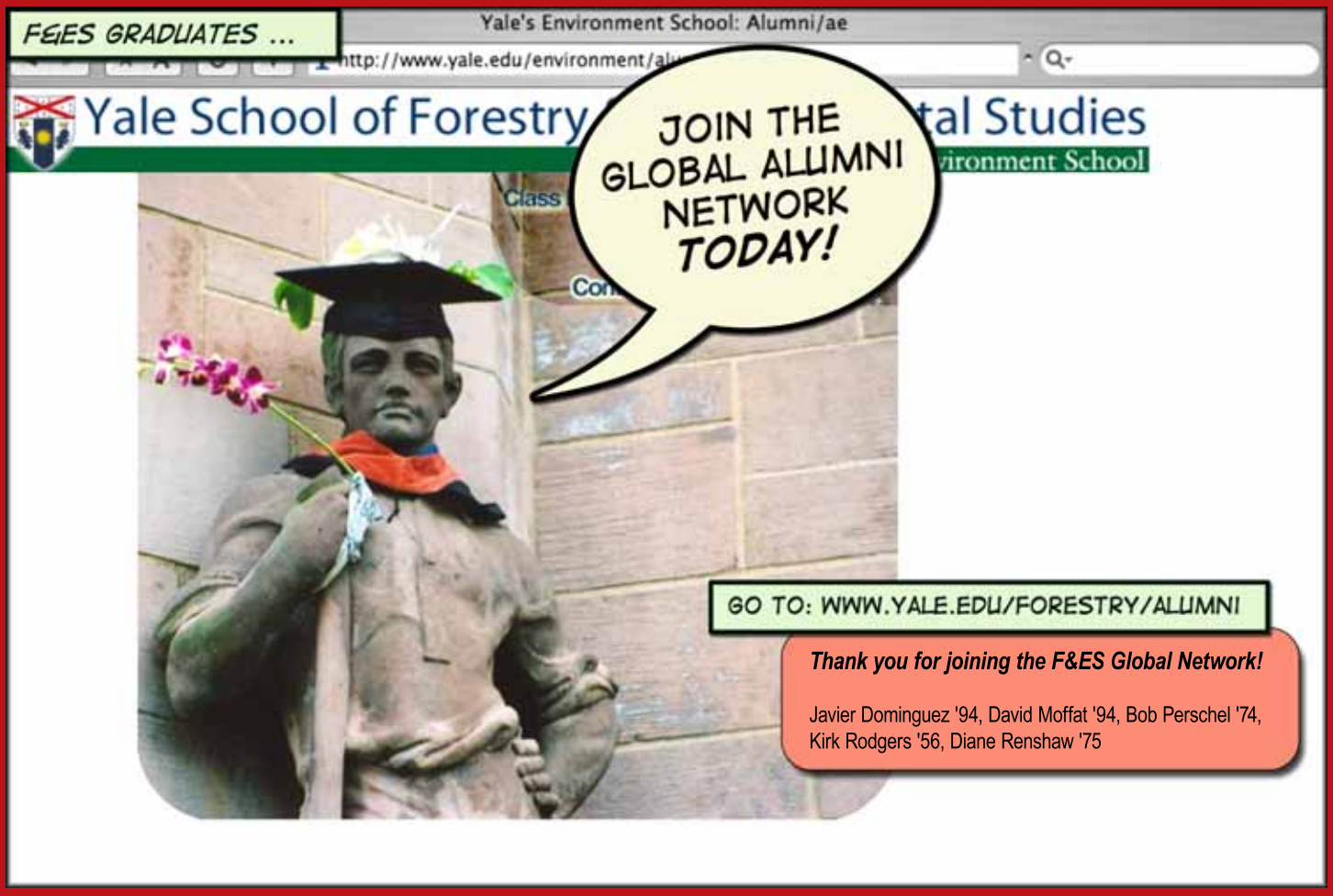
>
> *Alex McIntosh '05*



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