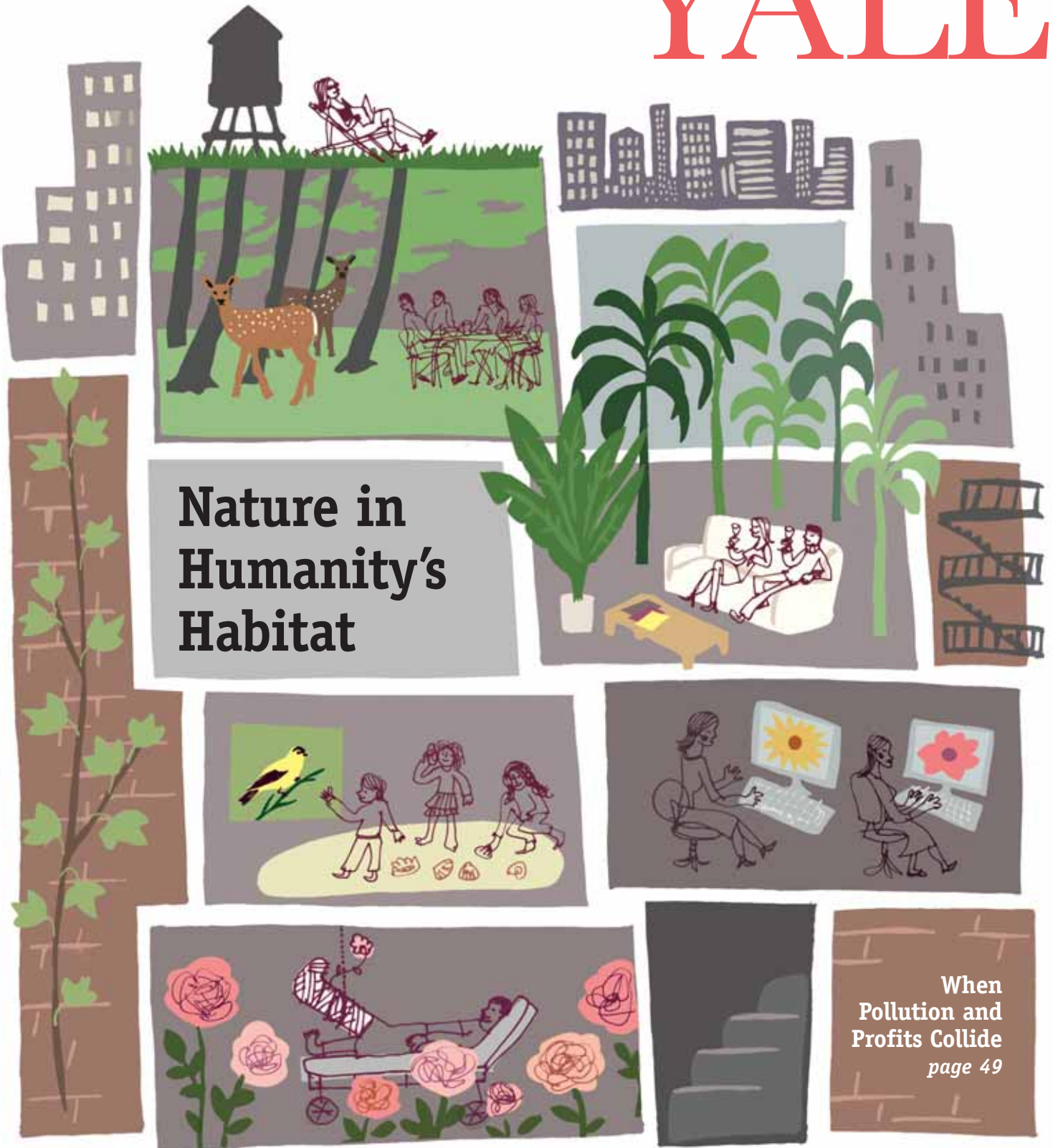


environment YALE



Nature in Humanity's Habitat

When
Pollution and
Profits Collide
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letters

To the Editor:

I was encouraged to read John Mitchell's description of the Chang Tang Wildlife Reserve in the Tibetan Autonomous Region of China ("Conservationists Thinking Big to Save the Last Great Places," Spring 2006) as one of the world's largest protected areas. It's worth adding, however, that the Chang Tang plateau itself extends west from Tibet across a disputed boundary between India and China and into the Indian Jammu-Kashmir region called Ladakh (known as "Little Tibet" for its strong Buddhist influence). I had the opportunity to trek through Ladakh after graduation from F&ES, and Mitchell's piece transported me back to a world of kyang, blue sheep and nomads moving through and around broad desert plains, jagged snow-capped peaks and deep blue lakes. To my knowledge, however, this exotic high-altitude plateau has not received the same level of protection in India as it has in Tibet, which suggests that preserving the



entire Chang Tang across sensitive borders may further test the capacity of conservationists to think big.

SETH DUNN '05
SARATOGA SPRINGS, N.Y.

To the Editor:

I read with interest the account of the F&ES green building ("New F&ES Home to Redefine the Green-Building Concept," Spring 2006), and I have a few comments based on my experience living in an environmentally friendly building of my own design for over 35 years. The alignment [of the Kroon building] will make the southern side pleasant and friendly during the winter, but the northern side will be cold and icy. Ample window space in the east end is desirable to promote early warming by the morning sun. The use of native lumber is desirable, but I hope it will be used structurally and not just ornamentally. There is no mention of the possibility of using wood

fuel for heat, steam and electricity. Tying into the university's fossil fuel system is certainly not environmentally friendly. A number of institutions in New England have found that wood fuel is desirable and economical.

HOWARD MASON '48
RUSSELL, MASS.

The editor responds: In order to reduce energy requirements through thermal mass in the structure of the building, the main structural elements of the Kroon building will be concrete. However, the roof structure will be constructed of wood and will be visible from inside the building. Through the design of the building and the use of geothermal energy, the Kroon building will eliminate the need for steam and chilled water for heating and cooling and the need for fossil fuels used to generate them on campus. While photovoltaics on the roof will supply a portion of the building's electricity requirements, a certain amount of electricity will need to be supplied through other means. At the moment, we are exploring the potential of wind power at the Yale-Myers Forest and photovoltaics on other buildings to meet this need. To be efficient, using wood or other biomass fuels to generate electricity would require a much larger facility than we have space for within our building site.

Bruce Babbitt, former U.S. Secretary of the Interior and now board chair of the World Wildlife Fund, hailed new efforts to take dams down during his keynote speech at the three-day Global Perspectives on Large Dams conference in November. Though dams have been built historically for flood control, irrigation, hydropower and transportation, Babbitt said that in most cases the long-term loss of species and land, the dispossession of native peoples and the financial costs have far outweighed the short-term benefits.



Harold Shapiro



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dean's message



Dean James Gustave Speth

One F&ES project of which I am quite proud is the effort our faculty is making to produce a new series of short introductory texts, *Foundations of Contemporary Environmental Studies*, published by Island Press. We hope to contribute significantly to both undergraduate education and public understanding, and the series complements our school's growing engagement with undergraduate education at Yale through the environmental studies program and major. Collectively, the series should fill the bill for what every informed person should know about environmental studies, though we may have to add two or three more volumes to make that claim.

My volume, *Global Environmental Governance*, is the first to be published (2006). I wrote it jointly with Peter Haas, a distinguished political scientist at the University of Massachusetts Amherst.

Global Environmental Governance was fun to write, as I hope you can see in the following edited excerpt from Chapter 1:

Let us begin with a very global perspective. Can you imagine Earth without people – not today's Earth, but an Earth that evolved to the present without us? If you can contemplate such a world with satisfaction rather than sadness – a world with forests of majestic old-growth trees, with oceans brimming over with fish, with clear skies literally darkened by passing flocks of birds, thriving with an awe-inspiring diversity of life and landscape but without people – then you not only have a vivid environmental imagination but, more to the point, you are ready for your first assignment as an environmental steward.

Imagine further that you live on a different planet that also circles Earth's sun. Though your world has become depleted and polluted, you and your people have decided to leave Earth alone – to protect it and all its beauty and let it evolve in its own uninterrupted way. It is enough to know that it is there in all its richness, protected for all time, wild, whole and beautiful.

Your assignment of protecting the pristine Earth is almost entirely far-fetched, but not completely. Consider that on Sunday, September 21, 2003, the space probe *Galileo*, having provided scientists with extraordinary amounts of new information about Jupiter's moons, was intentionally incinerated in a fiery crash into Jupiter itself. The National Aeronautics and Space Administration scientists took this unusual step out of concern that

organisms from our planet – stowaways on *Galileo* – might still be alive and therefore might contaminate one of Jupiter's moons [Europa], where life might already exist waiting to be discovered. A decision had been made to leave Jupiter's moons intact and unpolluted. And in the United States today, an area the size of California has been set aside as forever wild in a magnificent system of national wilderness areas.

But now imagine that another decision has been made. Your world has just learned that it is going to be demolished to make room for an intergalactic hyperspatial express route. When your people complained to the Hyperspace Planning Council about this planned destruction, you were told that the proposed expressway plan had been duly posted in the local planning department in Alpha Centauri, and that the time for public comment had long since expired! (With apologies to *The Hitchhiker's Guide to the Galaxy*.)

As a result of these unfortunate developments, your people – all 6.5 billion of you – have now decided to colonize the pristine Earth. Your new assignment as environmental steward is to settle Earth in a way that allows all of you to enjoy a decent standard of living while having the smallest possible impact on Earth's environment.

In contemplating this difficult assignment, two things occur to you right away. First, if you are going to sustain Earth's environment, you had better understand how Earth works: how Earth's abundant species interact among themselves and with the landscape; how Earth's great natural cycles of water, oxygen, carbon, nitrogen and others work together to sustain life; where the areas of greatest species richness and diversity and also the zones of greatest fragility are located. If you hope to disturb Earth minimally, then you have first to understand it. So there is, first and foremost, a huge project in science to be undertaken – the science of environmental sustainability.

Second, you see right away that all the nation-states fleeing your planet together must agree at the outset on a set of principles to guide your settlement of Earth, to do so in such a way that the planet will provide a lasting home for you and your people. You're not going to want to undertake such a task more than once! Where do you begin?

One recent effort on the part of international lawyers to elaborate sustainable development principles for nation-states to consider was the New Delhi Declaration

of Principles of International Law Relating to Sustainable Development, developed in 2002 by the International Law Association. It provides the following:

States are under a duty to manage natural resources, including natural resources within their own territory or jurisdiction, in a rational, sustainable and safe way so as to contribute to the development of their peoples ... and to the conservation and sustainable use of natural resources and the protection of the environment, including ecosystems. States must take into account the needs of future generations in determining the rate of use of natural resources. All relevant actors (including states, industrial concerns and other components of civil society) are under a duty to avoid wasteful use of natural resources and promote waste-minimization policies.

The protection, preservation and enhancement of the natural environment, particularly the proper management of the climate system, biological diversity and fauna and flora of the Earth, are the common concern of humankind. The resources of outer space and celestial bodies and of the sea-bed, ocean floor and subsoil thereof beyond the limits of national jurisdiction are the common heritage of humankind.

But are these proposed principles of international law sufficiently ambitious and unambiguous to guide the contemplated settlement of Earth? Perhaps, but you may want to consider more demanding requirements. And in any event, such broad principles must be supplemented with specific policies and programs that address such fundamental issues as the growth of human populations, the choice of technologies to be used on Earth, the pattern of human settlements to be allowed, the permitted means of transportation and communication, and so on. Moreover, to deal with the problem of the sovereign nations of your planet cooperating in the settlement of Earth, you may wish to consider far-reaching provisions such as these:

- The Earth shall be used by all states ... exclusively for peaceful purposes.
- In exploring and using the Earth, states ... shall take measures to prevent the disruption of the existing balance of its environment, whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra-environmental matter or otherwise.
- The Earth and its natural resources are the common heritage of humankind. ...

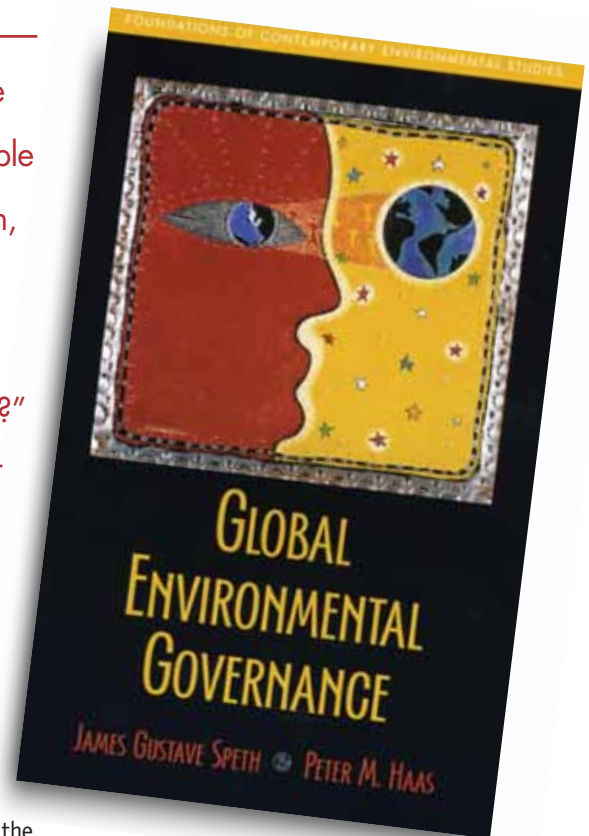
“Can you imagine
Earth without people
– not today’s Earth,
but an Earth that
evolved to the
present without us?”

- The Earth is not subject to national appropriation by any claim of sovereignty, by means of use or occupation or by any other means.
- Neither the surface nor the subsurface of the Earth, nor any part thereof of natural resources in place, shall become property of any state, international intergovernmental or nongovernmental organization, national organization or nongovernmental entity or of any natural person.

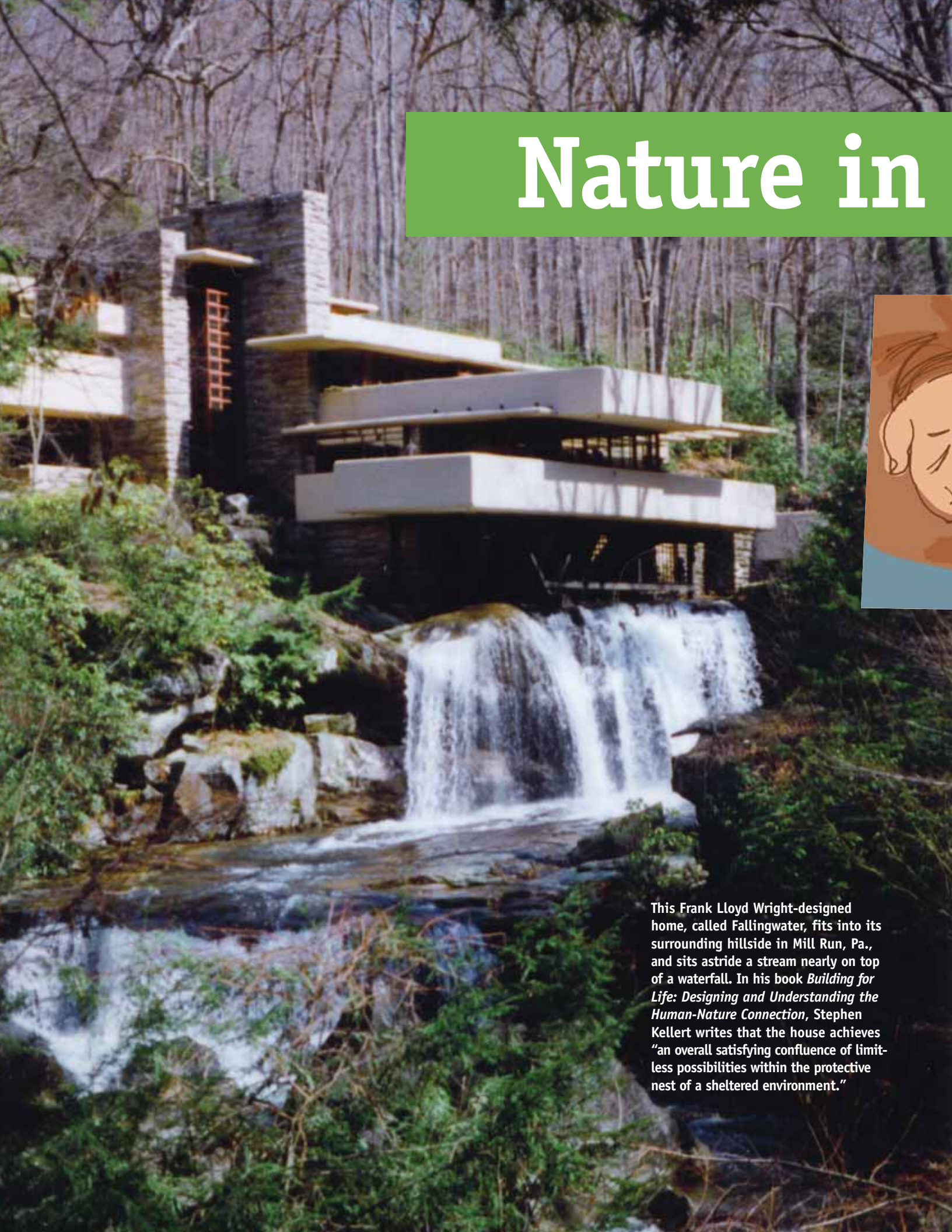
These are, in fact, actual provisions of the Moon Treaty, the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, with *Earth* substituted for *moon* in the text. As of 2005, only 11 countries had signed the 1979 Moon Treaty. No country with a significant space program, including the United States, had ratified it.

In the end, there is the question whether it will be possible for 6.5 billion of you to settle Earth, build a world economy that can provide everyone a prosperous standard of living, all the while protecting the treasured natural beauty and bounty of the planet. Whatever the odds of achieving this truly sustainable development on Earth, they are improved if the people and nations undertaking the colonization are at peace; if they are

continued on page 48



Nature in



This Frank Lloyd Wright-designed home, called Fallingwater, fits into its surrounding hillside in Mill Run, Pa., and sits astride a stream nearly on top of a waterfall. In his book *Building for Life: Designing and Understanding the Human-Nature Connection*, Stephen Kellert writes that the house achieves “an overall satisfying confluence of limitless possibilities within the protective nest of a sheltered environment.”

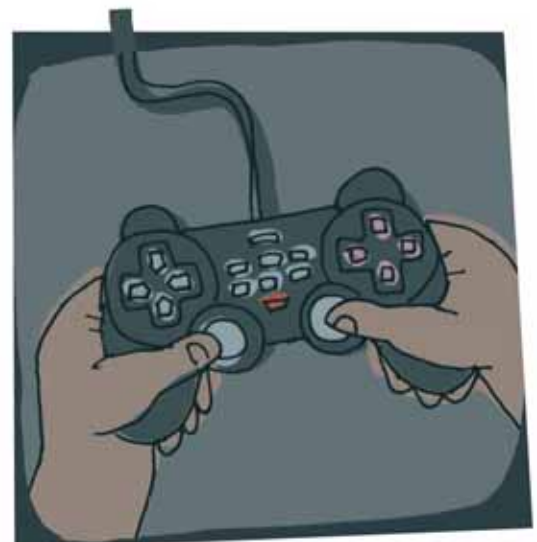
Humanity's Habitat

By Heather Millar



Remember that neighborhood fort you built with your friends? Remember exploring in the woods, mucking about in the local creek? Remember collecting potato bugs or frogs or snakes? Chances are your kids won't. Children between the ages of

8 and 18 spend an average of 44.5 hours plugged into electronics each week, according to a March 2005 Kaiser Family Foundation study. In just a single generation, the typical 8-year-old's "home habitat" – the area in which they can roam around outside on their own – has shrunk by more than 90 percent, the Children's Play Council in the United Kingdom found in 2004.



Illustrations by Einat Peled



Then there's this troubling quote: "I like to play inside 'cause that's where all the electrical outlets are," a San Diego fourth grader told Richard Louv, author of the bestselling 2005 book *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder*.

While that fourth grader might develop good eye-hand coordination playing video games, neither he nor any other young person his age are likely to fully develop intellectually, socially and physically, according to many recent studies. "Green space supports healthy child development," according to a review of the literature by the Human-Environment Research Laboratory at the University of Illinois at Urbana-Champaign. In Sweden, children who attended preschool outdoors – in all weather – developed longer attention spans and a greater ability to concentrate. Other researchers in Sweden, Australia, Canada and the United States found that children played more creatively in green spaces than in more traditional, built playgrounds.

So I take my kid outside. A foghorn blows mournfully as I watch my 5-year-old dart in and out of a wryly undulating playhouse woven from willows. Then she's off, up a steep hill to build a fort from reeds and grasses, then back down the hill to dig for broken Chinese pottery in a sandbox that looks like a wrecked miniature clipper ship, then up again to a crow's nest to look through a telescope at the first finger of mist reaching slowly through the Golden Gate Bridge. She's sometimes bored by the predictability of many play areas, but not this one. I marvel at how she just darts around, exploring. "Look at this!" she yells, as she discovers some frog-shaped stepping stones. "Look at that!" she says,

"It's about creating spaces that meet people's innate needs."

Stephen Kellert

as she finds a group of oversized birds' nests. "It must look really big to a baby bird!," she chirps, trying to climb in.

I sit on a knoll with other moms watching kids, mine among them, rivet metal pieces onto a miniature Golden Gate. A half a mile away, near the real bridge, the foghorn moans again. "This place is so beautiful, so integrated into the landscape," I think. My kid loves it, and fights kicking and screaming when it's time to leave. Even the promise of a TV show does not soften the blow.

What's going on here?

We could all intuit the answer: It's that reaction most of us experience watching the sun rise over a lake or standing on a ridge looking down over a serrated Western canyon or simply helping a child blow the fluff off a dandelion. It's that deep connection with landscape that sometimes overwhelms us during a long hike or a leisurely picnic on a spring day. But the success of that afternoon outing was more than just a fuzzy, feel-good moment, say pioneers at Yale, Harvard and several other universities, architecture firms and design companies.

The Bay Area Discovery Museum in Sausalito, Calif., with its Lookout Cove play area that so engaged and delighted my daughter, was designed to incorporate

the concept of biophilia, which means "love of nature."

Biophilia inspired the stick-fort building area, the willow house, the statues of native species slightly hidden so that children had to explore and search for them, and the crank that powers a giant stainless steel fish skeleton sculpture, making it move like one of the salmon in the bay just a few hundred yards away. Designers conceived the whole place to reflect the surrounding natural landscape and to help kids interact with it.

The work of bringing nature into built environments like this one pushes beyond simple nature appreciation and conservation, beyond the "do-no-harm" ethos of sustainability and most green building. It's not just that it would be nice to preserve nature where we live, or even that it's the right thing to do. Nature, proponents of biophilia say, is more than an amenity – it's a basic human need, perhaps embedded in our genetic code.

Skeptics might argue: What's so new about all this? Isn't that why we started the National Park System and set aside places like Central Park in Manhattan? Isn't that why the rich have always built their mansions in parks or on hills or by the sea or lakeside? Why research something that seems rather obvious – that humans enjoy and are part of nature? And, do we all *have* to love nature; isn't separating from wilderness what we call "civilization"? Woody Allen famously said, "I am at two with nature," and he seems to be having a pretty good run. Then there's the word – *biophilia*. Doesn't it sound a bit like something contagious? And how do you quantify something as subjective as "love of nature," let alone prove that there's a genetic antecedent for it? Might my daughter have cried about leaving *any* playground that day, not just the carefully planned Lookout Cove?

Maybe. Maybe not.

Juxtapose this nature-love concept with the fact that, sometime in this decade, we will become an urban species. For the first time in human history, more people

will live in cities than in the countryside. Americans spend 95 percent of their time indoors, writes Peter Wilson in *The Domestication of the Human Species*. An Urban Land Institute study estimates that the number of constructed square feet in this country will double by 2030. Clearly, there's a growing need to figure out how nature can be reintroduced into humanity's habitat. Yale is leading the effort to do so.

We need a fundamental re-evaluation of how we design and construct buildings and towns, argues Stephen Kellert, Ph.D. '71, Tweedy Ordway Professor of Social Ecology at F&ES, in his book *Building for Life: Designing and Understanding the Human-Nature Connection*. In recognition that for too long nature has been left out of most dialogue on design, Yale in February announced a new joint master's-degree program offered by the School of Architecture and F&ES (Environment: Yale, Spring 2006, page 21). The program will emphasize "restorative design" that brings nature into the places that humans build.

In May, Kellert and an assistant, Martin Mador '02, organized a symposium, "Bringing Buildings to Life: The Theory, Science and Practice of Biophilic Building Design," which brought 40 thinkers to a Rhode Island conference center to hammer out exactly what biophilia means for design. This one-of-a-kind, brainstorming meeting brought together a highly unusual group of people who are leaders in their fields: not just in architecture and real estate development and sociology, but also in medicine, mathematics, art, interior design, regional government and journalism.

"One of the really extraordinary aspects of this symposium was Steve Kellert's ability to bring together so many high-powered people from different disciplines," says Judith Heerwagen, a consultant and an environmental psychologist. "His reputation as a leader in the field was a huge benefit in attracting this group and keeping them there for three days. This was the most focused symposium I have ever attended. We all worked together from morning

until late at night, and this was a huge factor in the symposium's success."

These experts discussed how we might weave natural elements back into urban life. Symposium participants are currently working on a book to address this question. Greenbuild, ecobuilding's largest annual conference, held in November, featured a special session on biophilia. The U.S. Green Building Council, which administers Leadership in Energy and Environmental Design (LEED) certification, the point system for rating green architecture, has incorporated some points for biophilic measures and is considering more.

"The enormous breach between us and the natural world is at the root of an environmental, social and spiritual crisis," Kellert says. "Conventional design demands massive consumption of energy and materials. Sustainable design was a reaction to this. Sustainability is important, but it's not enough. We're talking about restorative design, design that brings places alive. It's about human experience. It's not just about avoiding bad things. It's about creating spaces that meet people's innate needs."

Jen Seal Cramer championed and researched the concept of biophilic design when she was at the Rocky Mountain Institute. "When you explain biophilia, people say, 'Duh!' But our normal buildings are like rabbit warrens. We get it, but we don't get it," says Cramer, who is now starting an environmental real estate investment fund. "Even with LEED, green strategies can just be appendages tacked on for points. Buildings can be energy efficient and still ugly. We're not after that. We're after life-enriching places. It's about restorative design, healing what we've messed up."

In other words, biophilic design is about more than a koi pond in a marble lobby or ficus trees next to a reception desk, though health research seems to suggest that every little bit helps. What's new is the growing momentum for the idea that it's not enough to preserve nature in the wilderness or even in pocket urban habitats. Humans need nature where they live

and work, in their buildings and cities.

The science to support this is admittedly in its infancy, biophiles concede. Only a few dozen studies of any rigor have been published. Part of the problem is that funding is hard to secure. Also, it's tougher to engineer pleasurable experiences to measure than it is to create unpleasant situations. Hundreds of studies on various aspects of biophilia's mirror image, biophobia, have been published. Meanwhile, a lot of the biophilia data rely on surveys, though at least 30 health-related studies have pinpointed physiological benefits of nature.

Yet the biophilia research results are consistent and break new ground by seeking to explain *why* we love nature and what that may mean for the way we design the places where we live and work. The research suggests that even a minimal connection with natural things – a tree in a courtyard, fresh air or just a view out a window – seems to have a profound impact on human health, productivity and learning.

Consider these findings from a selection of the biophilia canon:

- Surgery patients who have a view of nature heal faster and need fewer pain medications than those who look out on a brick wall.
- Children in low-income, subsidized housing showed a better ability to concentrate when they moved to houses with more outdoor vegetation.
- Looking at tropical fish swimming in a tank lowers blood pressure.
- Students who strolled through a park for 40 minutes did better on tests afterward than students who walked through an urban setting.

"People need nature, even though they may not know it," says Stephen Kaplan, a professor of psychology and of electrical engineering and computer science at the University of Michigan whose work with his wife and colleague, Rachel Kaplan, a professor of psychology and Samuel Trask Dana Professor of Environment and Behavior, has focused on how people react to natural environments. "The most

Symposium Explores Biophilic Building Design

In May a distinguished group of scientists, designers and developers convened at the Whispering Pines Conference Center in West Greenwich, R.I., to explore the theory, science and practice of biophilia building design during a three-day symposium titled “Bringing Buildings to Life.”



Stephen Kieran, Yale College Class of 1973, of the Philadelphia-based firm KieranTimberlake Associates.



Bob Pyle, Ph.D. '76, a conservation biologist; Stephen Kellert, Tweedy Ordway Professor of Social Ecology at F&ES; and E.O. Wilson, Harvard professor and Pulitzer Prize-winning scholar of social insects.



Bob Berkebile, principal of BNIM Architects of Kansas City.



Frances Kuo, a professor at the University of Illinois at Urbana-Champaign.



Gordon Orians, professor emeritus at the University of Washington; Richard Forman, a professor in the Department of Landscape Architecture at the Harvard Graduate School of Design; and Vivian Loftness, a professor at Carnegie Mellon University.



Richard Louv, author of *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder*.

Photos by Adrienne Swiatocha

exciting research on biophilia deals with problems hard to solve under any circumstance in our health care system, prisons, education, public housing and worker productivity. Nature can provide solutions inexpensively and can have a huge impact.”

We ignore this simple solution at our peril, says Frances Kuo, director of the Landscape and Human Health Laboratory at the University of Illinois at Urbana-Champaign who has studied the positive effects that even small bits of nature can have on the residents of Chicago housing projects. “Not only has 25 years of research shown that people like and prefer nature; finally, studies have shown that animals housed in unfit habitats undergo psychological and physical breakdown,” Kuo says. “A nature-deprived habitat is an unfit one.”

While much work remains to be done to conclusively prove this, the notion should not be so surprising. After all, humanity didn't evolve in midtown Manhattan. Rather, *homo sapiens* came to be in a biological world, one in which we interacted each moment with the ebb and flow of seasons, light and life cycles. We don't need to do exhaustive studies to see that these natural elements remain vastly at odds with the cube-land-, megamall-, superhighway-constructed world in which most of us live.

The Right Place

The new, evolving design agenda that seeks to remedy this has its roots in a 1984 book, *Biophilia*, by Edward O. Wilson, the world-renowned Harvard professor and Pulitzer Prize-winning scholar of social insects. Wilson pioneered the controversial field of sociobiology, suggesting that morality, religion and the arts might, in part, have their roots in the brain's evolution. In *Biophilia*, Wilson tried to extend this argument to biodiversity – another concept he originated – and conservation, writing a deeply personal narrative about how he came to believe that humans and the natural world are deeply intertwined and how the human perception of

that deep connection might be innate.

As he traveled all over the world studying ants, Wilson noticed that again and again his attention turned almost involuntarily to certain common features in widely different habitats. Wilson suggested that since most species evolve to survive under very specific conditions – a “right place” – humans might also be drawn to particular environments, even if they could survive in varied locales.

“I’m not suggesting the existence of an instinct. ... We learn most of what we know, but some things are learned much more quickly and easily than others,” Wilson wrote. “The hypothesis of biased learning is at least worth examining. ... What was the prevailing original habitat in which the brain evolved? Where would people go if given a completely free choice?”

Like so much of his other work, Wilson’s question gave rise to a robust academic dialogue. Some scholars suggested that perhaps this tendency to need and notice nature could have helped hunter-gatherers recover from the stress of a narrow escape or of being lost. This fascination with the landscape may also have conferred advantage while hunting. The concept of biophilia inspired discussions of ethics, art, culture, politics and religion, and was surveyed in *The Biophilia Hypothesis*, co-edited with Kellert.

The Savanna, Prospect and Refuge

Over time, this intellectual exchange would resonate particularly in the fields of design and architecture: In *Biophilia*, Wilson cited the suggestion of Gordon Orians, now a professor emeritus at the University of Washington, that people seemed to prefer landscapes reminiscent of the African savanna, where archeological evidence suggests humanity evolved for at least 2 million years. Other investigators found that savanna-like parks were preferred by city dwellers, even long-term residents of a desert city like Tucson. A few studies have shown that young children are drawn to savanna-like scenes.

Not long after Wilson’s book came out,

Orians teamed up with Judith Heerwagen to survey people around the world. They found that whatever their culture, people tend to prefer the same savanna-like elements.

People responding to these surveys liked the things you can imagine wanting if you were a hunter-gatherer in a previous age: wide-open landscapes dotted with large mammals, flowers and bodies of water – all indications of ample food;

“People need nature,
even though they may
not know it.”

Stephen Kaplan

changes in elevation; places to defend and to survey the horizon for enemies and prey; and trees with horizontal canopies like the African acacia – easy to climb in a pinch and good for shelter. The research seemed to support Wilson’s hypothesis that humans are primed to prefer such settings.

Then, in 1999, Grant Hildebrand, then an adjunct professor of architectural history at the University of Washington, published *Origins of Architectural Pleasure*. Hildebrand drew upon the ideas of geographer Jay Appleton, who had suggested that humans seemed to prefer dwellings that gave them both “prospect,” views over a wide landscape, and “refuge,” a protected space like a hearth or a cave. Hildebrand added that people seemed to prefer enticement and mystery, such as paths that curve around a bend or rooms just out of sight. Hildebrand was one of the first to suggest that biophilic properties be extended to the built environment – our homes and offices, our cities.

Restorative Design

This does not mean that we all need to return to the woods. There are plenty of less-than-positive things in nature that led us to construct buildings in the first place:

predators, severe weather and biting insects, to name just a few. The key, Kellert and others say, seems to be to avoid biophobic elements – like seats that leave people’s backs exposed, making them feel vulnerable – while at the same time learning to open ourselves and our buildings back to nature, to restore a threshold between the wild and the civilized.

“We want to convince people that if we don’t move in this direction, we won’t have sustainability and we won’t have architecture,” Kellert says. “The built and the natural have been treated as two separate places, instead of elements that need to be fused in some fashion.”

In 2005, Kellert sought to bring all the elements together in his book *Building for Life: Designing and Understanding the Human-Nature Connection*, suggesting that conventional architecture builds a wall between us and nature that makes not only for mediocre design but also for a lower quality of life. Kellert proposes that green design should not just be about conserving things; it should also be about rebuilding and restoring what we’ve lost.

However necessary and commendable, sustainable and energy-efficient design often says “Don’t.” Don’t use too much energy. Don’t waste water. Don’t use unsustainable materials. In contrast, biophilic design says “Do.” *Do* the obvious things, like allowing large windows and introducing trees, flowers and animals into the built environment. *Do* connect to the dynamics of daylight, weather and season. *Do* reflect the local environment and history. *Do* let in outside air. *Do* use 120-degree angles – the endlessly repeating angle of



a honeycomb, the most common angle at which branches arc from a tree trunk – which are more common in nature than the 90-degree angles of most buildings. *Do* offer a variety of things at a variety of distances – depths of field – for people to look at. Where appropriate, *do* move beyond the literal: pebbled glass can suggest water, undulating wrought iron can suggest vines.

What Makes It Biophilic?

So what combination of these measures makes a building or development biophilic?

- The Atwater Dining Hall at Middlebury College, a green-roofed pavilion in the woods with huge glass walls designed by Stephen Kieran's (Yale College Class of 1973) Philadelphia-based firm, KieranTimberlake Associates, looks out onto the trees.
- The emergency room waiting area of Providence St. Vincent Medical Center in Portland, Ore., features a calming garden and a waterfall.
- The Commerzbank office tower in Frankfurt, Germany, a 53-story building, has five indoor winter gardens, one every 13 floors.
- The new stadium in Guadalajara will be built in a hill, with a park on its exterior grassy slopes.
- When it opens in 2007, the remodeled California Academy of Sciences in San Francisco will feature a glass pavilion open to surrounding Golden Gate Park, topped with an undulating roof simulating sand dunes and planted with species native to the Pacific beaches just a mile away.
- The suburban Village Homes in Davis, Calif., features passive solar heating and common green space, but remains in car-dependent suburbia.
- The Greenwich Millennium Village, an ambitious, mixed-use urban development in southeast London, includes nature paths and a restored wetland.

Depending on whom you ask, each of these projects might be an excellent example of biophilia, or it might not. Part of what

makes biophilic design so slippery is that it depends on what E.O. Wilson called “the right place” – that is, a sense of where you are. That might mean bringing the design forms of California canyons into surrounding neighborhoods, as San Diego architect Mike Stegner, who helped develop that city's gaslight district, hopes to do. Or it might mean blending an upscale vacation house into a coastal Maryland pine forest with a green roof, pier foundation and vertical wood cladding, as KieranTimberlake

“Biophilia doesn't have
a two-sentence elevator
speech yet.”

Judith Heerwagen

Associates did. What works in La Jolla, Calif., might be totally wrong on Taylor's Island, Md.

What may also make biophilia hard to grasp is that a design that's biophilic doesn't necessarily mean more light, more animals or more plants inside. Even a suggestion of nature – a representation in decoration or art – can make a difference, experts say. For instance, the Ronald Reagan Washington National Airport in Washington, D.C., might not leap to mind as a nature-friendly place. Yet Kent Bloomer, a sculptor and artist who attended the Yale symposium, designed a beautiful metal “Foliated Trellis” that hangs in the ticketing level of Terminal B. Bloomer's sculpture reminds harried travelers that nature does surround us, even in an airport concourse.

The other challenge is that the theory that underpins biophilia is still being developed. That puzzle is what drew scholars and designers to Yale's “Bringing Buildings to Life” conference in May. “Biophilia doesn't have a two-sentence elevator speech yet,” explains Heerwagen. “What biophilia needs is a business plan

that says, ‘This is what it is. This is why it's important. This is how to do it.’ We're hoping that our new book will help to do that.”

A Biophilia Movement?

The book, inspired by the symposium, may also provide a manifesto that could create momentum for a broader biophilia movement. Today, buildings or projects that might be called biophilic are going up all over the place: Noisette, a 3,000-acre redevelopment in Charleston, S.C., seeks to reconnect the community by bordering business, residential and arts districts along a three-quarter-mile Cooper Riverfront Park and vistas of restored 200-acre Noisette Creek marshland. Prairie Crossing, a suburban development northwest of Chicago, set aside 60 percent of its 677 acres for farm fields, native prairies and wetlands. Biotech leader Genzyme's headquarters in Cambridge, Mass., so successfully integrated nature – using atriums, skylights and gardens – into its offices that the company plans to build a more nature-centered research lab complex. The Audubon Society in 2003 broadened a 100-year-old tradition of saving remote wild areas by beginning a campaign to save patches of wildness in urban areas. Yet the developers and organizers of these endeavors may not use the words *biophilia* and *biophilic* to describe what they are doing.

Even though LEED has incorporated points for a few biophilic elements and is considering more, the concept is probably new to most readers of *Environmental Building News*, says Alex Wilson, editor of that publication and a former board member of the U.S. Green Building Council, which administers LEED certification. Wilson wrote an introductory article about biophilia last summer in *Environmental Building News*.

Tim Beatley, the Teresa Heinz Professor of Sustainable Communities at the University of Virginia, says he often ends up pushing the idea. “I attended the [2006] World Urban Forum, a United Nations meeting. The theme was sustainable cities,

and I didn't hear *biophilia* mentioned once," Beatley says. "So I bring it up a lot."

"I always use the word *biophilia* when I lecture," says Bob Fox, principal of Cook+Fox Architects in Manhattan. "But I always have to define it."

"I'm not sure the word *biophilia* is as familiar as the idea behind the word," says Lance Hosey, a 1990 graduate of the Yale School of Architecture and a senior designer and project manager with William McDonough+Partners, the pioneering green architecture firm in Charlottesville, Va. "If you look at the idea of connecting the indoor environment to the outdoors, that's becoming familiar."

A Healthy Building, A Healthy Body

So far, hospitals and other health care institutions have perhaps taken biophilic design the furthest. In the last two or three decades, health researchers have produced the most quantitative data to support the notion that more-natural settings benefit human well-being.

In an oft-quoted 1984 study, Roger Ulrich, a behavioral scientist and professor in the departments of architecture and landscape architecture at Texas A&M University, studied surgery patients who looked out on a brick wall and those who had a view of trees outside. The patients with the better sight lines got well more quickly, needed fewer painkillers and had fewer complications.

Ulrich's study inspired many others. Surveys and case studies around the world have found that clinics, hospitals, nursing homes and even prisons that incorporate elements of nature show higher rehabilitation rates, according to Howie Frumkin, director of the National Center for Environmental Health at the Centers for Disease Control and Prevention in Atlanta, who compiled the data for a 2001 paper in the *American Journal of Preventive Medicine*.

"Maybe we don't know everything about the benefits of human-nature contact," Frumkin said at the F&ES-sponsored conference in May. "But we do know a lot,

and there's a pressing need to implement what we do know."

Most hospitals remain sublimely unbiophilic. Yet some are heeding Frumkin's call. At Johns Hopkins University, nature scenes are projected on the ceiling of the cancer radiation therapy room. At Prince of Wales Hospital in Hong Kong, colonoscopy patients can use virtual reality goggles to view nature scenes. Some have found the effect so calming that they fall asleep without drugs during the colonoscopy procedure, which usually requires sedation. At Beth Israel Medical Center in Manhattan, patients surrounded by a privacy curtain printed with a nature scene needed less anxiety medicine while waiting for procedures like angiograms or angioplasty. Science-based standards for selecting

"Foliated Trellis," a sculpture by Kent Bloomer, in the waiting room at Washington National Airport. Renderings of nature in buildings often appear in disguised, or metaphorical, form.



hospital art – nature scenes seem to be more calming than jarring abstract works – have been adopted by major institutions such as the M.D. Anderson Cancer Center in Houston, Northwestern Memorial Hospital in Chicago and Duke University Medical Center. Hospitals around the world have begun to install gardens, guided by books such as *Healing Gardens: Therapeutic Benefits and Design Recommendations* co-edited by Clare Cooper Marcus, professor emerita of architecture and landscape architecture at the University of California at Berkeley. Today in southwest Sweden, doctors even write “nature prescriptions” for patients, directing them to spend several mornings a week at the Alnarp Rehabilitation Garden near Lund.

Books like *Healing Gardens* and *With People in Mind: Design and Management of Everyday Nature*, by Rachel and Stephen Kaplan and Robert Ryan, inspired Legacy Health System, a network of six hospitals in the Portland/Vancouver metropolitan area, to weave nature and gardens into medical settings usually known for their sterility. Intensive-care patients at Legacy can look out of floor-to-ceiling windows onto a garden. Burn patients, usually confined inside due to fears of infection or sunburn, can sit under a shady pergola or pick blueberries in a 10,000-square-foot oasis at the Oregon Burn Center. Patients struggling through physical therapy don't have to lift weights in a basement gym;

they do so in a garden designed for that purpose.

“The Legacy gardens are amazing; they set an international benchmark,” says Ulrich, who has done some consulting for Legacy.

In the middle of downtown Portland, the hospital group has filled 38,000 square feet with gardens in its pediatric hospital, its neonatal intensive-care unit, cancer unit and acute-care facilities. Fund-raising has begun for gardens to be installed in pediatric intensive care, pediatric and adult psychiatric services and cancer outpatient services. A rehabilitation rose garden has been designed and is just waiting for administrative approval. Legacy has developed detailed “Therapeutic Garden Protocols,” and in September hosted a “Gardens in Healthcare Symposium” for the American Horticultural Therapy Association.

“We've probably got the most extensive garden offerings in the world,” says Teresia Hazen, the horticultural coordinator for all of Legacy's hospitals. “It all started with a small garden at our nursing home about 11 years ago. When we moved the nursing home to Good Samaritan Hospital in 1996, there was just a dried-up lawn in the courtyard. We decided to make that lawn into a terrific garden. Now our administrators talk about the idea of the whole campus being a healing garden.”

“These are all retrofits, and it's almost unending the way that people find uses for

these spaces,” Hazen says of the gardens. “We know that people have a positive response to nature. It's an inexpensive way for people to feel comfort. Our gardens cost between \$150,000 and \$250,000 each. In a \$150 million hospital, that's still cheap.”

Nature 9 to 5

Luckily, most of us go to hospitals only rarely. So what about the places where we do spend a good portion of our waking hours, like the office? Dilbert cartoons wouldn't have become a cultural touchstone if our workspaces were biophilic. Partially, this is because chief financial officers demand empirical evidence showing the benefits of biophilic investments before they'll spring for line items like big windows and indoor gardens. It's also because many management schools still teach what is known as the “Hawthorne effect.” In the 1920s, Harvard Business School professor Elton Mayo and his team studied factory workers at the Western Electric Company in Cicero, Ill. When bosses raised the lighting on the work floor, productivity went up. When they lowered the lighting, productivity still went up. Even though later studies disputed, some say disproved, the Hawthorne effect, the idea evolved that it doesn't matter much what you do for employees, as long as they know that you're doing *something*, that you're paying attention.

“I get calls all the time from corporations. They ask, ‘Can you prove that healthy buildings increase productivity?’” says Vivian Loftness, a professor at Carnegie Mellon University and a crusader for biophilic design. “Most decision-makers don't believe in that equation.”

Ever so slowly, studies to support biophilic office design have begun to accrue. In one much-cited 1993 study, University of Michigan professor Rachel Kaplan found that office workers with a view outside their window enjoyed their job more and reported better health and greater life satisfaction than those who had no view. In 1994, Joe Romm and Bill Browning,



then of the Rocky Mountain Institute, published a paper detailing eight anecdotal examples that seemed to suggest that gains in worker productivity far exceeded the value of energy or water savings in green buildings. Then the California Energy Commission in 1999 funded studies to determine whether day lighting – letting more natural light into buildings – really helped people. With much larger data sets, those studies concluded that natural light leads to increased business sales, as much as 40 percent higher. Those data led to funding for a detailed study of Herman Miller's GreenHouse, which had been completed a few years earlier. Employees at the furniture designer seemed to be more productive and enjoy better health in their biophilic workplace.

And while the idea of doing spreadsheets on nature is far from widespread, the anecdotal evidence that it might be a good idea continues to come in: The Analytica Chemical Lab/Hanford Nuclear Plant struggled with employee turnover. When the lab got rid of its jarring geometrical decorating and retrofitted with natural elements, people stopped quitting, says Heerwagen, who consulted on the project. At the Sacramento, Calif., municipal utility district, a study found that workers in the call center were more productive than they had been in the old facility. Workers with the best possible view handled calls 6 percent to 12 percent faster than those who had no view. First Marblehead Corp., a bank, moved its call center to a space in Medford, Mass., with panoramic views of the Boston skyline. Employees set up shop in work stations laid out in a honeycomb pattern by Herman Miller. Absenteeism dropped from 31 percent at the old call center to 11 percent at the new.

Theorists have spun out many ideas to change our 9-to-5 world. Storm drains might be turned back into burbling creeks, as Seattle has done with Growing Vine Street, on the outskirts of downtown. We might construct "green walls." (Think skyscrapers faced in plants, rather than glass, brick or steel.) But much-less-radical things

can make a huge difference, biophilic designers say.

"You can look at a building, it's all steel, and there seems nothing biophilic about it," says Heerwagen, describing the renovation of the Kluczynski Federal Building in Chicago. "The thing they did do is day lighting and views. It's taking advantage of what you have in a biophilic way. I think daylight and views are at the top of the list."

If they know the word *biophilia*, few New Yorkers will think of it as they rush

"The more primal way to sell the idea of biophilia is to talk about children and their health and the next generation."

Richard Louv

east from Times Square on 42nd Street in midtown Manhattan. It won't leap to mind as they look up at the corner of 42nd and Avenue of the Americas, watching I-beams rising to form the new Bank of America tower. As they continue on across Avenue of the Americas, toward Bryant Park and the central branch of the New York Public Library, most harried office workers would be surprised that this new skyscraper incorporates biophilic design.

Sure, the tower incorporates endless systems that save energy, water and materials – a green roof covered in plants, a canted exterior designed with prevailing winds in mind so that less steel could be used in constructing upper floors, partially recycled concrete in the foundation, a cogenerating plant for electricity that draws on seeping ground water, and toilets that use recycled storm runoff. Most predict that these kinds of approaches will earn the project the highest LEED rating, platinum.

But what really makes the new tower groundbreaking is that it was designed with nature and people, we teeming Dilberts of the world, in mind.

"Biophilia was a part of the conversation," says Fox, a partner in Cook+Fox Architects. "Every desk will have a thermostat; no one will complain that they're too hot or too cold. There are low, glass partitions. When someone stands up, they will see what's going on. Fresh air will flow through the building, filtered of ozone and VOCs (volatile organic compounds). Eight-foot windows are typical in New York; this building will have nine-and-a-half-foot windows. We're convinced that all this will lead to a lot better productivity, measured by lower absenteeism, fewer sick days and things like that."

"Six stories up, above the trading floors, will be a green roof," says Browning, of Browning + Bannon LLC, in Washington, D.C., who promoted biophilia when he was at the Rocky Mountain Institute. "Between that and the views of Bryant Park, the majority of people in the building will have a view out to nature in one of the biggest buildings that will ever be built in Manhattan! That's huge."

No matter how beneficial, will the idea of more nature-centered hospitals and offices really ignite the popular imagination? Probably not, says Richard Louv, the author of *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder*.

"I don't think many state legislators will pass laws to encourage biophilic design. They might, if you talked about children's health," says Louv, who's also a columnist for the *San Diego Union Tribune* and is collaborating on a website, www.cnaturenet.org, to centralize information about child-nature initiatives. "The more primal way to sell the idea of biophilia is to talk about children and their health and the next generation."

Children in classrooms with more daylight may score as much as 26 percent better on end-of-year tests, according to 1999 and 2001 studies by the Hescong Mahone Group in California, though a 2003

study showed that nature views may be more important than daylight in improving test scores. Children with attention-deficit/hyperactivity disorder showed an improved ability to focus after spending time outside, according to a 2004 paper by Frances Kuo and Andrea Faber Taylor in

**“We designed ourselves
into this situation.
We can design
ourselves out of it.”**

Stephen Kellert

the *American Journal of Public Health*.

Like much biophilia research, these results are largely anecdotal, but they still inspired planners at the University of Texas Health Science Center at the Houston School of Nursing.

“Nurses are all about promoting or restoring health. So we believe we should teach and do research in a healthy building,” says Patricia Starck, dean of the nursing school.

It’s difficult to remain open to nature in a place like Houston, a city in hurricane country, where it rains 105 days a year and triple-digit temperatures and crushing humidity in summer are the norm. To shield the building from the oppressive heat, the new nursing school building has a green roof. To guard against hurricane flood surges, there’s no basement. On the building’s sunny west side, specially glazed windows let in some light frequencies while filtering out others. Vertical, gauze-like shade sails further damp down the sun’s power. Inside, three atria bring daylight deep into the building, and each floor features gathering places where students and faculty can enjoy prospects through the east façade, which is almost completely glass. Through that clear wall, people can see the oak and pecan trees in Grant Fay

Park from almost anywhere in the building. People rush to lectures and labs past myriad sustainable materials: cypress harvested from the bottom of the Mississippi, where it sunk during log runs as long as a century ago, and structural steel and bricks reclaimed from a 19th-century San Antonio warehouse.

“Everything is organized to celebrate nature and to maximize resource conservation,” explains Bob Berkebile, principal of BNIM Architects of Kansas City, the firm that designed the building. “But the nurses and students, what they talk about is, ‘this is the greatest place I’ve ever been in.’ They react to the daylight and organization of space, the access to the park, and that’s as it should be.”

Fiona Lack, 29, is beginning her second year in the nursing program and says the nursing school building has more light and air than any other place she’s studied. “Not all the rooms have windows, but the light is still better. It’s more conducive to staying awake and listening to lectures,” says Lack, who commutes to school from Baytown, Texas. “You have the outdoors coming in, and the indoors kind of mixes in. There’s lots of light. I love the way they incorporate wood and glass. The building is just beautiful.”

Where to Go From Here?

A building here and a development there won’t bridge the disconnect between humanity and nature, nor will it achieve the potential that the proponents of biophilic design envision. But it’s a start, says Jonathan Rose, Yale College Class of 1974, scion of New York’s prominent real estate family and a specialist in sustainable development. Rose, whose company has projects worth several billion dollars in the works, says his efforts are becoming increasingly biophilic, like Highlands’ Garden Village in Denver, a project modeled on an English garden village, where every home looks out onto green space of some kind. “What I see today is the emergence of a field,” Rose says. “I think it’s emerging because it strikes at a core of

human need and human desire.”

For instance, Rose points out that only 26 percent of people who buy homes on golf courses actually play golf; most just want to live near open green space. At the “Bringing Buildings to Life” conference, presenters mentioned again and again that at least 30 percent of most cities’ area lies within the public domain – parks, sidewalks, highway landscaping and so on. So perhaps our public lands are a good place to start, says Berkebile, the UT Nursing School building architect. Kuo got a \$10 million grant to plant trees in Chicago as a result of her research on the benefits of green environments on public housing residents and kids with attention-deficit/hyperactivity disorder.

Terrain.org, an online “journal of the built & natural environments,” does “UnSprawl” case studies of developments like Coffee Creek in Indiana and Civano in Tucson. “None of them are exactly biophilic yet,” admits the journal’s editor, Simmons Buntin.

Everyone who researches biophilic design, or promotes it, clamors for more money for more research. Numbers are the coin of the realm, as any grant committee or chief financial officer considering a biophilic design proposal will explain. “There’s a huge need for additional research,” says Wilson, of *Environmental Building News*. “We need to make the case that this stuff is good to do.”

“Right now, there’s no funding stream,” says Loftness. “The time is now. The way to secure more funding is through the National Science Foundation and the National Institutes of Health, by linking the physical environment with the health and productivity of the citizenry.”

Kellert believes that the momentum fostered by the conference will continue to increase. “We have bits and pieces of the phenomenon that are important and compelling, but we need studies that systematically demonstrate that this is not just an aesthetic. It’s a necessity,” he explains. “We designed ourselves into this situation. We can design ourselves out of it.” ■

Sidwell Friends School Renovation Integrates Learning and Nature

By Heather Millar

When middle school students returned this fall to Sidwell Friends School in Washington, D.C., they began classes in a new building that tries to demonstrate how learning and nature might be reintegrated. Gone is a boxy brick building with an ugly blue mansard roof, windowless halls and the patched and repatched asphalt parking lot. In its stead is an expanded U-shaped building filled with light, faced with cladding made of recycled wine casks and centered around a constructed wetland that both recycles the building's wastewater and serves as a laboratory for science classes.

Inspired by the new facility's design, a group of students has launched an environmental club, and the school's food service has started to buy more organic and locally grown produce and looks forward to using herbs grown on the new building's green roof. The school has redoubled its recycling efforts. Instructors have woven elements of ecology and sustainability into the curriculum, not just in science and math classes, but also in arts and literature offerings. Students and teachers are also participating in an ambitious Yale study that seeks to determine what effect the new middle school will have on their health and mental acuity.

"It's been fascinating to watch how this building has been transformative for the entire institution," says Steve Kieran, Yale College Class of 1973, a partner in Philadelphia-based KieranTimberlake Associates, which designed the new middle school. "This is a case where decisions about



Eileen Collon (epicfest@aol.com)

The renovated Sidwell Friends School in Washington, D.C., is faced with cladding made of recycled wine casks and centered around a constructed wetland that both recycles the building's wastewater and serves as a laboratory for science classes.

a building have fired up a whole faculty."

Sidwell Friends didn't set out to become a poster child for biophilia, a concept that asserts that nature is not an amenity, but a basic human need. The elite, PreK-12 school – with more than 1,000 students, the largest Quaker school in the country – has been known more for its academic rigor and liberal, well-connected alums like Chelsea Clinton and Al Gore III than for its "green" credentials. The idea for the new building germinated, as these things often do, from the passion of one trustee inspired by a documentary about William McDonough, a pioneer of environmental architecture.

"This trustee met resistance initially,"

remembers Michael Saxenian, Sidwell's assistant head of school and chief financial officer. "I knew a lot about green design. Earlier in my career, I worked for Conservation International and in international development. But I was not out front with this issue. As CFO, I was supposed to be the fiscally conservative guy, and Quaker institutions are notoriously tightfisted when it comes to spending on facilities."

After a year of discussions, though, the school administration decided that a green renovation fit the school's values of stewardship and simplicity. The board decided that, even if it cost more, the project should try to achieve the highest rating – platinum –

from LEED (Leadership in Energy and Environmental Design), the most widely used American sustainable-design standard.

Most green school projects focus on energy efficiency and sustainability. Sidwell's new middle school also incorporated these kinds of measures: siting, to take advantage of passive solar heat; photovoltaic panels; extremely high-efficiency pulse boilers; linoleum made from 10 different natural materials; bamboo casework and so on.

But Sidwell's middle school took these low-impact strategies a step further, in an attempt to achieve a design that is restorative. Large windows – open on the north, screened on the south – bring diffuse sunlight into the classroom. Solar chimneys feature glazing that heats the air within, creating a convection current that draws cooler air in through north-facing open windows, resulting in passive, natural ventilation. Rather than being windowless tunnels, new exterior hallways look out onto a series of terraced spillways, a constructed wetland planted with native species like broad-leaved cattail and softstem bulrush and a "biology pond" that echo the nearby Rock Creek watershed flowing into the Potomac. A bas-relief of native species – dragonflies and grasses – decorates a concrete bridge abutment bordering the pathway beyond the wetland.

"We reference academic quadrangles and courtyards, but make this one a working natural environment. It's a 21st-century way to look at nature," explains Kieran, the architect. "This is the most successful and generative part of the whole project. It's the organizational core of the building. All day long, everybody will walk through this ecosystem. You cannot escape nature."

This feels like a good thing, especially in an era where few children play outside every day, compared to their parents' generation.

But will it make a measurable difference to the teachers and students who spend their days in the new middle school?

Studies seeking to quantify the benefits of biophilic elements in schools have often been dismissed as being too anecdotal. Heschong Mahone Group of California, the firm that has done some of the largest studies tracking the benefits of daylight and nature views on students, has been criticized for having a vested interest in their study results. They design green buildings.

A Yale team led by Stephen Kellert Ph.D. '71, Tweedy Ordway Professor of Social

"Restorative environmental design will be part of the school's curriculum."

Stephen Kellert

Ecology, and environmental psychologist Judith Heerwagen will seek to remedy those academic quibbles with an ambitious longitudinal study of the Sidwell Friends School community. The team hopes to learn how the new design affects health, emotional well-being, intellectual performance, motivation and social interaction.

In February and March 2006, before the move out of the old building, the research team gathered statistics on academic grades and asked students and faculty to fill out surveys. The seventh graders did a "mapping exercise," drawing their favorite places in the school.

"We will probably test them again at the same time in 2007. We will also repeat the drawing exercise," says Nicole Ardoin, a Ph.D. candidate in Kellert's research group.

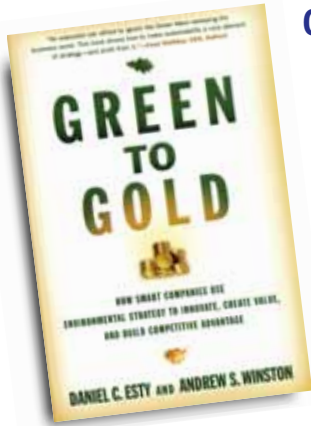
"We have numbered the students, so we will not only be able to compare groups, we will be able to compare Johnny's responses in 2006 with his responses in 2007. We will look at data from the surveys, the drawings, the teachers. Using the best practices in social science research, this study is trying to track how a biophilic environment affects students and teachers over a period of years."

Says Sidwell CFO Saxenian: "The Yale study is really important. As a lab for learning, we're contributing to primary research. I don't think we used the term *biophilia* before meeting Steve [Kellert]. It's just one more intriguing angle on what green buildings have to offer. It has become a guide for us. It is part of our vocabulary now."

Sidwell students will not only provide data on regenerative design, they will study it themselves. "Restorative environmental design will be part of the school's curriculum," says Kellert. "The wetlands will be used to encourage project-based, experiential learning, especially in the sciences."

The school is also designing displays to explain the biophilic and sustainable elements of the remodeled building. Budget considerations and the integration of an existing building limited how radical the new design could be, but the Sidwell administration hopes that its effort will become a model for other schools to try to go even further. Even as contractor crews were working double shifts to remake the school in time for its September opening, half a dozen other schools had already inquired about Sidwell's renovated middle school.

"If the news from the Yale study is good, we hope to encourage others to do the same thing," Saxenian says. ■



Green to Gold

Leading companies are discovering that thinking “green” can generate great value for their brands and do wonders for the bottom line, according to *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*.

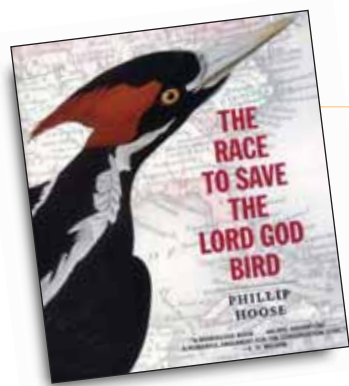
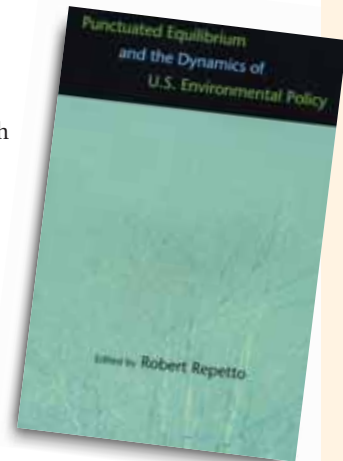
Authors Daniel Esty, director of the Yale Center for Environmental Law and Policy, and Andrew Winston '03, director of the Corporate Environmental Strategy Project at Yale, use examples of “WaveRiders,” or companies that have employed environmentally friendly strategies to their advantage, including 3M, BP, IKEA, Toyota, Ford, McDonald’s and GE.

In the case of Toyota, the authors lay out in detail that company’s development of the hybrid Prius automobile and its positive effect on the brand. They explain how 3M made a pact to cut pollution, a decision that sometimes resulted in short-run costs but has generated hundreds of millions in profit. And they recount how McDonald’s successfully changed its packaging to limit environmental impact. To purchase a copy of *Green to Gold*, published by Yale University Press, visit www.yale.edu/yup/books.

Punctuated Equilibrium and the Dynamics of U.S. Environmental Policy

Although many environmental policy issues remain deadlocked for decades with little movement, sometimes breakthroughs occur abruptly. Why do deadlocks persist? Why do major policy shifts occur infrequently? Is it possible to determine when policies are ripe for change?

Punctuated Equilibrium and the Dynamics of U.S. Environmental Policy, edited by Robert Repetto, professor in the practice of economics and sustainable development, presents new empirical evidence that the punctuated equilibrium theory of policy dynamics fits the facts of environmental policy change and can explain how stable policies can suddenly unravel in discontinuous change. The book’s contributors apply the theory to a wide range of important environmental and resource issues, and assess case histories in water, forestry, fisheries, public lands, energy and climate, some of which resulted in breakthroughs, others in stalemate. They also offer insights into the political conditions and tactics that are likely to produce these disparate outcomes. The book is published by Yale University Press. To purchase a copy, visit www.yale.edu/yup/books.



The Race to Save the Lord God Bird

For thousands of years, the majestic Ivory-billed Woodpecker reigned over the dark emerald forests that once carpeted the bottomlands of America’s broad southern rivers, as well as over the red, rugged mountains of eastern Cuba, where it was called *Carpintero real*. In the early 1800s, however, the species was beginning to disappear. A century later, it was presumed extinct. What happened?

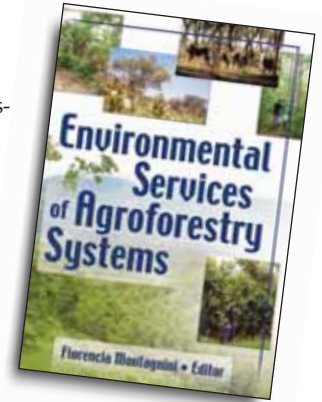
In *The Race to Save the Lord God Bird*, Phillip Hoose ’77 explores the Ivory-bill’s extinction, and probes our evolving attitudes toward understanding species and protecting habitat. The book is published by Farrar, Straus and Giroux. To purchase a copy, visit www.amazon.com.



Environmental Services of Agroforestry Systems

Deforestation and the rampant use of fossil fuels are major contributors to increases in atmospheric carbon dioxide and, therefore, global warming. *Environmental Services of Agroforestry Systems* addresses these global concerns with a collection of presentations on biodiversity and climate change from the First World Congress of Agroforestry that took place in Orlando, Fla., in 2004. Experts discuss the latest research and data on how agroforestry systems can help solve environmental problems through carbon sequestration and biodiversity conservation.

Environmental Services of Agroforestry Systems goes beyond regional considerations to focus on the challenges of today's most pressing global environmental concerns. The contributors describe the latest research and concepts in agroforestry systems, reforestation efforts, soils, vegetation and agriculture and review their economic aspects. Incentives for reforestation and agroforestry are explored in detail. The book is edited by Florencia Montagnini, professor in the practice of tropical forestry, and published by Haworth Press. To purchase a copy, visit www.haworthpress.com.



Yale School of Forestry & Environmental Studies PUBLICATION SERIES

Yale F&ES faculty, staff, and students participate in exciting environmental projects each year, including innovative courses, conferences, and applied research. The goal of the F&ES Publication Series is to capture some of the best of that work and make it available to a broad professional audience. There are now more than 30 Series publications on a wide range of topics.

Examples of recent publications in the Series include:

- *Americans and Climate Change*, a report on the insights and recommendations of 110 top leaders convened by Yale F&ES in Aspen in the fall of 2005 to assess how to overcome the gap between science and action on climate change;
- *Confronting Sustainability: Forest Certification in Developing and Transitioning Countries*, a 622 page report on an international conference held at F&ES on that topic, with case studies by 16 in-country experts;
- *Can the Anchor Hold? Rethinking the United Nations Environment Programme for the 21st Century*, a report based on an F&ES course that included a trip to UNEP headquarters in Nairobi, Kenya, and presentation of the ideas in the report to the UNEP staff;
- *The Industrial Platinum Cycle for Russia: A Case Study of Materials Accounting*, a working paper on one piece of a much larger metals cycling project being conducted by the Center for Industrial Ecology at F&ES.

For free pdf downloads or to order printed volumes:

www.yale.edu/environment/publications

Renewable Natural Resources Foundation Honors Educator

By Heather Millar

Heidi Margrit McAllister '88 says it all started with Smokey Bear. "I can still remember the rangers handing out Smokey stickers at the campground where my family was staying," said McAllister, who has so far dedicated 25 years to designing and promoting childhood environmental-education programs worldwide.

"I got a thrill when the Smithsonian Folklife Festival here in Washington featured the U.S. Forest Service in 2005, and I could go down to the Mall and see the guy who started Smokey the Bear. [The Forest Service started the Smokey Bear fire prevention campaign in 1944. When a real bear cub was rescued from a New Mexico wildfire in 1950, he became the campaign's ambassador, living out his days at the National Zoo in Washington, D.C.]

McAllister mentioned her mascot inspiration during her acceptance speech in November, when the Renewable Natural Resources Foundation (RNRF) honored her with a Sustained Achievement Award for her career of teaching conservation and sustainable resource management to young people in developing countries.

"We were impressed with her international look at what can be done to solve resource problems," said Ryan Colker, director of programs for the RNRF, an

organization of more than a dozen natural resource groups such as the American Fisheries Society and the Society for Range Management. "The biggest thing is to provide a foundation for future leaders, for future generations."

Growing up with parents who were both academic scientists in Evergreen, Colo., McAllister spent as much time as she could outside. Just out of high school,

"The first paycheck I earned was from environmental education. I knew right away that was what I wanted to do."

she heard about a job at an environmental-education summer camp, which was called the "Owl's Roost," part of the Jefferson County Schools summer curriculum. "The first paycheck I earned was from environmental education," McAllister said. "I knew right away that was what I wanted to do. The sciences, the environment, teaching – it would be the perfect career."

In the late 1970s, Hampshire College in Amherst, Mass., didn't offer a nature



Michael Ciesielski

Heidi Margrit McAllister '88

studies degree, so McAllister designed her own program called "environmental education and outdoor leadership" and graduated in 1982 with a bachelor of arts degree in it. (At Hampshire, undergraduates are able to design their own degree program with input from faculty.) After graduation, she joined the Peace Corps, which sent her to Paraguay, a nation then struggling with developing-world woes like deforestation, overpopulation and unsustainable hunting practices.

McAllister stayed for four years in Paraguay, creating an environmental-education program for elementary schools, incorporating exercises such as nature scavenger hunts and games to illustrate the web of life. During her last two years

there, she trained incoming Peace Corps volunteers to be educators and taught university courses. She also co-authored the two-volume Paraguayan National Elementary Environmental Education Curriculum, based on the country's natural history.

"I learned that environmental education in the developing world is really different," said McAllister. "In the United States, you start by teaching about different species and what each one does. In the developing world, kids can identify everything with their eyes closed. So you start by talking about ecological concepts, how things are related, the link between deforestation and erosion, for example, or between agricultural chemicals and health problems."

"The more I traveled, the more I realized that the issues are all the same – too many people using too few resources."

McAllister returned to the United States to get her master's degree at F&ES, where she also met her husband, Carlos Rodriguez-Franco, D.F.'88. The couple went to live in Carlos' home country of Mexico.

McAllister had done a lot of work on the Monarch butterfly while at Yale, and she built on this foundation during her years in Mexico, writing books about the butterfly, including a teaching booklet for children.

"Deforestation was the big issue," said McAllister. "As the forests get thinned, the

air there gets colder. The butterflies don't eat during the winter. If it gets colder and colder, they die."

During more than a decade in Mexico, McAllister worked with the National Heritage Institute, a San Francisco-based nonprofit working to combat desertification. She helped Mexico's department of agriculture design education and recreation activities for an experimental station. She developed teacher training for the secretariat of education, as well as science education and environmental-education curricula. Just before she left Mexico, the secretariat asked her to write a textbook on natural resources. More than 35,000 Mexican high school students use the book each year.

"Mexico is a lot more developed than Paraguay, but they had the same issues you find everywhere. You can't tell someone not to use agricultural chemicals if that is their livelihood," said McAllister. "In Mexico, you're working with producers, while in the United States you're working with consumers. In Mexico, the producers don't have as many options. You have to help them find alternatives."

McAllister returned to the United States in 1999 to oversee the Peace Corps' environmental-education efforts in Europe, the Mediterranean and Asia. This work took her around the world, overseeing projects such as designing a program so that Romanian schoolchildren could begin to understand the effects of things like deforestation and erosion, helping kids in places like Kazakhstan and Uzbekistan understand why water conservation is important, and trying to communicate to children in rapidly industrializing China why environmental controls may benefit society. McAllister also oversaw staff

training, and wrote a Peace Corps environmental-education manual that is used worldwide.

"The more I traveled, the more I realized that the issues are all the same," she said. "It could be water in central Asia or forests in Eastern Europe – it's too many people using too few resources. Environmental education is about teaching people to plan for the future, and to do that you have to use a two-pronged approach: First, you have to help people look at the consequences of their actions. Then, you have to offer alternatives. If you say, 'Don't dump sludge in the river,' nothing will happen if everyone in that town works in that factory. You have to come up with a different way for them to do what they're doing, like a treatment plant to process the sludge.

"That's where Peace Corps volunteers can really make a difference. They're there on the ground. They can see the options."

McAllister left the Peace Corps in 2004 to spend time with her newborn son, Benjamin, now a toddler. As she contemplates the next step in her career, she's hopeful.

"In 1978, when I started doing this, I was the lunatic fringe," she said. "Nobody knew anything then. Now, everybody has the K-12 program. Everybody has the bachelor's and master's degrees in environmental subjects. Now everybody does the environment. Worldwide, it is now an issue. Is it enough? Will we change fast enough? I don't know. But I have seen enormous change during my career." ■



Stephen Kellert

Social Ecology Prof Wins Research Award

Stephen Kellert, Ph.D. '71, Tweedy Ordway Professor of Social Ecology at F&ES, has won the Outstanding Contributions to Research Award from the North American Association for Environmental Education.

Kellert received the award at the association's annual conference in October in St. Paul, Minn. The award is given to an individual who has made outstanding theoretical and scientific contributions.

"Professor Kellert is a prolific writer, a superb teacher and a leader in his field," said Dean Gus Speth.

Much of Kellert's work focuses on understanding the connection between human and natural systems, with a particular interest in the value and conservation of nature and in designing ways to harmonize the natural and human built environments.

Kellert has authored more than 100 publications, including several books that explore people's relationship to nature. In 1993, he co-edited *The Biophilia Hypothesis* with Edward O. Wilson, an entomologist at Harvard. The book brought together 20 scientists from various disciplines to refine and examine biophilia, which asserts that humans possess a deep and biologically based urge to connect with the natural world.

He went on to publish *The Value of Life: Biological Diversity and Human Society* (1996); *Kinship to Mastery: Biophilia in Human Evolution and Development* (1997); *The Good in Nature and Humanity: Connecting Science, Religion, and Spirituality with the Natural World* (2002); *Children and Nature: Psychological, Sociocultural, and Evolutionary*

Investigations (2002); and *Building for Life: Designing and Understanding the Human-Nature Connection* (2005).

Kellert's other recent awards include the National Conservation Achievement Award from the National Wildlife Federation and the Distinguished Individual Achievement Award from the Society for Conservation Biology. He is one of 300 individuals listed in "American Environmental Leaders: From Colonial Times to the Present." He also has served on committees of the National Academy of Sciences, and is a member of the IUCN Species Survival Commission.

Program to Train Corporate Directors on Risks, Opportunities of Climate Change

Yale University, along with two other leading U.S. organizations, has announced a unique collaborative effort to educate hundreds of independent corporate board members about the potential liabilities and strategic business opportunities that global climate change can create for companies.

"Climate change is no longer the purview of scientists only," said Dean Gus Speth. "The widespread ramifications of unchecked climate change require that more leaders in our society understand its implications." The announcement was made at a plenary session of the 2006 annual meeting of the Clinton Global Initiative hosted in New York in September by former President Bill Clinton.

The collaboration draws together institutions with complementary expertise in the area of climate change: Marsh, the world's leading risk and insurance services firm; Yale University, one of the nation's leading academic institutions; and Ceres, the nation's largest coalition of investors and environmental

groups working with companies on environmental and social issues.

"Corporate directors are going to need a strategic and analytical underpinning to navigate the transformations that climate change will require in their businesses in the coming years," said Speth. "These changes offer great economic opportunity to those directors who act in a timely way. As a result of its combined academic, nongovernmental and corporate leadership, our new initiative will be well-positioned to deliver needed training and support to participating corporations."

Brian Storms, chair and chief executive officer of Marsh, said, "Increasingly, corporate leaders are asking us to help them better understand their total spectrum of risk, and how it affects their overall business strategies. Aligning with Yale and Ceres to educate top corporate leaders about one of the most critical business risks of our time demonstrates our strong commitment to addressing this important issue."

Initial training of more than 200 independent U.S. board members of Fortune 1000 companies will begin this winter through a newly



Left to right: Brian Storms, chair and chief executive officer of Marsh; former President Bill Clinton; Ceres President Mindy Lubber; and F&ES Dean Gus Speth.



created curriculum – the Sustainable Governance Forum. The training sessions will be offered across the country through September 2008. Marsh, Yale and Ceres are combining their intellectual capital and research to develop the training program, and a \$250,000 contribution by Marsh will be used to produce the materials. Courses and materials are being designed to provide insights into the practical financial, legal, business and investment implications of climate change for corporations. An earlier seed grant of \$50,000 from the Betsy and Jesse Fink Foundation helped to launch the new initiative.

Many companies focus on avoiding the liabilities related to climate change. However, Storms believes that there are as many opportunities as risks associated with climate change. “Those companies that understand true enterprise risk will be the ones to seize upon the growth prospects that threats like climate change create,” he said. “As more companies have begun to understand this and seek advice, we’re seeing increased business.”

Ceres President Mindy Lubber, who also directs the \$3 trillion Investor Network on Climate Risk, said, “This training program will prepare corporate directors for what is perhaps the biggest challenge companies will face in the 21st century. Major investors are increasingly demanding that companies sharpen their focus on the impacts of climate change, whether from new regulations, physical changes or growing global demand for low-carbon technologies. This program will help ensure that independent directors ask the tough, smart questions of the companies they oversee.”

The concept for the new collaboration took shape at a high-level conference on climate change hosted late in 2005 by F&ES, which has

long been committed to advancing rigorous science on climate change and has recently undertaken new initiatives to disseminate this science to major decision-makers, including the corporate directors addressed by this new collaboration.

The full program is described in a recently published book *Americans and Climate Change: Closing the Gap Between Science and Action* (<http://environment.yale.edu/climate/>).

Tropical Resources Prof Wins MacArthur “Genius” Grant

Lisa Curran, professor of tropical resources and director of the Tropical Resources Institute at F&ES, has been awarded a five-year John D. and Catherine T. MacArthur Foundation Fellowship. She will receive \$500,000 in unconditional support over the next five years.

Like all MacArthur Fellows, the award came as a total surprise to Curran. “It’s like winning the lottery after 20 years of *Survivor* in Borneo. Actually, this has been a tremendous team effort. I’ve worked with some of my Indonesian colleagues for 18 years. I’m part of all the people I’ve met: the villagers, the loggers, the scientists and the students – from both the U.S. and Indonesia.”

In announcing the award, the MacArthur Foundation said, “Through diplomatic skill, cultural sensitivity, and rigorous scientific acumen, Lisa Curran synthesizes concepts from the natural and social sciences to forge new, practical solutions for sustainable natural resource extraction and development. By developing consensus and fostering communication between diverse stakeholders, she is substantially increasing

protection efforts in endangered regions.”

Curran has focused her research on the forests of Borneo and the ecology of its most economically important family of tropical timber, Philippine mahogany. She has worked to devise new strategies to address deforestation and its devastating environmental consequences. Curran and her research team study the structure and dynamics of tropical forests using satellite remote sensing, field ecology and ground-based surveys and analysis to learn how the environment is altered by human activities and to improve the management of these forests by integrating scientific knowledge with sociological, political and economic realities. She has been instrumental in the establishment of national parks in Indonesia, and has worked to counter illegal logging and the corruption that allows it to take place.

“I’ve had an unusual career trajectory,” Curran says. “I tend to be a problem solver, which requires me to think outside the box. I’ve had to use creative ways to acquire the information I’ve needed to address the issues in this emerging new field, sustainability science. I understand the needs of the activist seeking change, but fundamentally I am a scientist seeking knowledge. My research is collaborative and interdisciplinary. I provide sound science so Indonesians can address these complicated issues. I provide training and information for them.”



William Sacco

Lisa Curran



Harold Shapiro

Michelle Bell

After graduating from Harvard University with an A.B. in anthropology in 1984, Curran went to Indonesian Borneo. She remained there for most of the next eight years, living in logging camps and seeing firsthand how the tropical forests were being used and abused. Borneo, the third-largest island in the world, is divided into four political regions: Kalimantan belongs to Indonesia, while the remaining regions are part of Malaysia and Brunei.

Curran received her Ph.D. from Princeton in 1994, after which she was a postdoctoral fellow at Harvard and an assistant professor at the University of Michigan. She joined the Yale faculty as an associate professor in 2001 and was promoted to professor with tenure in 2006.

Until recently, Curran has spent three to six months of the year in the field, hiking for miles through peat marshes and leech-infested swamps, drinking from springs and camping under a tarp in order to study the tropical ecosystem and the impact of illegal logging and agrobusiness. There were times her team was threatened and, she says, "I had a price on my head. It's a cowboy culture out there." For a couple of years, the situation was so dangerous in Indonesia that she shifted her studies to the Amazon rainforest. After Indonesia got its first democratically elected president in October 2004, she was able to resume work in the Kalimantan forest. She still travels to the field camp, training teams that stay on site year-round, but now she goes primarily during academic breaks.

The Tropical Resources Institute (TRI), which Curran heads, is an interdisciplinary, non-degree-granting program within F&ES. TRI supports student research projects aimed at practical solutions to conservation and management of resources in the tropics.

Environmental Health Professor Receives ONES Award

An F&ES professor is one of eight scientists to receive an Outstanding New Environmental Scientist (ONES) award from the National Institutes of Health.

Michelle Bell, assistant professor of environmental health at F&ES, will receive \$500,000 to study the relationship between outdoor concentrations of ozone, a reactive form of oxygen that is a primary component of urban smog, and the incidence of respiratory disease and death in exposed populations.

Bell is one of two Yale University professors to receive a ONES award. Sven-Eric Jordt, assistant professor of pharmacology in the School of Medicine, will study the way in which certain airborne pollutants interact with sensory nerve cells in order to produce eye, nose and throat irritation.

The National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health, awarded grants totaling \$3.6 million, which will support the eight scientists, each of whom is pursuing a career in environmental health research, over five years.

"The ONES program is designed to provide a strong foundation for outstanding scientists who are in the early, formative stages of their careers," said David Schwartz, director of the NIEHS. "These grants will assist the scientists in launching innovative research programs that focus on human disease and the influence of the environment."

Research supported by the ONES grants will cover a broad range of environmental exposures, as well as the biological responses they elicit. Each of the awardees will focus on a specific human disease or condition as it relates to a specific environmental exposure.



Julie Zimmerman



Paul Anastas

Green Engineer and Chemist to Join Yale Faculty

An author of a treatise on the principles of green engineering and the "father of green chemistry" will join the full-time Yale faculty in January. And F&ES is hosting an environmental practitioner and an expert on world religions and ecology as visiting scholars.

With the appointments of Julie Zimmerman of the U.S. Environmental Protection Agency (EPA) and Paul Anastas of the American Chemical Society, "Yale builds on its already world-class stature in industrial ecology and sustainability," said Thomas Graedel, Clifton R. Musser Professor of Industrial Ecology.

Zimmerman will hold a joint faculty appointment with the Department of Environmental Engineering and the School of Forestry & Environmental Studies, and is supported in part by the Yale Institute for Biospheric Studies. Anastas will be professor in the practice of green chemistry at F&ES, as well as having appointments in the Department of Chemistry and the Department of Environmental Engineering.

Zimmerman, who obtained a Ph.D. from the University of Michigan in 2003, developed novel, environmentally friendly metal-working solvents for optimizing manufacturing machining processes

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without sacrificing performance. Her results are currently being implemented by the auto industry.

In her current position with the Office of Research and Development at the EPA, Zimmerman's chief responsibility is managing grants to academia and small businesses in the areas of pollution prevention and sustainability. She is also managing several projects that will integrate sustainability concepts into engineering education. She authored



Harold Shapiro

Mary Evelyn Tucker



Jerome Ringo

a widely known and highly regarded article, "Sustainable Development Through the Principles of Green Engineering," which was published in *Environmental Science & Technology* in 2003. She is also a part-time faculty member at the University of Virginia, where she teaches these principles to engineers in training.

Anastas' name is synonymous with green chemistry throughout much of the world. He is director of the Green Chemistry Institute, which is headquartered at the American Chemical Society in Washington, D.C., and has established 24 green chemistry chapters in countries including China, Ethiopia, India, Japan and South Africa. He recently was named the "father of green chemistry" and the 2006 winner of the \$250,000 Heinz Prize for the Environment by the Heinz Family Philanthropies.

Anastas originated the field of green chemistry at the EPA in the 1990s, and has published the books *Benign by Design: Alternative Synthetic Design for Pollution Prevention* (1994); *Designing Safer Polymers* (2000); *Green Engineering: Environmentally Conscious Design of Chemical Processes* (2002); and his seminal work, with co-author John Warner, *Green Chemistry: Theory and Practice* (2000).

Anastas was assistant director for the environment in the White House Office of Science and Technology Policy from 1999 to 2004. Prior to joining that office, he was the chief of the Industrial Chemistry Branch of the EPA, where he was responsible for the regulatory review of industrial chemicals under the Toxic Substances Control Act and the development of rules, policy and guidance. He holds a Ph.D. in organic chemistry from Brandeis University.

F&ES Hosts Visiting Scholars

Mary Evelyn Tucker is the Yale Bioethicist in Residence for the 2006-2007 academic year. She is the co-founder and co-director of the Forum on Religion and Ecology. She is the author of *Worldly Wonder: Religions Enter Their Ecological Phase* (2003). She co-edited *Worldviews and Ecology: Religion, Philosophy, and the Environment* (1994); *Buddhism and Ecology* (1997); *Confucianism and Ecology* (1998); *Hinduism and Ecology* (2000); and a Daedalus volume, *Religion and Ecology: Can the Climate Change?* (2001).

Tucker received her Ph.D. in East Asian religions, with a concentration in Confucianism in China and Japan, from Columbia University. Until 2005, she was a professor of religion at Bucknell

University, where she taught courses in Asian religions and religion and ecology. From 1993 to 1996, she was a National Endowment for the Humanities Chair at Bucknell. She is currently a research associate at the Harvard-Yenching Institute and the Reischauer Institute of Japanese Studies at Harvard. While at Yale, she will teach "World Religions and Ecology: Asian Religions" in the spring, and taught "Seminar on World Religions and Ecology" in the fall.

Jerome Ringo, chair of the board of the National Wildlife Federation (NWF), will be the Dorothy S. McCluskey Visiting Fellow for Conservation during the spring 2007 semester. In 2005, Ringo was elected as chair of NWF and became president of the Apollo Alliance, a broad coalition of business, labor and environmental organizations.

As a champion of environmental justice and a vocal advocate of clean energy, Ringo has firsthand experience in these issues after working for more than 20 years in Louisiana's petrochemical industry. "He has a clear understanding of the impacts of poor environmental practices on the low-income communities that surround those petrochemical plants," said Dean Gus Speth.

While at F&ES, Ringo will not teach but will interact extensively with students, introducing them to his wide array of contacts and undertakings and providing them with new opportunities and insights. He will also offer a number of public and small-group presentations. And Ringo will work closely with students who are studying the recovery efforts in New Orleans, (His family was evacuated during Hurricanes Katrina and Rita).

Journal of Industrial Ecology Celebrates 10th Anniversary

The *Journal of Industrial Ecology* (JIE), an international quarterly dealing with industry and the environment, celebrated two major achievements in 2006 – its 10th anniversary and its inclusion in the Science Citation Index Expanded (SCiEx), an important benchmark in scientific publishing.

The peer-reviewed journal is published by MIT Press and headquartered at F&ES. JIE's editor-in-chief is Reid Lifset, associate director of the Industrial Environmental Management Program at F&ES.

JIE marked its 10th anniversary in May with a panel discussion at Yale on the past and future of industrial ecology. Among the distinguished speakers were John Ehrenfeld, executive director of the International Society for Industrial Ecology and co-editor of JIE; Faye Duchin, professor of economics at Rensselaer Polytechnic Institute and a world leader in input-output analysis for environmental assessment; Ramesh Ramaswamy, director and founder of the Resource Optimization Initiative in Bangalore, India; and Charles Powers, chair of the Project on Industrial Ecology, Pollution Prevention, and the New York/New Jersey Harbor at the New York Academy of Sciences.

JIE's acceptance into SCiEx, which is maintained by Thomson Scientific, means that the journal is carried by Current Contents, an abstracting and indexing service used by researchers worldwide. Approximately 2,000 new journals are reviewed every year by the Thomson Scientific staff, and only 10 percent to 12 percent are accepted for inclusion in SCiEx.

In addition, a recent article in the journal *Business Strategy and*

the Environment ranked JIE as the top journal dedicated to publishing in the field of organizations and natural environment.

Three Appointed to Endowed Professorships

Daniel Esty, J.D. '86, the newly named Hillhouse Professor of Environmental Law and Policy, is renowned for his research and teaching in those areas, as well as in the areas of world trade and the environment and environmental performance measurement.

Esty holds a joint appointment at F&ES and the Yale Law School. He has served since 2001 as director of the Yale World Fellows Program, an initiative to bring emerging world leaders to campus for a special leadership training program, and has been director of the Yale Center for Environmental Law and Policy since 1994.

Esty is co-author of *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage* (2006), which demonstrates that companies that have employed environmentally friendly strategies to their advantage are more innovative and entrepreneurial than their competitors (see Bookshelf, page 17).

The most recent books that he has co-edited are *Global Environmental Governance: Options & Opportunities* (2002); *Greening the Americas: NAFTA's Lessons for Hemispheric Trade* (2002); *Environmental Performance Measurement: The Global Report 2001-2002*; and *Regulatory Competition and Economic Integration: Comparative Perspectives* (2001).

A graduate of Harvard College, Esty studied at Oxford University as a Rhodes Scholar, and earned his J.D.

in 1986 from the Yale Law School, where he was executive editor of the *Yale Journal on Regulation* and project coordinator of the Environmental Litigation Program.

Following graduation, he served as an attorney at the Washington, D.C., firm Arnold & Porter, before being named special assistant to William Reilly, administrator of the U.S. Environmental Protection Agency (EPA), in 1989. He became deputy chief of staff in 1990 and deputy assistant administrator for policy a year later. At the EPA, he had responsibility for coordinating the agency's entry into the international trade arena, and was the chief EPA negotiator for the environmental aspects of the North American Free Trade Agreement, among other duties.

Esty joined the Yale faculty in 1994 after serving for a year as a senior fellow at the Institute for International Economics in Washington, D.C. He was an associate dean at F&ES from 1998 to 2002. He developed a pilot Environmental Sustainability Index in 1999 to measure the ability of economies to achieve environmentally sustainable development. He developed the methodology for the index, which provided the most comprehensive global report on the state of the environment, with support from the World Economic Forum.

The American Bar Association honored Esty with its Award for Distinguished Achievement in Environmental Law in 2002, and in 1998 and 2000 he was named by *Earth Times* as one of the world's "100 most influential environmental leaders." He has twice received the F&ES teaching award. His other honors include the EPA's Fitzhugh Green Award for contributions to international environmental protection.



Gale Zucker

Daniel Esty



Gus Speth



Michael Marsland

Oswald Schmitz

at the school



Dean Gus Speth has been named the Sara Shallenberger Brown Professor in the Practice of Environmental Policy. “Dean Speth’s distinguished contributions as a scholar and a leader in the practice of environmental law, climate change and energy make him well-deserving of this recognition,” said Yale President Richard Levin.

Speth’s areas of interest include U.S. and international environmental policy; climate change and related energy issues; and sustainable development in developing societies. His role as an advisor, consultant and leader in initiatives to combat environmental degradation has earned him a reputation as one of the world’s leading environmental stewards.

In his many publications, including *Red Sky at Morning: America and the Crisis of the Global Environment* (2004) and *Worlds Apart: Globalization and the Environment* (2003), Speth has emphasized a need for international action on global climate change. In *Global Environmental Governance* (2006), he and political scientist Peter Haas examine 10 major global environmental threats and how they can be addressed through treaties, governance and new forms of international cooperation.

As a member and chair of the President’s Council on Environmental Quality, Speth was President Carter’s principal White House advisor on environmental affairs. In 1979 and 1980, he led efforts to call attention to climate change and other challenges to the global environment that are now widely acknowledged. In 2002, he was awarded the Blue Planet Prize for his early efforts.

Prior to joining Yale in 1999, Speth was the administrator of the United Nations Development Programme and chair of the U.N. Development Group from 1993 to

1999. He was the founder and president, from 1982 to 1992, of the World Resources Institute, a center for policy research and technical assistance on environmental and development issues. He also was a co-founder of the Natural Resources Defense Council in 1970.

Oswald Schmitz has been appointed Oastler Professor of Population and Community Ecology.

Schmitz is an expert on the dynamics and structure of terrestrial food webs. His research focuses on plant-herbivore interactions and how they are shaped by carnivores and soil-nutrient levels. He is investigating the role of soil nutrients and large mammalian herbivores in limiting forest regeneration after clear-cutting, herbivore responses to predators, and the dynamics of ecological food chains and food webs comprised of grassland plants and insects.

Schmitz joined the F&ES faculty in 1992 and became a joint professor in the Department of Ecology and Evolutionary Biology in 1997. He was granted tenure as a full professor in 2000, and he has served as the associate dean for academic affairs at F&ES since 2004. He received the school’s teaching award in 1999.

A graduate of the University of Guelph in Canada, where he earned his bachelor’s and master’s degrees in the Department of Zoology, Schmitz went on to obtain his Ph.D. from the University of Michigan’s School of Natural Resources. He has served as a member of advisory boards and review panels for a number of organizations involved in conservation and policy initiatives, research and education, including the American Forest Foundation, the U.S. Environmental Protection Agency and the National Science Foundation. ■



Harold Shapiro



Course Taps Into Public Demand for River Science

By Marc Wortman

Robert Roscow is an architect who sits on the Planning and Zoning Commission in Hamden, a fast-growing suburb bordering New Haven. A transplanted Southerner, he also owns a farm in the Tampa, Fla., region, and has fought many battles over development of wetlands and watershed property in Connecticut and Florida. On a sparkling fall day, he stood in waders in the burbling headwaters of the Tenmile River, a tributary of the Quinnipiac River that snakes through the region. Roscow dipped a flow meter, a black-rubber-sheathed electronic instrument designed to measure the amount of water racing past, into the cold shallow stream. He called out the reading of 2 feet per second to others standing with him in the water or clustered on shore. They would later calculate the flow as 6 cubic feet per second (cfs). (A cubic foot of water contains approximately 7.5 gallons of water. The Connecticut River has an average flow rate of 16,000 cfs, while the Mississippi River at New Orleans has an average flow rate of 600,000 cfs.)

“It’s difficult when you’re fighting one of these things in court,” he said later of his struggles to protect watershed areas from development. “They ask you where your figures about the impact on the watershed are coming from, and when you say, ‘I don’t know,’ that gets your case thrown out fast. It can’t just be our tree-hugging ways. We need expertise.” Like many citizens fighting environmental battles, though, he has little scientific background in the fields that affect the outcome of fights over waterways and wetlands.

Charles Waskiewicz, foreground, chair of the Inland-Wetlands and Watercourses Commission for the town of Orange and assistant business manager at F&ES, collects samples of organisms using a fine-mesh net as part of the “Yale Short Course in River Processes.”

Attending the “Yale Short Course in River Processes” this past October was a way to begin to remedy his ignorance. The three-day program – two evenings and a morning of classes, followed by the field trip to the Tenmile River-introduced him and 19 others to the science they might need to assess the impact of, say, water pouring off a new parking lot into a nearby stream or new housing drawing on a watershed aquifer.

“I didn’t know the difference between a 3-cfs stream and a 100,” said Roscow of his walk in the river. “I’ll know now. Having some knowledge of what’s going on has immeasurable worth.”

Reaching Beyond Yale

Shimon Anisfeld, senior lecturer and research scientist in water resources and environmental chemistry, is an expert on water quality and watershed management. He created the course through the Center for Coastal and Watershed Systems (CCWS) five years ago. According to CCWS Director Martha Smith ’00, “The CCWS and several of its affiliated faculty have historically conducted research work in the local community and recognized the need for the course. But the biggest reason the course exists is that Shimi was personally willing to develop and teach it.”

The course has been filled every year by volunteer activists interested in river conservation and water resource management. Most come from Connecticut, though some have come from surrounding states. Said Erin Higbee, who restores dammed and polluted rivers for the Riverways Program of the Massachusetts Department of Fish and Game: “This is completely relevant to the work I do. I also wanted to be able to tap into the environment school. It’s unique for the community

to have access to the great faculty here.”

Anisfeld, whose courses on water resource management, environmental chemistry and coastal ecology, are among the most popular at F&ES, researches water-quality issues in Connecticut, which have national implications for understanding the impact of human activities on watersheds. He has examined the sources of excess nitrogen being transported to Long Island Sound, which is believed to be responsible for an annual oxygen-depleted “dead zone.” He has calculated the impacts of nitrogen entering rivers emptying into the Sound from sewage, urban stormwater, agricultural fertilizer and deposition from atmospheric sources. He has also studied the impact of wetland loss along the Quinnipiac River and worked to improve water-quality data-monitoring methods using sites on the river.

“I often deal with local citizens whose lives have been affected by water-quality and stream-health issues,” Anisfeld said.

Recognizing their role in dealing with regional water issues, he saw a need to reach out beyond F&ES to “educate local decision-makers and activists about how rivers function and how they are modified by human activity. This is for people who don’t have all the tools they need to understand the science behind river systems. This way they can better bridge the gap between scientists, who often have their own jargon, and the wider community, which needs

to understand the science.”

Although participants pay a modest \$60 for the course (which includes three meals), most of the cost is covered by a \$7,700 grant from the Quinnipiac River Fund of the Community Foundation for Greater New Haven.

A student in the class, Jeff Yale, works for the South Central Connecticut Regional

Water Authority, which is responsible for providing drinking water to 400,000 people in the New Haven region. His work includes water sampling, stream-flow monitoring and community environmental outreach. “This gives me a better understanding of what we need to protect,” he said, “and how to continue providing safe drinking water.” Others are more concerned about maintaining the scenic quality of riverways, reducing existing pollution and preventing future development from impinging on watersheds. Cris Schaefer recently became executive director of the Pomperaug River Watershed Coalition in Connecticut after a career as an executive in industry. He said, “I came out of the business world. I didn’t know river science. Studying river technologies with some of the best people in this field will make me more effective” in overseeing the 90-square-mile scenic watershed region in rural Litchfield County that is also an important source of drinking water for neighboring towns.

A River Sampler

The course is broken into four sections that focus on different scientific aspects of river processes. Anisfeld covers two of these – hydrology (the study of water systems) and water quality. He co-teaches the course with James MacBroom, F&ES lecturer in river processes and restoration, author of *The River Book*, and co-founder and senior vice president of Milone & MacBroom, a civil engineering, landscape architecture and environmental sciences consulting firm whose corporate office is in Cheshire, Conn. MacBroom leads the section on geomorphology, the study of how rivers form and shape their channels and how geological forces in turn affect watersheds and rivers. His colleague from the firm’s Vermont office, Roy Schiff, Ph.D. ’05, teaches river ecology. “Each science has its own jargon, tools and concepts,” said Anisfeld. “We give the highlights and basics of the most important concepts in each field.”

During the field trip, the students

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“We give the highlights and basics of the most important concepts in each field.”

Shimon Anisfeld

More Scholarship Aid Needed to Lure Promising Students

By Alan Bisbort

When F&ES students graduate each year, they are – quite literally – dispersed to the four corners of the globe. Often they return to their homeland or to other parts of the world where environmental problems are acute, if not critical. Some move into business and governmental circles, while others dive deeper into academia. Wherever they land, these young leaders put the skills acquired at Yale to work on environmental challenges.

They are, in a word, committed.

Upon graduating in 2006, for example, Anil Pokhrel returned to his native Nepal to resume the work he'd begun eight years earlier – bringing clean water and sanitation to rural communities. Baruani Mshale '08 plans to return to his native Tanzania or to sub-Saharan Africa to work on sustainable development issues. Korinti Recalde '08 had, prior to entering F&ES this year, spent nearly five years as a private-sector consultant working on the rehabilitation of federal Superfund and RCRA (Resource Conservation and Recovery Act) brown-field sites. And, prior to joining F&ES last year, Rachele Gould '07 had already spent two years in Chile as a field organizer and liaison for The Nature Conservancy, and had just completed summer work at the Ugyen Wangchuck Environment and Forestry Institute in Bhutan, a project directed by Dechen Dorji '01.

Anil, Baruani, Korinti and Rachele, as well as Dechen, are success stories. But what would have happened had they not been able, due to financial constraints, to attend F&ES? This is not a hypothetical question, but a burning issue. Indeed, the dark cloud hanging over the otherwise happy scenarios above is the cost of an education. A year's education at F&ES for incoming students costs \$41,465, including tuition, room and board, health insurance, books,

supplies and summer modules. (Returning students pay \$39,600.)

For some students, especially those from developing countries, the cost is prohibitive.

"Students who take on large loans can't pursue the environmental careers they intended. Their choices are limited because they need to pay back their loans," said Bethany Zemba, director of financial aid. "This is especially true for international and U.S. students who wish to complete environmental work abroad, where the average salaries are much lower than U.S. salaries."

Eugenie Gentry, director of development, said, "It's not just the cost of an education that's prohibitive; it's the loss of two years' worth of earnings while they're in school. They must be fully funded."

Foreign or not – and F&ES international enrollment has now increased to more than 30 percent – the majority of all students in the Classes of 2007 and 2008 have received scholarships or financial aid packages. By any measure, the financial aid program at F&ES has improved under Dean Speth, increasing to \$2.8 million from \$786,400 since 2000, when he arrived.

"In six years, we've more than tripled the amount of financial aid, which sounds impressive, but we are nowhere near where we need to be," said Zemba.

Of the top 115 applicants to F&ES this year, in fact, the available aid covered only one-third of these prospective students' expenses. This, to Speth and the Financial Aid Office, is unacceptable. In a recent fund-raising letter, the Dean wrote, "Better scholarship aid is the most critical challenge we face at the school. ...What is happening now is a true tragedy, given the environmental challenges that lie ahead."

"We have a 'needs-blind' tuition policy," said Zemba. "We don't look at the ability to pay while considering an applicant, but



Anil Pokhrel '06



Baruani Mshale '08



Korinti Recalde '08



Rachele Gould '07

how many students had to decline their admissions offer due to lack of funding?"

Anil Pokhrel, who earned an M.E.M. at the Yale School of Management and F&ES, never gave up on his Yale dream. As he wrote in a student essay, "I dreamed of furthering my knowledge by studying in the best U.S. university, but I was poor and the only path to get there was through scholarship." He began applying for scholarships in 2003 and was rewarded the following year. "My work, previous academic achievements and my determination helped me win the coveted 2004 Fulbright Fellowship from Nepal. I then applied to the Yale School of Forestry & Environmental Studies and was very happy to find my dreams come closer when I got admitted."

He faced one last hurdle: the Fulbright scholarship didn't cover all of his fees and tuition. "The F&ES scholarship helped me bridge my final difficulty," he wrote. "I would not have been able to attend F&ES without that generous support." Soon after

being accepted, Anil celebrated by seeking out four other Yale graduates who were then living in Nepal. “We met for dinner, and the ‘Yale Club of Kathmandu’ was born.”

Baruani Mshale received a B.Sc. in wildlife science and conservation from the University of Dar Es Salaam in June 2006. He wanted to continue schooling but was undecided where to turn. He considered working for one year with Savannas Forever, a University of Minnesota-led project on game-controlled areas in Tanzania and Botswana. But, in February 2006, an F&ES delegation visited universities in South Africa, Kenya and Tanzania. Baruani met Emly McDiarmid '78, director of admissions, who told him about the full master's-degree program at F&ES and encouraged him to apply.

“For me, it was more of a dream – you know, ‘wow, the Ivy League,’” he said. He applied in February, was accepted by March and arrived in New Haven in August, his first time in the United States. He hopes to pursue a joint degree with the School of Management, focusing on international development economics.

“I don't worry about the expenses right now,” he said. “The scholarship covers \$27,000, I do work study five hours a week and I have taken out a loan for the

rest (\$14,465).”

Baruani wants to study how policy is made in international organizations and then how that policy is put into action – one of the conundrums facing environmentalism worldwide, but particularly in sub-Saharan Africa. He envisions working in natural resources management for an organization such as the World Bank or the World Wildlife Fund. He is precise in his ambitions.

“I will work for five years in the policy field and then do research on areas that are often neglected, like sustainable development,” he said. “Economic development is inevitable, but the natural resources are depleted. How do you have the former while preserving and protecting the latter? I want to be influential in answering that question.”

Korinti Recalde has found the atmosphere at F&ES refreshing after nearly five years in the private sector with a job in information management.

“The students genuinely care and want to make an impact,” she said. “They're intelligent, well-traveled and informed on international issues. They are not going into this for the money, which is good because getting into environmental policy is not the pathway to wealth.”

Though she was born in Quito, Ecuador, Korinti moved to the United States as a child and was raised in New Haven. Her father is Ecuadorian, her mother Polish and her husband Israeli. “We have every race in the family,” she said, laughing. She received a B.A. from Boston University in economics and environmental policy and analysis in 2001, and took a job with Booz Allen Hamilton upon graduation.

“I am fortunate that my tuition is covered by scholarship through the F&ES program,” she said.

Ultimately, Korinti wants to return to the private sector, having realized that any solutions to environmental problems must include the business community. “I worked on Superfund sites and regularly saw the aftereffects of pollution, the negative impacts of industry. Now I want to work within industry to prevent these sorts of things from happening in the first place.”

Rachelle Gould is working toward an M.E.Sc. that focuses on social ecology

conservation and development. While an undergraduate at Harvard, she had a “conversion” experience during an intern project in Costa Rica. Upon her return to school, she switched her major from Hispanic studies to environmental science and public policy, receiving her A.B. in 2003.

“I flipped my major after I visited the tropics,” she said. “I noticed the ecosystems weren't being taken care of and thought, ‘if this was going on in Costa Rica, which is



Alphonse Fletcher Jr.



Josie Merck

considered a model of enlightened stewardship, what's going on elsewhere?”

After Harvard, she worked in Chile for two years, first as an unpaid intern, then on a fellowship in public service from the Ann and Elliot Richardson Foundation. She was a liaison within the country and a field organizer for a 1.4-million-acre biological corridor, 78 percent of which is private land. By the second year, she was a paid employee of The Nature Conservancy.

“The experience in Chile taught me a holistic approach to land conservation, seeing the larger picture,” said Gould. “What I did covered the whole spectrum of provincial government, herders and landowners, creating a network.”

When it came time to consider going to graduate school, she looked not to Harvard, but to Yale. “They don't have a program like Yale's, and nothing like its vibrant community. F&ES really has a reputation across all of Yale's schools for being more community-oriented, united and fun. Students may have many reasons for enrolling in other Yale schools, but at F&ES one of the major ones is emotional. I feel very lucky.”

Rachelle received a scholarship to F&ES that covers tuition but not living expenses.

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Bob and Sharon Buchanan

Michael Ciesielski



1942

Richard West writes: "I have moved from New Jersey to Florida. I will continue to be our class agent for '42, but regret that there are only a few of us left. I think we were the largest class to graduate just before World War II. As a professor at Rutgers, I encouraged a number of our students to attend Yale; for example, **Bill Smith '63** and **Ann Camp '90**, who is doing fine work and excellent informative writing."

1946

Class Secretaries:

Paul Burns pyburns@lycos.com

David Smith david.m.smith@yale.edu

Cliff Bryden's wife, **Burna Dean Bryden**, writes that Cliff will be 90 in December. He retired after 26 years as woods manager for Roseburg Forest Products. His first wife of 42 years died in 1982. They had three children. In 1986, he married **Burna Dean Friedrichs**, who had two children, so together they have seven grandchildren and three great-grandchildren. Cliff's hobby has been travel, and his favorite places are the out-of-the-way corners of the world. Since he has Alzheimer's, his and his wife's traveling days are limited. He told **Burna Dean** to relate that every place in the world holds its own special beauty, culture, history and landscape. ■ **Paul Burns**, now 86, retired from Louisiana State University's School of Forestry, Wildlife, and Fisheries 20 years ago. He has kept an office at the school and helps in various ways, including review of faculty manuscripts and providing historical information about the school. As an example, he recently helped a retired forester in Georgia, who was trying to get a copy of a poem about a forester written by **Calvin Stott '25**. Stott worked for the U.S. Forest Service in its State and Private Forestry section, headquartered in Wisconsin. Stott is long deceased, but Burns was able to track down his grandson, who helped find the poem. Titled "Hundeshagen's Lament," it was a parody of *The Night Before Christmas*. Those who remember forest management instruction under H.H. Chapman or Walter H. Meyer will perhaps remember that Hundeshagen was a

German forester in the 1800s who developed a formula for determining the yield obtainable in a forest, based on the forest's growing stock.

1947

Class Secretary:

Evert Johnson

swede-doc@mindspring.com

1948

Class Secretary:

Francis Clifton fhcpbyfor@webtv.net

Francis Clifton writes: "Last April, I flew a Navy patrol PBV aircraft that I had flown in Hawaii in 1944 during World War II. Remembering how and doing it again 62 years later exposed that time gap." (See related photo on the F&ES website.) ■ **Walt Henson** and his family had a respite from Winnipeg winters and celebrated his 80th birthday in February with a long Caribbean cruise.

1950

Class Secretary:

Kenneth Carvell kencarvell@aol.com

1951

Class Secretary:

Peter Arnold arnoldp@nccn.net

1952

Class Secretary:

Milton Hartley redhedded@olympus.net

1953

Class Secretary:

Stanley Goodrich slmygood2@cox.net

Tom Norton writes: "Sold our home of 33 years prior to going into an independent living cottage at Coburg Village in Rexford, N.Y. I never did actively follow a career in forestry. I spent two years in the Air Force, two years teaching at a private school and a year and two summers on either side attending Albany State University, which prepared me for a successful and rewarding career teaching physics in public high school. I had many summers with NSF grants and 10 years with the Atmospheric Sciences Research Center (part of SUNY, Albany), which included sabbatical research on natural air pollutants such as alpha and beta

pinenes. In 1984, I was one of five finalists in New York state for NASA's Teacher in Space Program."

1954

Class Secretary:

Richard Chase rachase@aol.com

1955

Frank Carlson writes: "In my time as a student in the Yale Conservation Program (YCP), it was refreshing to be able to take courses in other departments without the usual prerequisites. The day that I arrived at the front of the brownstone on the corner of Prospect & Trumbull Streets, I met **George Lamb**. Shortly thereafter, the door of the building opened and out walked **Mrs. Aldo Leopold** and her daughter, **Stella**. **George**, a student of wildlife management at Ohio State University, about fell over. I was at the bottom of a very steep learning curve in the conservation movement. Now, over 50 years later, I've come to realize that my career was influenced largely by two botanists: **Dr. Paul Sears** and **Prof. Warren**, then chair of the Biology Department at Tufts College. It was **Prof. Warren**, a wonderful teacher in his own right, who suggested that I might consider applying to the YCP. I would never have known of it otherwise."

1956

Class Secretary:

Jack Rose jackarose@sbcglobal.net

1958

Class Secretary:

Ernest Kurmes ernest.kurmes@nau.edu

Doogie Darling writes: "A friend and I are trying to complete a paper on the early logging history of **Crossett Lumber Company**. It will be published in the *Arkansas Historical Quarterly*."

1959

Class Secretary:

Hans Berg hberg16@aol.com

1960

Class Secretary:

John Hamner jhamner@bellsouth.net

Bob Donnelly writes: "Eighteen years ago, I transferred into the Southern

class notes



Hemisphere with Christchurch, New Zealand, as my principal residence and a connection with Brazil. The transiting between these two locations continues. Part of the year involves lecturing at the School of Forestry (University of Canterbury) in Christchurch, and the balance of the year I spend doing consulting project work, which has been largely in Brazil. Plantation forestry in Brazil is achieving international prominence with both southern pine and eucalyptus forests. Some industry sectors are taking off. There are new developments in eucalyptus market pulp that lead the international industry in operational excellence, in both scale and performance, including environmental and social objectives. For those interested in Brazil, there is a forest industry tour offered annually in April, which I co-sponsor (visit www.worldforestinvestment.com). ■

John Hamner writes: "Annette and I retired from Union Camp Corporation in 1994, following a little more than 37 years employment, and returned to a home we owned in Bellville, Ga. I retired as a regional land manager, Alabama Woodlands Region. My career as a forester was most rewarding and enjoyable. We are both in reasonably good health and able to enjoy life. We participate in local activities and travel to some extent to see family, friends or just to be tourists. The best part of retirement is being able to do what I want to do when I want to do it!" ■

Pete Huberth writes: "I am in business as a forestry consultant and work about half-time. I am pretty much down to one client with small 'handshake' deals along the way. Over the last eight years or so I have done quite a bit of pro bono work assisting the State of Alaska with formulating a hydrogeomorphic system for classifying and measuring rain-fed anadromous (salmon) streams in Southeast Alaska and in formulating HGM for slope wetlands immediate to those streams. When not fooling around in forestry, I travel, bicycle, alpine ski and survive orthopedic operations. I have had both of my hips, shoulders and knees (November 2005) totally replaced due to osteoarthritis. Skiing is the easiest thing I do, with emphasis on light snow hiking to stay off the

groomed runs, because I prefer powder and junk. Later this month I expect to ski on the south island of New Zealand, where I have skied before. Besides my skiing in various areas, Jan and I travel to Europe every October, where we drive to see some of my family, visit friends, visit art museums and stop to look at stand management techniques from Finland to Portugal and points in between. Some sites I have visited for close to 20 years, including watching them recover from acid rain. I have one son who lives in Seattle, so I see him and his family several times a year. Unfortunately for him, his place becomes my convalescent center until I can go home after operations." ■

Jon Liles writes: "I am tentatively scheduling total knee replacement for this fall after hurricane season. I am sure you all have heard the saying, 'Old foresters never die; they just pine away.' That is going to be me. I will keep on 'til I wear out. Hope all of my classmates are doing the same. If any of you are ever down this way to Edisto Island, S.C., give me a call. Anyone interested in house-sitting on the creek?" ■ **Art Sundt** writes: "We decided to pull out of Costa Rica, where we had wintered for over 20 years. We sold our beach house and were left with our 33-acre ranch about a mile from tidewater (Gulf of Nicoya). Nice place with pastures, high rocky hills, a creek meandering through huge timber trees and all kinds of fruit trees. Prospective buyers were plentiful enough, but either they had no money or were developers planning on making their fortune by turning our little paradise into a rural slum. Sorry! We contacted the SUNY Forestry School in Syracuse, N.Y., my alma mater. They were interested and sent a faculty member to check us out. The property committee in Syracuse went into a huddle and agreed unanimously to 'go for it.' We're in the paper stage right now, but it looks like a sure thing. We don't know yet what the facility will become, but it may be a good start for those interested in tropical ecology. This is my hope. (Students or faculty interested in knowing more, contact Bob Quinn at SUNY College on Environmental Science and Forestry.) We are secure in our Alaska home. We

hope to do some traveling this fall or winter." ■ **Seijuro Uraki** continues to work in the hotel business in Japan, with Hotel Urashima, Manseiro, Urashima Harbor Hotel, Kawayu Midoriya and Matsuya. The region where they operate the hotels has an ancient mountain trail that is on the World Heritage List. There are also many ancient shrines and temples, beautiful sea and shore area, forests, mountains and rivers and falls and hot springs. Travel there is about seven hours from Tokyo and four hours from Osaka by train.

1961

Class Secretary: *Roger Graham*

Lee Miller writes: "After eight years as a member and chair of the board of the local public library, I retired last fall and took up volunteer tutoring of English as a Second Language. The difficulty of learning a second language as an adult is well known to me, after struggling with French at age 55 and Italian at age 70, so I have great empathy for my students. Sylvia and I have enjoyed vacations abroad almost every year since 1987, when we spent a sabbatical year in southern France. We fell in love with Italy in 1992, and have enjoyed several trips there. When we took the year-long freshman Italian course at Cornell in 2000-2001, we substituted a month on a farm near Lucca for the final exam. Recent travels included trips to China, India, Romania, Czech Republic, Croatia and Slovenia. In 2003, we returned to France to celebrate our 50th wedding anniversary with our two kids, their spouses and our four grandchildren, and then spent a week with friends from Ithaca. I still enjoy bicycling, just as I did at Yale, when I biked to the Forestry School every day from our Quonset hut on the polo field across from the Yale Bowl." ■ **Scott Wallinger** writes: "I continue to be busy in retirement on several forestry fronts, including participation on the National Commission on Science for Sustainable Forestry, as well as serving as vice chair of the Forest History Society. In June, I helped the Joseph W. Jones Ecological Research Center to convene a meeting of

diverse interests in actions to sustain public and media support for the use of prescribed fire to maintain critical forest ecosystems. Several states now have RxFire Councils that deal with pending changes in EPA regulations on particulate emissions that could affect prescribed fires, as well as the legal liability, urban interface and other challenges. But I've worked the forestry activities down to a level where they don't interfere too much with golf, boating, fishing, hunting, grandchildren, travel and such!"

1962

Class Secretary:

Lary Safford lsaffordnh@earthlink.net

1963

Class Secretary:

James Boyle forsol40@comcast.net

1965

Class Secretary:

James Howard jhoward@sfasu.edu

1966

Class Secretary:

Howard C. 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@newenglandforestry.org

1971

Class Secretary:

Harold Nygren tnygren@juno.com

1972

Class Secretary:

Ruth Hamilton Allen
ruth.allen@aehinstitute.com

Phil Nemir continues to work and live

on the pine-covered slopes of the northeastern Sierra Nevada on the edge of the Great Basin. He lives with his British companion of 17 years, Lynda Jackson, and his 5-year-old corgi, Lewie. He manages over 7,000 acres of forestland for small private landowners, is active in local conservation projects and is recognized as a group resource manager by the Forest Stewardship Council. He had the good fortune of meeting Piet Blanksma '71 in France and Bill Burch in our neck of the woods in the past year.

1973

Class Secretary: [Open]

Lauren Brown would like to hand the reins to a new secretary. Thanks to Lauren for many years of service! Contact alumni.fes@yale.edu if you are interested in serving the Class of 1973 in this role.

1974

Len Lankford told us about some of the innovative technologies he's working on with Greenleaf Forestry and Wood Products (www.greenleafforestry.com). He writes: "We were awarded a Woody Biomass Utilization Grant for \$243,500 by the U.S. Forest Products Lab. It will be used for equipment to process small-diameter fire hazard mitigation wood into fencing and railing systems. Our next building has been started, and will be 10,000 square feet for a super-size showroom. I hope this will become a center of sustainable stewardship forestry for the region. I have been appointed as the coordinator of our county-wide Community Wildfire Protection Plan, and this process is the catalyst for instilling an interest in long-term forest health and related forestry practices here. My daughter, Angela (a Williams College economics graduate), continues to practice sustainable economic development in Tibet and China. She secured grant assistance for this work from WinRock International. See her website, www.definitelynomadic.com. My other daughter, Claire Harper (a Duke University M.E.M. graduate), works in the Forest Legacy Program at headquarters, Cooperative Forestry, USFS, in Washington, D.C. Her husband,

Craig Harper, works at NRDC in Washington, D.C., and their first child is named Wilson Leopold Harper." ■ Judith Stockdale writes: "I continue as executive director of the Gaylord and Dorothy Donnelley Foundation in Chicago. The foundation's mission is land conservation and arts vitality in the Chicago region and the low country of South Carolina. It's rewarding work, and preservation of some substantial lands has been possible. I am married to Jonathan Boyer, who obtained a master's degree in architecture from Yale in 1974 and is now with Farr Associates, building sustainable buildings (two LEED Platinum buildings in Chicago). I have two daughters: Sarah, an assistant designer at True Religion (graduated from Scripps College in 2003), and Julia, a senior at Kenyon College."

1975

Steve Levy writes: "I made my first trip to explore Alaska with classmate Jaynee Levy in 1974, while still at Yale. I just completed my sixth wilderness trip there, hiking for 10 days in the Alaska Range east of Denali. I enjoy it as much as ever and have been blessed with good health. Retirement and my ongoing work with other people's children continue to be rewarding." ■ Jacqueline Russell writes: "I'm in my sixth year as an assistant attorney general for the State of Maryland, Department of Environment, primarily handling enforcement cases in the areas of wetlands, water pollution and solid waste. I'm also a member of the advisory board of BEADs (www.beadsforeducation.org), a non-profit organization devoted to enhancing the status of young girls and women in Kenya and to promoting environmental awareness. The latter gets me to Africa every year and, in addition to being awed by the wildlife and the natural beauty of the place, brings home the troubling reality of the status of women in the developing world."

1976

Thomas Barounis writes: "I am still with the U.S. EPA, Region 5 (Chicago), and I still work in the Superfund program as a remedial project manager. Our strategies for cleaning up contam-

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



inated soil and ground water, and other media, continue to evolve. I have now been married to Diane, whom I met at Yale, for 31 years. Our son, Timothy, has completed his medical studies and is now a resident at the University of Illinois Hospital in Chicago. Our daughter, Cynthia, is well on her way to a Ph.D. in English, also at the University of Illinois. I regret that, despite my best intentions, I was unable to be at the class reunion, especially since one of my classmates, **Phil Conkling**, was honored for his work with the Island Institute.”

1977

Class Secretary:

James Guldin jguldin@prodigy.net

Jim Guldin is project leader for the USFS Arkansas Forestry Sciences Lab of the Southern Research Station, and deals with studies of the ecology and management of upland forests in the mid-South. ■ **Phil Hoose**, author and conservation planner, has won the 2005 Boston Globe-Horn Book award for nonfiction writing for his book on the ivory-billed woodpecker, *The Race to Save the Lord God Bird*, published in 2004 (see Bookshelf, page 17). He has also been on the road with his multimedia presentations for audiences of all ages of this and other titles.

1978

Class Secretaries:

Susan Curman curman@brandeis.edu

Marie Magleby lomamag@aol.com

Regina Rochefort

regina_rochefort@nps.gov

Peter Falco writes: “I am with Rockwood Capital LLC in Greenwich, Conn. Rockwood is a private equity real estate investment firm, doing investments in all types of commercial property – office, retail, residential and hotel, plus R&D, throughout the United States. I’m responsible for raising the debt and equity for all of our investments, as well as a bit of portfolio management. We do a lot of land planning, entitlement and development projects. I went to the first Yale Real Estate Alumni gathering.” ■ **Gina Rochefort** writes: “Carol Aubry and I have been working together on an

interagency whitebark pine working group for the last several years. In August, we were invited to give a joint presentation at the Pacific Coast Whitebark Pine Conference in Ashland, Ore. Our topic was ‘Whitebark Pine Restoration: Where Do We Go From Here?’ We are also completing a genetic survey of whitebark pine in national forests and national parks in Washington. Carol is the area geneticist for the Olympic, Mount Baker-Snoqualmie, Okanagon and Wenatchee national forests. I am a science advisor at North Cascades National Park.”

1979

Class Secretary:

John Carey carey@aya.yale.edu

Chris Brown is director for wilderness and wild and scenic rivers for the National Park Service. The new job is “really interesting, fast-paced and challenging,” he writes. ■ **Dorie Faulkner** writes: “I retired from the environmental consulting business close to 10 years ago and became a caregiver for my parents. One thing led to another, and I found myself in a second career working with the elderly. I have five grandchildren ages 8 to 1, two boys and three girls, and they all live within a couple hundred miles of us. My husband, Gerry, and I downsized a few years ago and moved to the Gainesville area (University of Florida). Our little cabin in the woods is surrounded by three different habitat types.” ■ **Bob Perschel** writes: “I’m regional director for the Forest Guild, working part-time for the organization to develop a Northeast regional program. I just finished writing a publication called ‘Ensuring Sustainable Forestry Through Working Forest Conservation Easements in the Northeast: A Forest Guild Perspective.’ Over 120 foresters attended our guild’s Northeast regional meeting on sustainable forestry, an indication that there is tremendous support for a more ecological approach to forestry. I continue to explore an expanded model of environmental leadership that integrates ethics, emotions, our connections to the natural world and our spiritual lives. In June, I finished a two-year appointment at Yale as an associate research scholar, and

last summer I began writing a book, currently titled *The Heart and Mind of Environmental Leadership*.” ■ **Pierre LaFond** stepped down as director of a forest research institute in Quebec City 10 years ago to run an orchard and cider mill on the banks of the St. Lawrence River. His wife, Patricia, writes: “We bought an abandoned orchard in 1977, and we’ve been living off of it since 1996.” The Lafonds make hard cider, jams, jellies and even bread with apples. They have three children. One of their most interesting products is ice cider, made from frozen apples. So far, the Lafonds are selling the ice cider (which goes for \$20 to \$25 for a half-bottle) only in Quebec, but are looking to export it to the United States. ■ **Robert McKinstry** writes: “I’m starting my last year of my final term as the Goddard Professor at Penn State. My book, *Biodiversity Conservation Handbook: State, Local, and Private Protection of Biological Diversity* (with co-editors Coreen M. Ripp and Emily Lisy), has been published by the Environmental Law Institute. I’ve also been representing a group of the leading climate-change scientists, who are participating as amici curiae to the Supreme Court in the case *Massachusetts v. EPA*. I’m continuing to teach courses on climate change and on biodiversity and land conservation law. I’ve been doing quite a bit of speaking and writing on climate change and biodiversity conservation. I’m working on a research project involving use of habitat banking and habitat conservation plans for the protection of the bog turtle in the Northeast, where fractured local government control over land use makes the model employed by USFWS more difficult. **Jim Thorne ’80** is another principal in that project.” **Robert and Betsy Rich** were divorced last December. Their son, Andrew, is in his third year of medical school at Columbia University’s College of Physicians and Surgeons; their other son, Spencer, worked on the campaign to elect Bob Casey to the U.S. Senate from Pennsylvania; and their daughter, Erin, is a freshman at Penn State University. Betsy is living in Philadelphia, and continues to teach

undergraduate ecology and related courses at Drexel University.

1980

Class Secretary:

Sara Schreiner-Kendall
sara.kendall@weyerhaeuser.com

1981

Class Secretaries:

Fred Hadley mrm@evansville.net
Carol Youell envstew@snet.net

Femi Olaleye writes: "Extend my regards to the Dean, professors, staff and students of F&ES. I missed seeing members of the Class of 1981; I send my special greeting to all of them. It will be my delight to welcome any of them to Nigeria."

1982

Class Secretaries:

Barbara Hanson Forestsrus@aol.com
Kenneth Osborn forstman@fidalgo.net

Miguel Musalem, Ph.D. '84, has been designated Distinguished Silviculturist by the National Academy of Forest Science of Mexico. ■ **Ken Osborn** is still residing in Mt. Vernon, Wash., but plans to spend a couple of months each northern winter at a second home on the North Island of New Zealand, where he manages some forestland held by German owners, for whom he also manages forest holdings in Washington State.

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 Secretary:

Alex Brash abrash@npca.org

1986

Class Secretary:

Caroline Norden cnorden@maine.rr.com

1987

Class Secretaries:

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

Heidi Albers, associate professor of forest resources in the Oregon State University's College of Forestry, is focused on the huge growth in the conservation of land by private trusts in America. Her research is supported by a three-year, \$320,000 grant from the National Science Foundation, and is a collaborative undertaking with the University of Illinois. From 1998 to 2003, about 1,500 private trusts more than doubled the amount of U.S. land that such groups have been able to protect for conservation purposes – species protection, flood control and recreation. Findings indicate that even more conservation benefits could be gained by coordination among different groups or government land-protection programs with similar goals. Heidi writes: "In the 1990s, there was a significant increase by private groups to obtain or protect land for conservation purposes. A question was whether those uncoordinated efforts could produce the patterns of conservation that society prefers. We found that there are a number of ways that private and public agencies could generate more conservation value."

1988

Class Secretaries:

Diane Stark salserad@yahoo.com
Philip Voorhees pvoorhees@ncca.org

Anne Buckelew Cumming continues to live with her family in West Virginia and work for the USDA Forest Service in the Urban and Community Forestry Program. When not worried about emerald ash borer, Asian Longhorned beetles or crown dieback, she's been racing in local and regional 5K races and watching her seventh-grade daughter participate in softball, lacrosse and cross-country. ■ **Heidi Margrit McAllister** received the 2006 Sustained Achievement Award from the Renewable Natural Resources Foundation (see article, page 19). ■ **Cristin Gallup Rich** writes: "I am working part-time as a consultant to the Hotchkiss School Environmental Initiative on 'greening campus' issues. Other news is that I was elected to the planning and zoning board last fall. We are in a significant planning mode, which draws on many of my interests

and some skills. I primarily continue to really enjoy the time with my family, especially my twin daughters, who are 12 and entering seventh grade this fall. My husband is working on affordable housing and part-time on clean-water technology distribution." ■ **Diane Stark (Pierce)** and her two daughters, Allyson, 15, and Phoebe, 12, still live in the San Francisco Bay Area. In addition to her day job improving transportation in the congested Bay Area, as well as playing piano and salsa dancing, Diane just successfully completed her first triathlon at Pacific Grove, Monterey. She was training as part of the Team in Training program for the Leukemia and Lymphoma Society, and was part of a team that raised \$1.2 million for research and patient services for blood cancer patients.

1989

Class Secretaries:

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

1990

Class Secretaries:

Judy Olson Hicks
Carolyn Anne Pilling capilling@gds.org

Seema Bhatt writes: "I continue to work as an independent consultant on biodiversity issues in India. My focus in the last year has been more on ecotourism. I am in the process of finalizing a book, which is an analytical perspective of ecotourism in India. I have co-authored this book with another colleague. I am also working on a management plan for sustainable tourism for a high-altitude lake in Ladakh, in the Himalayas." ■ **Phil Liu** writes: "I am now living in Wilmington, Del., with my spouse, Kate, 5-year-old daughter, Tully, and 15-year-old cat, Moto. I have been working as a cell and molecular biologist for Incyte Corp., a biotech firm engaged in drug discovery, for the past four years." ■ **Marco Lowenstein** writes: "I am in La Ceiba, Honduras, working with cooperatives operations in the Rio Platano Biosphere Reserve to develop products for export to the United States. Otherwise, I am living and working in Portland, Ore., for the past four years

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with my wife, Charla, and two children, Micah, 10, and Kaileah, 6. I work for North American Wood Products (NAWPI), a lumber import and export firm, where I manage the Latin American purchasing program. NAWPI (www.nawpi.com) is heavily involved in the purchase and sale of sustainable and FSC-certified forest products, as well as wood for musical instruments, flooring, doors and distribution. I am working with community organizations from the Selva Maya Biosphere Reserve in Guatemala and the Rio Platano Biosphere Reserve Honduras to develop sustainable products appropriate to their unique conditions. In the past year, I have been to Guatemala, Honduras, Peru, Bolivia and Brazil.”

■ **Susannah Troner** writes: “I am working for the Miami-Dade County’s Office of Strategic Business Management, trying to find grant revenue for the county’s coffers and doing my best to focus on environmental issues. My family and I recently trekked to the Washington, D.C., area for an extended July 4th holiday, and visited with Tom and Joan (Becker) Kelsch ’91 and kids, and Tara Evans, hubby Steve Shimberg and kids. I sent a picture from Tom and Joan’s wonderful backyard in Washington, D.C. [See the photo at <http://environment.yale.edu>.]

1991

Class Secretaries: [Open]

Dorothy Beardsley and **Kristin Ramstad** want to retire. Many thanks to both for their years of service! Please contact alumni.fes@yale.edu if you are interested in taking up the class secretary role for the Class of 1991 – thank you!

1992

Class Secretary:

Katherine Kearse Farhadian
farhadian@aya.yale.edu

1993

Class Secretaries:

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

1994

Class Secretaries:

Jane Calvin jcalvin@prospeed.net
Cynthia W. Henshaw
chenshaw@newenglandforestry.org
Jane Whitehill
janewhitehill@hotmail.com

Jane Calvin writes: “**Andrew Beckerman** and wife, Sophie, are doing well in Sheffield, England. Andrew is an assistant professor at the University of Sheffield, and Sophie recently retired from chopping trees with chainsaws, because they’ve just had a baby girl, Rosie Eva. We saw **Mark Bryer** and family in London a few months ago, and we should be seeing **Kristina Rothley** in October. **Mark and Sue Bartow** announced the birth of their second child, Quinn, on July 4. Mark still works for TNC, with a focus on Chesapeake Bay and South American freshwaters.” ■ **Cynthia Caron** writes: “I remain in Sri Lanka, where the conflict is intensifying. I have been given extra duties and am now overseeing relief in the eastern province for the 30,000-plus displaced persons who have fled aerial bombings since August.” ■ **Anne Downey** and her family have moved into a newly renovated house in a great neighborhood, where the kids can ride bikes and jump rope while she sits on her front porch and hangs out with her friends. She writes that **Diana Wheeler**, **Sean Murphy** and **Lindsey Brace** have already stopped by, and they welcome more F&ES visitors to Hanover. *Anne.Downey@valley.net* ■ **Holly Ferrette** writes: “We have been in La Paz, Bolivia, now for over a year. I am director of the USAID/Bolivia Environment Office, and Fernando is with the Wildlife Conservation Society. It has been an incredible time to be here, as major political and social changes are in the works and we feel that (for better or worse) we have a front row seat for history in the making! Fortunately, when things get too intense, we can easily escape to places nearby that offer incredible beauty and tranquility. Our older daughter, Dharma, is now a first grader as well as the proud big sister of our latest addition to the family, Tessa Paz, born on May 15. We

were able to catch up with **Joaquin Leguia** earlier this year during a visit to Peru, as well as with **Jamison Suter** when our paths crossed in D.C. I can be reached at hferrette@usaid.gov.” ■ **Andrea Gaut** writes: “My exciting news is that my husband and I are expecting our first child in mid-November. I will now be entering the arena so many of our peers have already entered – trying to balance it all!” ■ **Guido Rahr** is president and CEO of The Wild Salmon Center and The Natural Capital Center in Portland, Ore. He recently returned from Kamchatka, and earlier this summer was on an expedition to the Koppi River, which flows from Russia’s Sikhote Alin Mountains into the Sea of Japan. In addition to bears, wolves, Amur tigers and the elusive Blakiston’s fish owl, the Koppi watershed is home to the Sakhalin taimen. This ancient sea-going “trout” feeds on the adult salmon that migrate to the Koppi River each year. Sakhalin taimen have become rare, but specimens over 70 pounds are still caught each year (his goal for 2007 is to catch a big one on a fly). On the home front, he and Lee welcomed a third boy into their family: Henrik Tucker Rahr, now a year old. grahr@wildsalmoncenter.org ■ **Nicolas von der Schulenburg** has left CAM Private Equity. Does anybody have a current email for him? ■ **Donna Stauffer** moved back to the United States in June after 11 years abroad, most recently more than two years in Mozambique, where she served as deputy director to the U.S. Agency for International Development’s \$70 million foreign aid program. She’s been in the Foreign Service since 1982 and was promoted earlier this year into the Senior Foreign Service. She’s now director of strategic information, monitoring and evaluation in the Office of the Director of Foreign Assistance at the State Department in Washington, D.C. She and her husband, Robert Miller, celebrated their 10th anniversary in June. Donna considers the opportunity to travel to some unusual places and to experience some fascinating cultures a major benefit of her profession, with climbing to the top of Mt. Kilimanjaro (the highest mountain in Africa) in Tanzania a highlight of

this year. StaufferDR@state.gov ■ **William Stevenson** writes that he and Rika have a new baby boy – their third – Herrick Wilson Stevenson, who arrived on June 29. “We’re not sleeping, but having a blast.” westevenson@yahoo.com ■ **Graham Trelstad** says he’s still a consulting city planner with AKRF in White Plains, N.Y., three doors down from **Jim Nash**. Graham also started teaching site planning and design at Columbia’s Graduate School of Architecture, Planning and Preservation. He plans on teaching everything he learned in Hydrology, TerrEco, Soils and Silviculture in one two-hour lecture. Oxygen and paramedics will be on standby. In his spare time, he works on “being a hip dad to Ellie and Lizzy, who are now entering seventh grade, and a supportive husband to Julie, who is launching her own publishing company, Plain White Press.” Graham_Trelstad@AKRF.com ■ **Michael Webber** writes that he began his fourth year of teaching at Trinity Pawling School in New York. He is teaching chemistry and two environmental science courses, as well as coaching football and baseball. He and his wife, Sue, spent this past summer with their two boys, Larry, 8, and Joe, 6, at their beach house in Old Saybrook, Conn. “Like me, the boys enjoy swimming, boating, crabbing and fishing. Too many crabs and fish to count. All fish were safely released, except one!” mwebber@trinitypawling.org ■ **Jane Whitehill** makes sure to go to as many parties as possible, including the terrific and continuing New York TGIFs organized by **Javier Dominguez** and **Monika Kumar**. janewhitehill@hotmail.com ■ **Jessica Bennett Wilkinson**, her husband, Eric, and sons Josh, 6, and Ethan, 3, live in Pennington, N.J. Jessica continues to work from home for the D.C.-based Environmental Law Institute, where she directs its wetlands and state biodiversity programs. While traveling for work last February, Jessica visited with **Macol Stewart Cerda** in Chicago and **Dave Moffat** and **Carol Hall** in New Hampshire. In April, on a family visit to D.C., Jessica visited with **Mark Bryer** and his then soon-to-be expanding family (now expanded by a second son). She also had the

pleasure of meeting **Stephanie Flack’s** son, Alexander, while in Washington. eliwilkinson@comcast.net ■ **Ted Wong** and his partner, Michelle Mancini, announced the birth of their daughter, Tilia April Wongcini, on April 24. Ted writes that Tillie enjoys looking up at trees, including the many lindens on the sidewalks of Philadelphia. Ted has created a new, free Web-based mapping service, Mapsprout, and invites everyone to try it out (www.mapsprout.net). tgw0@yahoo.com

1995

Class Secretaries:

Marie Gunning mjgunning@aol.com
Ciara O’Connell cmoconnell@comcast.net

Francisco Becerra is stationed at Pachuca, Hidalgo, where he conducts forestry and agroforestry research and edits publications in these fields for Mexican governmental agencies, including the main national forestry school at the University of Chapingo. ■ **Marie Gunning** and her husband, Michael Murphy, were blessed with the birth of their son, Christopher Francis Murphy, at Maine Medical Center in March. Chris joins his big sister, Mary Kate, who is now a very active toddler. Marie is a consultant, supporting sustainable natural resource use and socially responsible investment. ■ **Adam Moore** writes that he and Melissa had a son, Robert James Moore, on July 22. He weighed 9 lbs. at birth. Robert was born at home in Durham, Conn., and was welcomed by his big sisters, Madeleine, Isabel and Ingrid.

1996

Class Secretaries:

Kathryn Pipkin kate@goodisp.com
Julie Rothrock jarothrock@aya.yale.edu

Gary Barrett is in Sudan serving as the team leader for the USAID Office of Foreign Disaster Assistance, Darfur field office. USAID has had a team responding to the humanitarian crisis in Darfur since spring 2004. USAID and its NGO partners are also exploring ways to mitigate the environmental impacts of the crisis through better resource management. ■ **Deron Chang** writes: “I’m still teaching at Choate Rosemary Hall, a boarding school about 20 minutes north of Sage

Boy. The difference is that I am on sabbatical this year, and I hope to spend all this extra time with my offspring, Abigail, 5, and Callum, 1. Penny and I are struggling to stay sane as we patiently await the days when Callum will sleep through the night. It was great to see **Bob Fitzgerald**, **Kris Phelps**, **Ted Wickwire**, **Anne Reynolds**, **Dave Ganz**, **Bill Martin** and all of their spouses and kids at the reunion.” ■ **Sarah Hick** writes: “I am at the University of Minnesota working on my Ph.D. in curriculum and instruction with a focus on science education. I plan to finish in August 2007. I am also working with a team to open an experiential-education urban charter high school with an environmental focus. I had a commitment ceremony with my partner, Suzie Darnell, on October 14.” ■ **Ali Jalili** moved to Moscow in June 2006 with his family. Ali is a Foreign Service officer with the State Department, and his wife, Courtney, is a Foreign Service officer with USAID. Ali will study Russian for a year, and then will be the energy officer at the Embassy. They and their two boys, Brady, 5, and Aidan, 3, will be in Moscow until the summer of 2010 and welcome any visitors. jalilichubb@yahoo.com ■ **Adena Messinger** made a career change a short while ago. She writes: “I went back to school for a degree in city and regional planning. I now work for the North Carolina State University Department of Transportation, and my title is transportation planner.” ■ **Jennifer Pett-Ridge** writes: “I finished my Ph.D. in soil microbiology and biogeochemistry in 2005 and moved onto a postdoc at Lawrence Livermore National Lab. The job is great and is exposing me to lots of new opportunities. Last fall, my husband, Logan, and I bought a house in Berkeley and went off on a super six-week honeymoon to New Zealand. And on August 26, our daughter, Elinor Sage, was born!” ■ **Shigeo Sakai** writes: “I am working in the Republic of Panamá. Lillian, my wife, is working for the Yale School of Medicine.” ■ In April, **Rhonda Williams** writes: “My husband, Tom, who just completed his Ph.D. from the University of Chicago, is joining the

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faculty in the Religion Department at the University of Vermont. We found a home in Vermont 30 miles from Burlington in the country. I am a public/environmental health consultant.”
rwilliams@alamc.org

1997

Class Secretary:

Paul Calzada pcalzada@eco.org

Jeff Albert, Ph.D. '02, is the co-founder and CEO of the Aquaya Institute (www.aquaya.org), a nonprofit organization dedicated to research, testing and promotion of water-resource innovations in the developing world. Jeff also teaches at the Arava Institute of Environmental Studies in Israel and has an adjunct faculty position at Brown University, where he previously was jointly appointed in the Department of Geological Sciences and the Center for Environmental Studies. Between 1998 and 2001, Jeff was on the staff of the Water Commission, the Israeli government agency with prime responsibility for water allocation decision-making. Since 1997, he has been involved in a variety of Israeli-Palestinian water and environmental projects, and he makes regular trips to the region. Jeff is a citizen of both Israel and the United States. His doctoral research was devoted to exploring the water deficit faced by the riparians of the Jordan River watershed, and examining the risks and benefits associated with water supply augmentation measures pursued by Israel. ■ **Zander Evans, Ph.D. '07**, writes: “Twenty-four hours after I got into Santa Fe, I was offered a job as research director at the Forest Guild (www.forestguild.org). The Forest Guild is a smaller, more environmentally conscientious version of the Society of American Foresters. They seem to have tailored the position to my interests: research into silviculture and forest practices. The office is on the Santa Fe plaza and should afford a pretty high quality of life.” alexander.evans@aya.yale.edu ■ **Geraldine Lee** writes: “I am married and have a baby! I married Farid Hamid in Mariposa, Calif., in a fantastic, quiet ceremony officiated by a druid and a shaman. I am starting a business

to do training and expeditions to various ASEAN (Association of Southeast Asian Nations) countries: Bhutan, Timor-Leste, China and India.” ■ **David Pinney**, first selectman of Somers, Conn., was recently elected to the board of directors of the Connecticut Conference of Municipalities (CCM). **Kath Schomaker '96** noticed this news item in the CCM newsletter, which she receives in her capacity as an elected member of the legislative council in Hamden, Conn. (Kath was elected in the fall of 2005). Also serving in elected office in Connecticut is **Curtis Rand '80**, the first selectman of Salisbury.

1998

Class Secretaries:

Nadine Block nadine.block@verizon.net

Claire Corcoran

corcoran_claire@verizon.net

Andrea Cristofani Geurts writes: “I am a deputy director at Save The (San Francisco) Bay, leading the community engagement, development and education programs.” ■ **Vanessa Johnson** writes: “I taught English in Ecuador for seven months, and now I am gearing up for a job search in Portland, Ore.” ■ **Brad Kahn** writes: “After almost seven years at Pyramid Communications, I am moving on to new adventures. I got married and will travel for a year with my new bride, Erin Hemmings. Needless to say, we are both very excited. And never fear, after exploring the reaches of Africa, Asia and South America, we will be back in Seattle in the summer of 2007. For those of you interested in hearing about our adventures on the road, send me an email and I will keep you posted.” hbkahn@gmail.com

1999

Class Secretaries:

Jocelyn Forbush jforbush@ttor.org

Jennifer Garrison

jennifermgarrisonross@yahoo.com

Christiana Jones

christiana@jonesfamilyfarms.com

Steve Bosak has a new job with Restore America's Estuaries. ■ **Elizabeth Bennett Carroll** is excited about a fresh start in a brand new home in

Massachusetts. The move was necessary because Elizabeth is expecting a child this fall. ■ **Jen Heintz** writes: “I'm engaged to a Sicilian chef and expecting on March 18, 2007! **Heidi Kretser** has two kids and is finishing her Ph.D. dissertation at Cornell, but working for Wildlife Conservation Society in the Adirondacks. She and Andy bought a natural foods grocery.”

2000

Class Secretaries:

Erica Schaub easffe@hotmail.com

Zikun Yu

Alethea Abuyuan writes: “I successfully defended my dissertation in March – ‘Faith-Based Organizations, International Development Agencies, and Environmental Management’ – and will receive the doctor of planning of development studies degree from the University of Southern California's School of Policy, Planning, and Development.” ■ **Monica Araya, Ph.D. '06**, who joined the Ph.D. program at F&ES in September 2001, defended her dissertation in March. She studied corporations in Brazil, Chile and Mexico, and analyzed drivers for corporate transparency and environmental disclosure. She writes: “I had to do fieldwork, so I did not stay in New Haven all the time, in case you are wondering. It's been an interesting journey, and I will miss a lot of people from the doctoral program here. On the other hand, I am happy to be done and ready to move on. I plan to go back to Latin America, and I am very eager to work in Chile. I plan to join a Santiago-based consulting firm by January 2007 and do part-time teaching at a business school. In the meantime, I'll be part of an OECD (Organisation for Economic Co-operation and Development) project that analyzes companies that are investing in environmental technologies.” ■ **Colorado State University** appointed **Joyce Berry, Ph.D.**, vice president for university development and advancement. In her new role, Berry will be responsible for planning, developing and administering a coordinated universitywide effort to establish and strengthen ties with university constituents; raising private funds to support the strategic

initiatives of the university; and overseeing effective recognition and stewardship programs for alumni, donors and friends. ■ **Terry Kellogg** writes: “The opportunity to run an organization called One Percent For The Planet surfaced last spring, and I jumped at it. One Percent is a movement built around companies that commit to giving 1 percent of their sales to environmental causes. We certify that they do it and license a trademark for their use. We’re growing like crazy – more than 400 members now versus 90 when I started. Our growth is a testament to the growth of the market for products from companies that are values-aligned.”

2001

Class Secretaries:

Leigh Cash leigh.cash@aya.yale.edu

Adam Chambers

achambers@aya.yale.edu

Jennifer Grimm

jennifergrimm@aya.yale.edu

Liam Carr writes: “I have been accepted into the Texas A&M University Geography Department for a Ph.D. on fish populations. I started in the fall in the lab of Will Heyman, formerly of TNC, and most likely will center my dissertation on work in Antigua.” ■

Katina Henderson writes: “Josh and I had a beautiful baby boy on April 25. He was 7 lbs., 8.9 ounces and 20 inches long at birth. Atticus Marcell Hanson is doing very well. His mommy is recovering well too.” ■ **Chris Nyce** is working for the United States State Department as a visa officer in London.

2002

Class Secretaries:

Catherine Bottrill and

Roberto Frau-Rodriguez

Sageboy02@yahoo.com

Dimos Anastasiou is a research consultant working on forestry and mapping in Europe. He is based in Lamia after living in Athens and Italy. He enjoys escaping to the mountains as much as possible. **Mahua Acharya** is continuing her work with the World Bank in the carbon finance group and very much enjoys life in Alexandria, Va., with her husband, Muru. Congratulations to **Zhanna Beisembaeva-Funaro** and **Michael**

Funaro, who had a baby boy this summer. We wish all the best to **Kate Giese**, who got married in North Carolina this October to long-term boyfriend, Jed. **Nancy Kong** has moved to Oxford (U.K.) to work as legal counsel at EcoSecurities, a consultancy working on international carbon abatement projects. **Catherine Bottrill**, **Derik Frederiksen**, **Sarah Canham**, **Erika Diamond**, **Susanne Sessine**, **Kim Thurlow**, **Marc Stern**, **David Vexler** and **Josh Zaffos** got together in September for the celebration of **Neal Etre** and **Kendra Kinscherf's** wedding in Cape Cod. **Ania Vexler** and **Aidan Stern** showed that they were up for the party. **Kim** and **Marc** have moved to Blacksburg, Va., where **Marc** has taken a lectureship at Virginia Tech, and **Kim** continues her work with TNC from home. **Curtis Robinhold** and wife **Angela** are living in central London, where **Curtis** has been working for BP with their new energy company that was set up earlier this year.

2003

Class Secretaries:

Brian Goldberg

brian.goldberg@aya.yale.edu

Scott Threadgill

michael.threadgill@aya.yale.edu

Daniela Cusack writes: “I’m still plugging away at my Ph.D. at U.C. Berkeley. I’m working on nitrogen pollution effects on soil C cycling. Sadly, I had an accident in the field in Puerto Rico this summer, got a bad back injury, and will be laid up for a few months. Drop a line if I haven’t heard from you!” ■ **Melanie Cutler** writes: “We welcomed **Emilia Rose Cutler**, a.k.a. **Baby Emmy** (7 lbs., 11 ounces), into the world on February 22, and we loved having the summer off to play with her. We also moved into a new, slightly roomier apartment on the Phillips Academy campus. I’m still teaching environmental science and biology at Andover High School. I love having guest speakers in my classes, so if any of you are in the area and want to spend the day talking with teenagers about environmental issues, let me know.” melanie.cutler@aya.yale.edu ■ **Lydia Dixon** writes: “I spent about a month in Bolivia in the spring, pad-

dling around in a collapsible canoe in various bodies of water (Lake Titicaca and the Rio Hondo in the Amazon) and backpacking in the Andes. It was pretty spectacular. Other than that, I’m looking forward to ski season in Jackson.” ■ **Bill Finnegan** writes: “I spent July in Cairo making a radio program on garbage collectors and recyclers for the BBC. After a complete sensory overload, I returned to Vermont and the cramped office of Tamarack Media, which I share with **Pete Land** and **Charleston Clyde Willoughby**, **Pete's** new puppy. I also developed a new medium of communication – using fruit on waffles to spell out important questions.” ■ **Alison Forrestel** writes: “**Kabir (Peay)** and I decided to get engaged. Thank you to **Ashton** for silviculture, where it all started.” ■ **Brian Goldberg**: “I’m getting settled in Washington, D.C., after a year with the United Nations in Thailand.” ■ **Bishop Grewell** writes: “I just started my clerkship in Denver with the 10th Circuit after graduating from Northwestern Law. I will be in Denver until next August.” ■ **Kate Hammond** writes: “After three years together, I got married in September to the wonderful **Geoff Brown**, who works for a biodiesel manufacturer.” ■ **Ben Hodgdon** writes: “**Margarita** and I are in Portland, Ore., working out the details of our work to come in Latin America with an NGO based here. In the meantime, we’ll be traveling through the West, Midwest and Deep South.” ■ **Orawan “One” (Vorakanonta) Intarakomalyasut** writes: “Please kindly note my newly revised last name. I’m expecting a baby boy this November.” ■ **Krithi Karanth** writes: “I spent the first six months of 2006 in India collecting data and am back at Duke.” ■ **Sunanda Kishore** checked in from the World Bank: “Our little F&ES community at the Environment Department is thriving now, with **Sarah Kay Matheson ’05**, **Judith Moore ’89**, **Nicole Maywah** and so many more. It’s just great to bump into each other, as well as build synergies professionally.” ■ **Taka Kobayashi** writes: “I am at the University of Michigan teaching statistics in the ICPSR program, and will be heading back to Bloomington,

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Ind., to finish my Ph.D. in a year. I guess I need a job because I will get married next summer. Does anyone want to have a GIS and spatial statistics specialist?" ■ **Ted Lanzano** is married to Monica Hurtado from Chile. He works for the EPA on solid waste projects in Central America. ■ **James Lucas** writes: "Deb and I had our first child, a baby boy, on May 27. His name is Fletcher Jameson Lucas, and he is a little angel. I have joined PricewaterhouseCoopers in its Global Forestry Practice. I will be working on forestry audits all over North America under the SFI, CSA and ISO certification programs. I hope to work within our sustainable business solutions group and branch out into sustainability report auditing." ■ **Florence Miller** lives in Vermont and works for the Center for Whole Communities. ■ **Terry Miller** writes: "Kate and I discovered a whole new level of love and happiness when we welcomed Henry Miles Miller into the world on July 12. Henry is an absolute joy, and mom is doing great. I continue in my role as green building program coordinator for the City of Portland, when I'm not changing diapers." ■ **Fuyumi Naito** writes: "I am going to be a mom in January. Plus, I got an opportunity to work in Geneva for three years." ■ **Curtis Robinhold** writes: "Angela and I are living in London, visiting with F&ESers **Sasha Silver '01**, **Ramsay Ravenal '02**, **Scott Hedges** and **Catherine Bottrill**. I'm working for BP's alternative energy business as the commercial manager for our wind business in Europe and Asia. We're also enjoying the travel and food in Europe and Asia." curtis.robinhold@bp.com ■ **Abdallah Shah** writes: "I am still in Dar es Salaam; life goes on as usual. The only difference is I have more children. This year **Emly McDiarmid '78** visited Tanzania and we met. I was so happy to see her in this part of the world, and she got to see my family. The only downside was that her visit was too short." ■ **Jay Shepherd** writes: "I am working as the Washington, D.C.-based acquisitions and development manager for Weston Solutions, renovating former environmentally challenged properties

into a wide variety of asset product classes, including industrial, retail and multifamily residential. I am responsible for equity investment in both clean and contaminated real estate. Aside from managing the acquisition, I manage all the pre-development (zoning changes, site plan approval, public subsidies entitlement, utility easements, debt participation, etc.) and development of the improvements. Lately it has been mostly residential construction, but all asset classes are within our scope." Jay will have a second master's degree in real estate development from Johns Hopkins in 2007. Jay also writes: "Camille will be 4 years old in March 2007." ■ **Scott Threadgill** writes: "**Marni Rapoport** and **Nathaniel Carroll** were married in Gearhart, Ore., on September 2 at what became a mini-F&ES reunion. In attendance from F&ES were **Alison Forrestel** and **Kabir Peay**, **Bill Finnegan** and **Flo Miller**, **Liz Roberts**, **Pete Land**, **Oliver Grantham**, **John Homan**, **Terry Miller** (and beautiful wife and new son), **Betony Jones**, **Karen (Murray) Hardigg**, **Jesse Barnes**, **Scott** and 'Sageboy' **Threadgill** and, of course, **Marni** and **Nathaniel**. The number of Loggerhythms in attendance allowed us to sing the 'Merry Forester' song during the ceremony – a special treat for us, **Marni** and **Nathaniel**. TGIF, polar bear swims, schoolyard games and Wednesday night poker were also recreated for the weekend. Unfortunately, there was no sauna." ■ **Veda Truesdale** writes: "Florence Lee (Flo) was born on September 29, 2005. Lots and lots of pictures of her are available on our website, www.natandveda.com." ■ **Toru Uemachi** writes: "I left Beijing for Tokyo in late July. Now I work in the president's office of JICA (Japan International Cooperation Agency) as a secretary to the senior vice president." ■ **Nicole Vickey** writes: "Jesse, Elle and I are living in Mobile, Ala., and I am working for The Nature Conservancy. We're finishing an exciting reef restoration project in the Mississippi Sound, just purchased 14,000 acres along the Perdido River and are getting under way with our first seagrass protection project. Jesse and I got back from an amazing trip to South Africa

for some wildlife viewing. Elle will be 2 this fall, so life is full of giggles and tantrums." ■ **Yvette Williams** writes: "I am off to the University of Maryland. I was accepted into the doctoral program with the Marine, Estuarine, and Environmental Science Department through an IGERT fellowship. I am very excited, since I had been seeking an interdisciplinary program." ■ **Jason Wilmot** and **Kate** celebrated the birth of their second child, **Luke**, in late spring. Jason is leading a wolverine research effort in Yellowstone National Park, and is the director of the Northern Rockies Conservation Cooperative in Jackson, Wyo. He wonders if trying to juggle too much makes one a clown. ■ **Andrew Winston** writes: "Second child (and second boy) on its way (and here by the time this hits the press); a new house in Connecticut – leaving New York City after 12 years; my first car, believe it or not, a new Toyota Prius; and my book, *Green to Gold*." (See Bookshelf, page 17.)

2004

Class Secretaries:

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Jennifer Vogel jen.vogel@aya.yale.edu
Laura Wooley

Jessie Barnes writes: "I am entering the third year of my Ph.D. program in sustainable development at Columbia. I am enjoying life much more now that I have finished course work, and am living in a great apartment with **Sarah Vogel '03** in Park Slope. I will be starting my research on farmer water resources management in Syria next summer." ■ **Keith Bisson** has returned to Maine. He lives in Orono at the confluence of the Stillwater and Penobscot Rivers. ■ **Cecilia Blasco** writes: "Greetings from Mexico, where the copious rains have done nothing to dampen political fervors. We're all waiting to see who the next president will be, and what impact this will have on environmental policies. I'm very happy with my job at the Mexican Nature Conservation Fund, where I work on watershed management projects and was recently given temporary custody of the portfolio of projects in

the Gulf of California. It's an incredible part of the world that I highly recommend for a visit." ■ After graduating, **Libby Borden** spearheaded a mapping project for the town of Norfolk, Conn., which included the mapping of natural resources, protected lands and historic and cultural sites, among others. The map project is ongoing, but she is also involved with a myriad other town organizations and projects, the latest being Smart Power. ■ **George Chih-Kuo Chiang** writes: "Still in Boston and have passed the qualifying exam for my Ph.D. program. I am planning to spend most of next year doing research in Cologne, Germany." ■ **Hahn-Ning Chou** writes: "I've been traveling so much, I forget what my bed looks like. Thailand, Taiwan, Vietnam, Malaysia, Philippines, China and India are some of the countries I'm regularly visiting these couple of months. Hopefully I will be able to stay home for a week soon." ■ **Avery Cohn's** doctoral research at U.C. Santa Cruz focuses on renewable energy politics in the Americas. ■ **Amanda Farris** is still getting paid to tromp around the woods and make music in beautiful Maine. ■ **Betony Jones** is still living in the Wild West, "encountering F&ES folk everywhere I go." She is working on forestry issues and carbon sequestration in the Sierra Nevada. For fun, she is busy climbing mountains, kayaking, biking, swimming in cold lakes, playing with her dog, seeing lots of live music and going to lots of weddings. ■ **Amit Kapur, Ph.D.**, writes: "I have completed my postdoctoral research at the University of Michigan, and have now joined Five Winds International as a consultant in the Boston office." ■ **Christopher "Fox" Kral** writes: "I stayed with Robbie, or **Zhizhou Zhang**, and his wife during my internship with the UNDP China country office in Beijing from May to July this past summer. Robbie specializes in industrial economics/ecology as a consultant for CEB Monitor. He was amazing, warm and so welcoming. Good times eating Beijing Duck in the Hutongs!" rzhang@cebmonitor.com or zzzhang76@yahoo.com.cn ■ **Cindy Kushner** is working to improve water

and energy in rural areas of Timor-Leste! ■ **John Longstreth** writes: "I am retiring in mid-August from Audubon. I have been here over five years, and I feel it's time to give someone else with fresh imagination and energy a chance at leading this terrific place. It is more than a full-time job and fairly exhausting for someone with arthritic knees. We are moving to the Point Reyes area in California, actually to Inverness, the last little village before entering the National Park. We have bought an older house overlooking Tomales Bay. My wife, Carolyn, is a fifth-generation Californian. She has wanted to move back there for quite a while, and I will turn 60 next year, so this seems like a good time. There are a ton of environmental organizations in West Marin, and I figure we will start volunteering once we get our feet under us. Several of the groups work on invasives; I don't think I will ever escape from the nasty little buggers." ■ **Liz Martin** writes that she is happy to return to the Natural Resources Defense Council in Washington, D.C., to work in their climate center. Liz works on national and state climate policy in the Mid-Atlantic States. Liz and her husband, Alex, just bought a little townhouse in Tenleytown, right next to Fort Reno Park and the Metro. emartin@nrdc.org ■ **Garrett Miller** writes: "I have been developing a company committed to greening the world's workplaces, and am now working on broadcasting our launch. TheGreenOffice.com offers a multitude of tools and services that I think many F&ES alumni will find useful and eye-opening. The company is an online retailer of environmentally and socially responsible office products that are labeled and ranked based on key sustainability indicators. We carry the 'dark' green products environmentally conscious consumers cannot find at big box stores and the 'light' green conventional products with which we are all familiar. With over 40,000 products in our catalog, we are truly a viable solution for any office's responsible procurement strategy. TheGreenOffice.com also has a variety of responsible business practices, such as climate conscious shipping, whereby we offset the carbon emissions related

to a product's delivery. Coupled with the retail side of the company are a host of educational tools, including the Office Footprint Calculator™, which allows users to gauge their offices' impact on the environment." ■ **Liz (Wyman) Mills** got married in June to Jarod Mills. She is the public outreach coordinator at Stonewall Farm, a nonprofit working farm and education center in Keene, N.H. ■ **Christian Palmer** writes that he and his wife, Damaris, had their first child; Lorenzo Santos Palmer was born on March 27, and is doing great. They just moved back to Hawaii, and are excited to be back in the tropics. ■ **Christopher Riely** is located on the west side of the Cascades in Washington State, where he is working for a few months at Seattle's Cedar River Watershed, the source of the city's drinking water. Most of Christopher's work is devoted to an innovative thinning program in second-growth forest stands intended to accelerate the development of late-successional/old-growth forest structure and habitat. christopher.riely@aya.yale.edu ■ **Nalin Sahni** writes: "I'm back in Canada and studying environmental law at the University of Toronto." nalin.sahni@gmail.com ■ **Neha Sami** writes: "I'm in Ann Arbor, at the University of Michigan. I'm a year into the Ph.D. program in urban planning and enjoying it very much. My research focuses on peripheral city growth in Indian cities in the post-liberalization period. I've just returned from a couple of months in India doing a bit of preliminary fieldwork selecting case study sites. I hope to return there in a year or so to start my fieldwork." ■ **Corinna Steward** continues to work for Grassroots International in Boston. She writes: "I've been getting to know the farm and conservation issues facing U.S. family farmers, visiting farms in the Midwest and the Mississippi Delta. I also had a chance to go to Panama this summer with the UNDP's Small Grants Program and help them to market biodiversity-based products. **Jen Vogel's** wedding was a reunion of sorts in northern Vermont, and I saw **Robin Barr** during her brief time in the United States before heading back to Indonesia." ■ In April, **Brynn**

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Scholarship Aid Needed...

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She is working on a thesis about non-timber forest products. She eyes a Ph.D. and has ambitions to be in academia, but only if her role is an active one, “solving real-world problems by using the tools of academia.”

While students like these are the proof in the pudding, so to speak, they would not have not gotten their chances without the help of generous donors. “People who care about the environment and make the connection to education find giving to Yale compelling,” said Gentry, director of development. “I deal with donors who are committed to the environment and see their gifts as acts of stewardship. I introduce them to students who’ve received their aid, and they tell me that this interaction is the most fulfilling part of supporting Yale.”

Among F&ES’ most generous donors are Bob and Sharon Buchanan.

“Sharon and I have continued to develop an awareness of our natural environment through our common enjoyment of birding and her involvement as a board member of the Maryland/D.C. Chapter of The Nature Conservancy,” said Bob Buchanan, a classmate of Dean Speth’s, Yale Law School Class of 1964.

The Buchanans are completing a four-year pledge to help fund the scholarship initiative Gus created to attract the best students worldwide to the F&ES program, and have made another commitment to help support the Yale Project on Climate Change (<http://environment.yale.edu/climate>).

“We hope that such education and outreach will lead to policies and programs that mitigate the waste and unsustainable practices that are too common today, and even change those policies that don’t take into account scientific evidence that global warming is not just cyclical,” he said.

Another generous F&ES donor is Josie Merck, who created the Vervane Foundation in 1993 to support sustainable environmental initiatives in Connecticut and nationally. Her first connection with F&ES was in 1998 when, as a recent graduate of the Yale School of Art, she designed a park project on Block Island. She later collaborated with Stephen Kellert, Ph.D. ’71, Tweedy Ordway Professor of Social Ecology at F&ES, on a course that combined biophilia and the built environment.

Merck knew Dean Speth from the Natural Resources Defense Council, which he helped found and on whose board she sat. “Gus’ passion for urgent action to correct our destructive assaults on our environment is deeply compelling,” she said. “His appeal to us to provide scholarship monies was clear and urgent.”

Most convincing were his descriptions of the specific students that F&ES was losing because of a lack of scholarship support. Merck became so “jazzed” with F&ES – she refers to it as “an environmental United Nations” – that she made a four-year commitment, and the “Jazz Scholarship” was born. The name derives from the term for the myriad grassroots-level efforts to take on the crisis of climate disruption that are explained in Speth’s recent book, *Red Sky at Morning: America and the Crisis of the Global Environment*.

Alphonse “Buddy” Fletcher Jr. ’04 is not only a generous supporter of aid for scholarships, but one of the more remarkable graduates of F&ES, having received a master’s degree in environmental management after a successful career in investment planning. He was vice president for Bear, Stearns & Co.; senior vice president for Kidder, Peabody & Co.; and in 1991 created Fletcher Asset Management, of which he is chair and chief executive officer.

Fletcher focuses on financial planning in areas of social and environmental sustainability. He has also worked on forest defragmentation projects, the creation of urban parks, wetlands restoration, coastal ecology studies and the preservation of historic architecture.

“Simply put, F&ES graduates work to make the world a better place,” said Fletcher. “Unfortunately, many of those noble and rewarding occupations don’t come with salaries that would allow repayment of substantial student loans. The availability of financial aid might allow a prospective student to pursue her dream of studying at F&ES and then perhaps work for a small nonprofit organization.”

Fletcher welcomes the idea of F&ES graduates pursuing careers on Wall Street, where they could use their environmental and social awareness to influence investment decisions.

“If they do, then they certainly should remember to donate to F&ES to support financial aid!” said Fletcher.

Taylor left the EPA and her good F&ES friends in D.C., and moved home to California. She is working at the Breast Cancer Fund in San Francisco, working on the environmental links to breast cancer. She bought her first home on August 1 in San Francisco, and is looking forward to connecting more regularly with Bay Area F&ESers. brynn.taylor@aya.yale.edu ■ Daniela Vizcaino writes: “Greetings from my homeland. I’m working with Conservation International Venezuela in its office in Caracas, and supervising work with local partners south of the Orinoco River.” ■ Abby Weinberg writes that she has passed the two-year mark at the Open Space Institute in New York City, and that she continues to enjoy working on forest conservation easements in Maine. ■ Ethan Winter writes: “My wife, Anne, and I had a baby boy on July 29, Owen Woods Winter. I am the Northeast program coordinator for the Land Trust Alliance and often bump into conservation leaders from the F&ES ranks. We live in Saratoga Springs, the gateway to the Adirondacks, and are always happy to host F&ES gatherings.” ethanhwinter@msn.com

2005

Class Secretaries:

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Benjamin Urquhart bnurquhart@gmail.com

Ines Angulo writes: “I’m a short-term consultant at the GEF evaluation office, and I’m working on the reviews of terminal evaluations of GEF’s biodiversity projects.” ■ Lauren Baker writes: “I have been working with the Center for International Environmental Law since last October, where I focus on issues of community rights to natural resources in Asia and Africa and on human rights and the environment in Latin America. I have been enjoying life in Washington, D.C., including living with Sarah Matheson, and will stay in the area for at least one more year.” ■ Cherelle Blazer writes: “I have taken a job as an environmental consultant in Dallas, and have a beautiful baby boy, Julian Theodore Blazer, born October 25, 2005.” ■ Pat Burtis

writes: "After six months of hunting around for the right job and following a long and arduous interview process, I recently received a Kauffman Fellowship (Kauffman.org), which will post me for two years at Amadeus Capital Partners, a London-based venture capital firm specializing in technology investing. Amadeus Capital has traditionally invested in IT, telecoms and medical technology, but is very interested in the clean energy and 'clean tech' space." pat@patburtis.com ■ **Seth Dunn** writes: "After graduation, I went trekking in the Indian Himalayas and volcano-watching and manta ray-diving on the Big Island with resident Hawaiians, **Alice Bond** and **Virginia Lacy**, before starting my job with GE Energy's wind segment in Schenectady, N.Y. I am enjoying work and live in Saratoga Springs, down the street from **Ethan Winter '04** and his family and the foothills of the Adirondacks." ■ **Trisha Eylar** writes: "I am in Woodbridge, Va., working as an air compliance inspector for the Virginia Department of Environmental Quality." ■ **Jamie Fergusson** writes: "Still living with my lovely wife, Sarah, in D.C., and working for the IFC/World Bank. Only additions to the family are two cats, Taxi and Madison." ■ **Loni Gardner** writes: "I have successfully studied for and passed the New York and Connecticut bar exams, and started working as an attorney in Connecticut at Murtha Cullina LLP. My practice areas include environmental litigation. I have had the pleasure to work on land conservation issues, as well as projects where the end result is the cleanup of contaminated property in Connecticut. I am still living in New Haven." lonigardner@yahoo.com or gardner@murthalaw.com ■ **Ann Grodnik** writes: "Mike and I bicycled our way from New Haven to Seattle this summer, and we have been enjoying settling in since late July. I am working in public finance in the energy sector for a regional investment bank called Seattle-Northwest Securities. I am also heading up efforts to recruit new members to our F&ES cabal in these parts." ■ **Christopher Hudak** writes: "I am four months into a Fulbright Fellowship in Mongolia,

working on establishing a national mercury assessment to try and understand the extent of gold mining pollution here." ■ **Andrea Johnson** writes: "I've been conducting research in Indonesia, and spent six gorgeous months in Panama working with the Yale/Smithsonian joint venture, Program for Native Species Restoration. I began a job in D.C. as a campaigner with the Environmental Investigation Agency, a small NGO that documents and campaigns against international eco-crimes, such as trafficking in illegal timber, poached animals and banned substances." ■ **Monika Kumar** writes: "Since graduating last year, I have been working on short-term consulting projects with Kinetix LLC, a small consulting firm in New York City. One of my responsibilities was to analyze data, then draft and develop content for a sustainability report for the State Street Coffee Company in Nicaragua. In addition, I was volunteering my services with the Women's Network for a Sustainable Future, a forum for women executives in business providing support to each other in sustainability issues. I am interning with Holcim Group Support Ltd., a Swiss cement company. Located in Zurich, I am redrafting their sustainability/corporate responsibility handbook, which will be utilized by group companies to set up and carry out their sustainability projects. Simultaneously, I am traveling the country, hiking mountains, exploring villages and trying all sorts of chocolates, chocolates and more chocolates!" ■ **Virginia Lacy** traveled for a couple of months around Asia with two other F&ES alums, **Jim Cronan** and **Deb Fillis**, before making her final stop in Hawaii, where she is working as a member of the Rocky Mountain Institute's energy and resources group in the Kona office. Since moving to Hawaii, she has made two major purchases – a used diesel Scout II, which runs on waste vegetable oil, and a used surfboard. Both have an equal number of dings. ■ **Michelle Lichtenfels** writes: "I've been working for Environment Northeast in New Haven since September 2005 on forest carbon sequestration policy in the Northeast." ■ **Alex McIntosh** writes: "I've been

working at Nestle Waters North America, putting together a corporate citizenship program for its bottled-water operations. Building a sustainable condominium in Stamford, Conn.; it's nearly done, and experimenting has taught me a lot." ■ **Matt Muspratt** writes: "I am halfway through law school at the University of Michigan, and spent the summer in rural Sierra Leone advocating for farmers and participating in mediations. This fall I'll be in D.C. for an externship with the International Labor Rights Fund; the group sues multinational corporations that commit human rights violations abroad." ■ **Angela Lopez Quiros** writes: "This past year, I've been in Austin, working for the Texas Commission on Environmental Quality and doing environmental audits in the enforcement division. Because of visa issues, I have to go back to the Philippines. I don't yet know what I'm going to do except maybe travel a little with money I've saved, and then look for work in the Philippines. I hope to return to the United States in the fall of 2007." ■ **Jen Ronk** writes: "The big news for me is the birth of Corbin Joseph Keichline on November 25, 2005. Also, in addition to working for the Renewable Energy and International Law Project, I recently became a senior environmental scientist with Cape Environmental. What a year!" ■ **Roy Schiff, Ph.D.**, writes: "I do river restoration consulting work in Vermont and New Hampshire." ■ **Elena Traister** writes: "After teaching environmental science for a year at the Massachusetts College of Liberal Arts, I'm now starting my Ph.D. at the University of New Hampshire, looking at the biogeochemical response of rivers to disturbance and restoration." ■ See **Rolando Mendez-Treneman** in a photo on the school's alumni website while he was on a bear cub rescue mission. "Two of us biologists hiked rather far into the mountains, in knee-deep snow and on steep terrain, when we met a female bear that was emerging from her winter snooze. She had two cubs, born this winter, with her already. Enjoy the photo, as the experience is quite the memorable one indeed." dezen@charter.net ■ **Ben Urquhart**

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writes: "Julie and I are now engaged. We are planning a wedding for sometime next summer. I continue to stay busy as a private consulting forester in Boston. I have been writing management plans for private landowners and some Olmsted urban parks. Sometimes I even get to use a chainsaw and paint gun. I became a licensed forester this September and will expand my clientele throughout eastern Massachusetts."

■ **Zoe Wang** writes: "I am in Taiwan doing the same job. I moved to Berkeley, Calif., in September for a six-month visiting scholarship." ■ **Songlin Wang** writes: "I am the marine program officer with WWF-China in Beijing. An important part of my work is to cooperate with WWF-Japan to support the Yellow Sea Large Marine Ecosystem Project, which is a transboundary integrated marine management project funded primarily by the Global Environment Facility and led by the UNDP. I met **Seth Cook '98, Ph.D. '04**, on the first day I worked at the Beijing office." slwang@wwfchina.org

2006

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Jill Savery jill.savery@aya.yale.edu

Janny Min Choy writes: "I just started work in August as a hydrologist with the Bureau of Land Management in western Colorado. This beautifully stark landscape of canyons and desert is certainly different from the lushness of New England. Before this, I went on a National Outdoor Leadership School trip to Alaska, where I backpacked in the eastern Chugach and sea kayaked in Prince William Sound from Valdez to Whittier." ■ **Konstantine**

Drakonakis writes: "I just came back from Europe – Ireland and Greece – visiting family and friends. I'm reviewing proposals and managing projects for the emergent-technologies arm of the CT Clean Energy Fund." ■ **Ross Geredien** writes: "I am finishing a GIS mapping project on mountaintop removal mining for Appalachian

Voices in Boone, N.C. We are getting ready to launch a new interactive website with a Google Earth interface that shows the devastation in the coal mining region. The URL will be www.ilovemountains.org. I will continue to look for full-time work over the next few months, but in the meantime I hope to keep working on conservation and energy issues in the Appalachians."

■ **Oliver Enuoh** writes: "I am exploring job opportunities with international environmental agencies in Nigeria and Africa." ■ **Wendy Francesconi** writes:

"I'm doing a doctoral program in the School of Forest Resources and Conservation at the University of Florida. My focus will be on agroforestry combined with landscape ecology and conservation biology." ■

Erin Flanagan writes: "I was getting ready for the New York and Connecticut bar exams, before I moved out to Cleveland to work as a federal law clerk for the Honorable James Gwin, U.S. District judge for the Northern District of Ohio. Having been to the Buckeye State once before relocating here, I'm glad to report that it is actually quite groovy. I live in the ultra-hip 'warehouse' district, where I enjoy a spectacular view of the Cuyahoga River and Lake Erie." ■ **Dan Braden** writes: "I got married this summer, drove around the country and am now starting the Yale teacher training program, which means one more year in New Haven before we hopefully move to Vermont." ■ **Dan Jones** writes:

"I'm basically running a nonprofit that is developing a large park in the suburbs of Louisville, Ky. (27 miles long, about 5,000 acres so far) We have good funding, both public and private, and my job is to manage the development of the park. We're trying to move beyond the problem of sprawl by creating green infrastructure in advance of development." ■ **Krista Anderson** writes: "I moved back to the Boston area, started work as an analyst for the U.S. Government Accountability Office, and will be getting married in December." ■ **Fuphan Chou** writes:

"This summer I spent an amazing month in China, mostly in Yunnan, a province that borders both Vietnam

and Tibet and has the highest ethnic diversity and biodiversity in China. My mom and I were teaching at a summer camp in Yuanyang for poor rural children, run by an NGO called The Peach Foundation. I began work at the International Finance Corporation in September. I am based in D.C. My first year-long rotation will be in the Infrastructure Department, and my title is associate investment officer. My job is to evaluate and structure projects for possible investment by the International Finance Corp." ■ **Jessica Darling** writes: "I am living in Boston and working at the Ipswich River Watershed Association with **Emily Levin '05**." ■ **Reilly Dibner** writes: "I am in Ireland for a year of research as a Fulbright Fellow. I'll be in Galway. I'm training for the Dublin City marathon, applying to Ph.D. programs and preparing for 10 months of rain." ■ **Catherine Schloegel** spent her summer performing Excel magic with spreadsheets and pivot tables. She was a business consultant to Pictured Rocks National Lakeshore and lived in the mythic Upper Peninsula of Michigan. ■ **Larissa Yocom** spent the summer hard at work in Yale-Myers Forest doing research, and then stayed on to be a teacher's assistant at mods. ■ **Yue Wang** is an intern in the West Virginia field office of The Nature Conservancy. She is busy helping with the decision-making process regarding eco-regional planning in the West Allegheny Plateau. After the internship, Yue may head to the West Coast to visit friends in Seattle. ■ **Chimi Wangmo** sends greetings and exciting news from Bhutan. She writes: "I have become the CEO for an NGO called RENEW (Respect, Educate, Nurture and Empower Women), under the presidency of Her Majesty Ashi Sangay Choden Wangchuck, the Queen of Bhutan." ■ **Dhyana Quintanar** began working in Mexico City in August at the Center of Sustainable Transport of Mexico. She is coordinator of mobility and urban development, and manages bus rapid transit projects in large cities in Mexico. She also is involved in national and metropolitan urban transport public policy projects.

■ **Ben “Shep” Shepherd** is living in Brooklyn and working for a green design firm (atelier ten, www.atelierten.com). benshep57@hotmail.com ■ **Jason Rauch** is beginning Ph.D. work with Tom Graedel this fall. ■ **Kristen Welsh** is working as the program facilitator for the Yale Environmental Leadership and Training Initiative, funded by a new grant that F&ES just received to offer short courses for locals in Latin America and Southeast Asia. ■ **Ali Rau** is a first-year law student at the University of Connecticut in Hartford. This summer she volunteered on farms in Ireland and the U.K., where she did a lot of fruit and veggie harvesting, cooking and running around after animals and kids. alison.rau@gmail.com ■ **Perrine Punwani** was in Guatemala for all of July learning Spanish, and then traveled in Canada. ■ **Patti Ruby** writes: “I took a job with the Upper Raritan Watershed Association. I work in the land and water conservation programs and will soon branch into more advocacy and policy work. I am also volunteering my time with the People & Predators Fund, a nonprofit started by **Laly Lichtenfeld ’99, Ph.D. ’05**. I’ve been lucky enough to catch up with other F&ESers, like **Nicole Rousmaniere** and **Caren Mintz**.” ■ **Christina Czarella** got married on June 29 in New Haven and honeymooned at an eco-resort in Costa Rica. She writes: “This went well until the fifth day when my new husband contracted malaria, which we didn’t find out about until many doctor appointments later back in the United States. I have been working for the National Council for Science and the Environment in Washington, D.C., since May. I am program coordinator for the Wildlife Habitat Policy Research Program and the National Commission for Science and Sustainable Forestry.” ■ **Alexis Ringwald** is off to India to study Hindi in the Himalayas for a couple of months before moving to New Delhi to begin her Fulbright research at the Tata Energy Research Institute. She will be focusing on investment in alternative fuels like biofuels, climate change and corporate governance, agriculture and water issues, and everything else

under the sun. She will continue her photography; take up the study of Indian classical dance and choreograph a dance fusion with her previous studies of tango and ballet; and make mini-documentaries of the fascinating stories she comes across.

■ **Jill Savery** spent three weeks in Europe visiting Barcelona, Paris and much of northern Italy. She writes: “I have temporarily moved to California. I’ve been busy looking for a position in the Olympic sport and environment field.” ■ **Kevin Tidwell** is working at the Global Environment Fund in D.C. on sustainable forestry investments in emerging markets. He has no pets, lots of work and lots of travel, and loves it.

■ **Xizhou Xizhou** is working at Industrial Economics, and is comforted to know that that he’s actually using things he learned in F&ES classes. He is on a Justice Department case fighting an extremely bad and cunning polluter.

■ **Rosi Kerr** spent the summer in Alaska, leading river trips and turning fish guts into biodiesel. ■ **Dahvi Wilson** was a river guide out of Utah and Colorado this summer. She had a wonderful time and doesn’t know why she should ever find a real job. ■

Caley Johnson writes: “I moved to Golden, Colo., and started working in the technology transfer group of the Transportation Center at the National Renewable Energy Laboratory. I like being back in my home state and enjoyed the summer activities of Colorado. **Kate Hamilton** and I went to Brazil for three weeks in August and loved it.” ■ **Gonzalo Griebenow** writes: “I am in Peru and have been traveling to the Amazon, the Andes and the coast in Peru, places like Cuzco (Machu Picchu), Puno and the Nazca lines in the coast. After that, I started to work on a project evaluating a rainforest (close to the border with Brazil) to create a private conservation area. This is because the new transoceanic road, which will go from Brazil to Peru and cross the Amazon, will bring lots of economic benefits, but also lots of migration and impacts to this pristine rainforest area that is very close to the Peruvian national park, Bahuaja Sonene. My work is to present a proposal to

potential funders, like the Global Environment Facility, World Bank and Conservation International, to come up with a plan that can mitigate the impact of this new road.” ■ **Melanie Loftus** writes: “This summer I started a cross-country bike trip known as the Habitat Bicycle Challenge. I say ‘started’ because in the first week of the trip, on my way into Johnstown, Penn., I had a collision with a dog, crashed and broke my collarbone and my elbow. So, I went home to Virginia for a few weeks, got a few pins in the elbow and healed a bit. At the end of June, I rejoined the riders in Kansas, and when we got to Utah, I was able to hop back on my bike and ride the last 1,000 miles of the trip through Nevada and California. I rode into San Francisco on the Golden Gate Bridge on July 30. I moved to San Francisco in August.” ■ **Mary McNealy** writes: “After traveling in Southeast Asia (Thailand, Cambodia, Vietnam) for the summer, I have settled in Philadelphia and started working for McNeil Consumer (part of Johnson & Johnson).” ■ **Alice Bond** writes: “I’ve moved from New Haven to San Francisco to work for The Wilderness Society. I settled into an apartment in the Inner Richmond neighborhood for the next few months (between Golden Gate Park and The Presidio).”

■ **Lex Hovani** writes: “I am living in the Washington, D.C., area and working for The Nature Conservancy’s Global Forest Initiative. I am helping develop country-level pilot projects to test a new market for carbon credits from avoided deforestation.” lexhovani@gmail.com or lhovani@tnc.org ■ **Luisa Lema Velez** writes: “I am a program fellow in sustainable development in D.C. working for the United Nations Foundation.”

■ **Madeleine Meek** writes: “In March, I hope to leave for the Peace Corps for two years in Morocco, where I will be focusing on agroforestry, environmental education and protected areas management while learning Arabic (and possibly Berber) and immersing myself in the wonderful culture.” madeleine.meek@aya.yale.edu or madeleine.meek@gmail.com

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R. Keith Arnold '38 (1913-2006), an educator, scientist and administrator, passed away on April 22 from complications of Parkinson's disease. Keith was born in Long Beach, Calif., to H. Park Arnold and Mayme Swan Arnold. He received his B.S. degree in forestry from the University of California at Berkeley in 1937. Following his studies at Yale, he received his Ph.D. from the University of Michigan in 1950. He also served in the Navy from 1942 to 1946. He was an assistant professor of forestry at U.C. Berkeley, and dean of natural resources at the University of Michigan (1966-1969). At the University of Texas (1973-1979), he was assistant vice president for research, associate dean and director of the Division of Natural Resources and the Environment of the Lyndon B. Johnson School of Public Affairs. After retirement, he remained an active educator by accepting visiting-professor appointments at several universities across the country. He also had an extensive career in forest research with the federal government in the Department of Agriculture, Forest Service. At the Pacific Southwest Forest and Range Experiment Station in California, he was director of forest fire research and, later, the station director (1957-1963). In Washington, D.C., he was director of forest protection research (1963-1966) and deputy chief of research (1969-1973) for the Forest Service. His personal research focus was forest-fire behavior. During the 1950s, he helped coordinate Operation Firestop in California and led efforts to determine the effects of nuclear blasts on forests for the military. The aerial application of fire retardant was invented and tested in Operation Firestop. He also directed some of the early research on prescribed fire and fuel reduction navigation, wrote training manuals and worked on methods to capture the U505 submarine. He was predeceased by his former

wives, Helen Dubose Arnold and Lillian DeAngelis Arnold, and his sons Bruce Arnold and Robert DeAngelis. He is survived by his third wife, Ruth Stroud Arnold; his sons R. Park Arnold, J. Ross Arnold, Michael DeAngelis and Lee Douglas; and his daughter, Anita DeAngelis.

Alice Jean Eichold '89 (1947-2006), a native of Mobile, Ala., and a longtime resident of California, died on August 23, in Mobile, where she was active with the Historical Mobile Preservation Society. Alice received a B.A. from Mary Baldwin College, a B.A. and M.A. in architecture from Tulane University and an M.A. in architecture from the University of California, in addition to her M.F.S. in land use planning from Yale. She worked with NASA on architecture and land use planning for outer space environments. She is survived by her sister, Elizabeth Eichold Walmsley, and her brother, Dr. Bernard Herbert Eichold II; six nephews, Hughes P. Walmsley III, William Madoc Walmsley, Thomas Semmes Walmsley, Samuel Eichold III, Alfred Delchamps Eichold and Bernard Herbert Eichold III; and a great nephew and several cousins.

Joseph Ely '35 (1911-2006), who was credited with giving birth to modern aerial firefighting, died in Chico, Calif., at the age of 94. As a forest control officer working in the Mendocino National Forest in the 1950s, Joseph was interested in making wildfires safer to fight by attacking them from the air. Others had tried with very limited results. In 1953, he saw 15 firefighters die while fighting a Mendocino National Forest blaze from the ground, which inspired him to adapt a crop-dusting plane for aerial firefighting. His main contribution was conceiving of a coordinated attack on a wildfire from air and land, and developing the equipment and practices necessary to allow that to happen. He was

born in Pewaukee, Wis. After his years at Yale, he spent his whole career with the Forest Service. He moved to Chico following retirement, and taught forest and range management courses at Butte College and Chico State University. His wife, Katherine, died in 1997. In 2005, he was the honored guest at a 50th anniversary celebration of aerial firefighting.

Richard Haley '94 (1962-2006) died on June 3 following a car accident in Flagstaff, Ariz. Richard was centers and education director for Audubon New York in 2005, overseeing the fiscal, staff, facility and programmatic aspects of Audubon Centers and Sanctuaries, including Buttercup Farm, Constitution Marsh, Prospect Park, Rheinstrom Hill and Theodore Roosevelt, and leading the effort to start new centers at Knox State Park and Montezuma Wetlands Complex. Richard had over 12 years of prior experience directing nature centers, including the New Canaan Nature Center and the Goodwin Conservation Center, operated by Connecticut's Department of Environmental Protection. He quadrupled the staff at the Goodwin center while doubling its operation budget and increasing program attendance from a few hundred to over 10,000 people annually. He served on many boards, including those of the Association of Nature Center Administrators and the New England Environmental Education Alliance. His experience covered a breadth of categories, including citizen science program development, facility and exhibit design, government and NGO partnerships, fund-raising, strategic planning and operational and staff management. He received his B.S. in biology from Cornell and his master's degree in environmental studies from F&ES. He is survived by his wife and many beloved family members.

Robert Fisher Metcalf Jr. '79, a resident of Watertown, Mass., for more than 60 years, was the son of Robert Metcalf and Jennie (Spofford) Metcalf. Robert graduated from MIT in 1934 with a degree in mechanical engineering and a commission in the Army Reserve. He worked in Allentown, Pa., and Plymouth, Mass., before volunteering for active duty in late 1940. He was assigned to Watertown Arsenal, and in October 1941 he married Eleanor Perley. After leaving active duty in 1945, he remained in the Army Reserve and retired in 1962 as a lieutenant colonel. For most of his professional career, he worked for Stone and Webster Engineering in Boston, where he worked on the Yankee Rowe and Maine Yankee nuclear power plants, among other projects. In the 1960s, he resumed his formal education, earning an M.S. in mechanical engineering from Northeastern University in 1967, an M.S. with a specialty in industrial hygiene from Harvard in 1971 and a master's degree in forest science at Yale. After retiring from Stone and Webster in 1977, he served for several years on the history and heritage committee of the American Society of Mechanical Engineers. He served as a member of Watertown's Representative Town Meeting for 27 years, on the board of Marshall Home and with the troop committee of Boy Scout Troop 204. He enjoyed volunteering with his wife at Charlesgate Manor Convalescent Home, where they led a twice-monthly sing-along and assisted in a variety of activities. He and his wife were honored for public service by Attorney General Scott Harshbarger in 1997, by the Watertown Rotary Club in 1999 and by Gov. Jane Swift in 2001 on the occasion of their 60th wedding anniversary. He is survived by his wife, Eleanor; his sons, Samuel, James and Thomas; and four grandchildren, David, Katherine, T. Mitchell and David.

He leaves a legacy of family love, public service and charitable generosity.

William Porter '72 (1940-2006) grew up near Cleveland, Ohio, and lived most of his life in the New Haven area. William became an expert and consultant on fire control and emergency planning services, active in several volunteer fire companies. He was editor of *Fire Chief* magazine, and was a Connecticut state fire commissioner for one five-year term. He sold commercial real estate, and owned several Curves for Women fitness center franchises. He was an enthusiastic motorcyclist and spent many summers at a family camp on Lake Temagami in Ontario. He resided in Branford at the time of his death on September 18. Survivors include his wife, Doss; four children; two stepchildren; and nine grandchildren.

Frederick Schuett '41 (1914-2006) was born in Seattle, Wash., and was the elder brother of Theo, Helen and Louise. Fred graduated from Garfield High, the University of Washington and Yale. He worked with early USGS surveys of the Olympic Peninsula, and was a weather officer for the Army in World War II and an aerospace engineer for many years. He married Lolita Casper in 1981. Besides his wife, he is survived by two children from a previous marriage, Laurence Schuett and Joanne Schuett-Hames; and four grandchildren, Robin and Joy Schuett-Hames, and Alan and Heather Casper. Active with the Great Peninsula Land Conservancy, he had a great love for the natural beauty of the Seabeck (Wash.) area.

Christian Skaar, Ph.D. '57 (1919-2006), of Blacksburg, Va., died on August 1, at Montgomery Regional Hospital. Christian was born in Brooklyn, and was a veteran of

World War II, having served in the U.S. Army Air Corps. He received his B.S. and M.S. from Syracuse University and a Ph.D. from Yale. After teaching at Syracuse University for 30 years, he taught at Virginia Tech, retiring in 1989 as the Thomas M. Brooks Professor of Forest Products. He is survived by his wife of 62 years, Dorothy Skaar; two sons, Eric and Steven; two daughters, Dee and Janet; seven grandchildren; a sister, Guro Olsen; and two brothers, Martin and Irving.

Frederick "Buck" Stabler Sr. '38 (1913-2006) was born in Portland, Ore., and grew up in Sandy Springs, Md. Buck was an alumnus of the University of Virginia, then studied at Yale. He was a veteran of World War II, having served in France and Germany. He was a forester for many years at International Paper in Camden and Sheridan, Ark. He retired in 1978 as the woodlands manager at Scott Paper in Mobile, Ala. He died in Spanish Fort, Ala., in July. He was predeceased by a brother, Willard Stabler, and by his first wife, Martha Trice Stabler. He is survived by his second wife, Edwina Ryan Stabler; his son, F.E. "Rick" Stabler Jr.; and three grandchildren, Courtney, Trice and Lauren.

Selmer Uhr '58 (1933-2006), of Altamonte Springs, Fla., passed away on July 14. Selmer's degree from Yale was in forestry economics, which he applied in his career as an urban tree consultant and forester. Survivors include his wife, Mary Ellen Uhr; a daughter, Cindi McGee; his sons, John and David; and 11 grandchildren.

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Dean's Message...

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democracies, not dictatorships; if their people are well-informed about science and policy choices; if they share deeply the values of social justice and environmental protection and care about the future as well as themselves; if they have a tradition of working together cooperatively to forge common goals and solve mutual problems; and if they enjoy a level of economic development that enables them to spend resources on environmental protection. Do the nations of your world meet these tests? If they cannot agree on fundamental goals and how to realize them and cooperate successfully among themselves, then their experiment in global governance on the new planet will likely fail.

However difficult it might be to plan the sustainable settlement of a pristine planet, it is child's play compared with the real-world task we all now face on Earth. As the 1987 World Commission on Environment and Development (the Brundtland Commission) wrote: "The Earth is one but the world is not." How do we achieve environmental sustainability in our world today? The real world's 6.5 billion people are already spread across six continents and settled in geographic patterns that have been determined historically over thousands of years. They work in a \$55 trillion world economy (in 2003 U.S. dollars) made possible by technologies designed when the environment was not a concern and in which obeying price and other market signals do not take environmental protection into account. They live in nation-states claiming sovereignty within their geographic borders, including the sovereign right to develop the natural resources within those borders as they see fit. These nation-states are divided by rich and poor, democratic and nondemocratic. They are divided by race, religion, ethnicity, language, history and natural resources. The leading examples of their cooperation among themselves are wartime collaborations, and like the tribes and clans that preceded them, they are prone to conflict to advance their interests as they see them. Since World War II, there have been 38 significant international

wars (defined as conflicts with over 1,000 battle deaths and more than 5 percent of the combatant national troops involved); however, the vast majority of armed conflicts have been civil wars, often longstanding, where the principal casualties are civilians.

The willingness and ability of human societies to wreak havoc on the environment is not news. In 1948, Fairfield Osborn wrote in his prescient book, *Our Plundered Planet*: "Man's misuse of the land is very old, going back thousands of years." He chronicled how the "cradle of civilization" in the Middle East gradually became a desert, how Greece and Turkey were deforested, and how the more recent destruction of the American prairie contributed to the Dust Bowl. Historians speak of numerous other civilizations, once mighty like the Khmer Empire in Southeast Asia or the small tribes that lived on Easter Island in the far Pacific Ocean, which have collapsed, caused in part by destruction of their environments.

Despite these serious depredations in times past, historian J.R. McNeill is correct in asserting that the 20th century brought something new under the sun. The 20th century, and particularly the period since World War II, he writes: "shattered the constraints and rough stability of the old economic, demographic and energy regimes." McNeill goes on: "In environmental history, the 20th century qualifies as a peculiar century because of the screeching acceleration of so many of the processes that bring ecological change."

So extraordinary has been this scaling up of environmental impacts in the 20th century that by 1980 it became obvious that nations would have to collaborate in framing responses to a set of environmental threats of global significance. As noted, we can think of this collective response as the birth of global environmental governance. Why were societies driven to make that effort? What have been the principal means governments have chosen for environmental cooperation? How have they fared? What could be done in a second phase of global environmental governance to correct past and current deficiencies? These are among the key questions taken up in this book. ■

River Science...

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donned hip waders and tromped into sun-dappled woodlands in Prospect, Conn., where they gathered in groups beside the Tenmile River's narrow bed. Schiff demonstrated to the students how to select a site for sampling aquatic life in the river. In an actual study, he would normally inspect the river a mile both up- and downstream. "You need to know where you are," he explained. "That will influence what you're seeing." He pointed out that this site just below a dam would have large amounts of organic debris collected in the lake behind the dam, and as a result, that they were likely to find large numbers of insects known to be attracted by fine particulate organic matter.

He showed the group how to establish collection sites as he waded into a stream. "There's a bit of an art to where exactly you position your collection net," he said. He dipped his net into a pool, where numerous rocks with leaves and other plant debris clinging to them offered a likely rich harvest of critters. He brought the dripping net to the shore and unloaded it into a water-filled tray. He pointed out scores of wriggling mayflies, stoneflies, caddisflies and other insects. The abundance and types of insects "show us that this is a well-oxygenated cold stream." The water quality was high, and with its abundance of insect life, would be able to support small trout and other fish, such as the slimy sculpin.

As the river's water flows out of the woodlands into the Quinnipiac River, though, increasing pollution, turbidity and silted-in river beds reduce habitat quality. In any attempt to restore the lower river environment, he explained, biomonitoring could provide evidence for the river's changing health.

Many in the river processes course become immersed in the field, and, said Anisfeld of his students, "whatever their background or ambitions, they'll have the context for the decisions they'll need to make. If we can give them those tools, the course has succeeded." ■

When Pollution and Profits Collide

By Robert Repetto

Early in the Clinton administration the political guru James Carville said that if he were reincarnated, he'd like to come back as the bond market, because then he could intimidate everybody. Certainly, corporate CEOs are easily spooked by changes in their companies' credit ratings or stock prices, partly because such changes are the measure of a CEO's performance. The problem is, these financial market metrics are poor measures of an increasingly important dimension of management performance, the management of environmental risk.

Financial analysts and investors have difficulty understanding the risks companies face because of their environmental performance, because – unlike sales revenues and operating costs – environmental risks are mostly off the books. Nonetheless, these risks often turn into financial crises, whether due to new regulations, lawsuits or spills and accidents. If financial markets can't accurately evaluate these risks and price them accordingly into bond, stock and insurance prices, then investors are subject to unexpected losses and CEOs lack a key incentive to manage environmental performance prudently.

Though public companies are required by law to disclose in their financial reports any financially significant environmental risks that management knows about, I have shown in a series of industry studies that, more often than not, they fail to do so. This has led to an increasingly active movement by institutional investors and public interest groups, through shareholder resolutions and petitions to the Securities and Exchange Commission, to force companies to improve their disclo-

sure. The Carbon Disclosure Project, for example, a coalition of more than 200 institutional investors controlling more than \$2 billion in assets, is pushing companies to disclose the financial risks they face from greenhouse gas emissions and the steps they're taking to manage these risks.

I have recently gone one step further by actually estimating the environmental risks companies face in financial terms and comparing them with the companies' ability to bear such risks, should they materialize. Working with Trucost Plc, an environmental research firm for which I serve as a technical advisor, I have developed a new financial measure, TRUEVA (for True Economic Value Added), which compares the operating profits companies make with the environmental damages they cause.

The economic damages from the pollution and wastes a company generates in the course of operations are a measure of the extent of the company's potential financial risk, should it be forced to assume responsibility for those damages. The operating profits the company makes, after subtracting taxes and the costs of capital it employs in the business, are a measure of the ability of the company to finance such risks. Companies whose profits are large compared to the damages they cause are obviously less risky investments.

TRUEVA was first applied to publicly owned U.S. electric utilities, which have large emissions of carbon dioxide and other pollutants. Surprisingly, of the 33 companies studied, all but four had environmental risks larger in financial terms than their operating profits after taxes and capital costs. Two of the largest companies, American Electric Power and Southern Company, had negative



Harold Shapiro

Robert Repetto

TRUEVA in 2004 of \$4.85 billion and \$3.35 billion, respectively, indicating large-scale risks to investors. Not surprisingly, these two companies were the only ones in the industry testifying to the Senate in recent hearings in opposition to mandatory controls on greenhouse gases.

Since the first results were published in the July/August issue of the magazine *Environmental Finance*, TRUEVA has already gathered a good deal of attention among institutional investors, answering a need for metrics that integrate financial and environmental performance measures. Interest has been forthcoming not only from "socially responsible" investors but also from large, mainstream institutional investors that are now taking climate and other environmental issues much more seriously. In response, I and my colleagues at Trucost have been working to extend our research to other industries.

Robert Repetto, professor in the practice of economics and sustainable development, teaches a course, "Financial Markets and the Environment," at F&ES and the School of Management, and is editor of the book Punctuated Equilibrium and the Dynamics of U.S. Environmental Policy (Bookshelf, page 17).

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