

A surreal painting of a man in a grey suit and white shirt, holding a whip that extends across a landscape. The landscape features a river, green fields, and a grid of dark lines overlaid on it. The background is a mix of yellow, green, and blue tones.

environment
YALE

**Conservationists
Thinking Big to Save
the Last Great Places**

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letters

To the Editor:

I read your article about forests as a remedy for global warming ["As a Remedy to Global Warming, Do Forests Matter?," Fall 2005] and was perplexed, because nowhere in the article was the fact that the carbon taken up by a tree part remains out of circulation as long as that tree part is not degraded to its constituent molecules or elements. This should be a major tenet of the tree-based sequestration argument, and it should be used to negotiate the modification of building codes internationally. It is my experience that the performance of the environmental community has been lacking in this regard.

Regarding the thought that carbon sequestration payments should not be made for activities that are now being done by existing forests, it is my experience that financially astute individuals do not hold on to nonperforming assets any longer than necessary to change their status. It is likely that much of the forest that has been sequestering carbon for many years under past owners will face re-evaluation soon after the existing owners transfer their assets to others. Human life spans are not in sync with forest generation times, and estate transfers are going to cause this re-evaluation at an increasing rate. So either society can begin to compensate private owners for some of the unvalued functions that forests perform, or those owners may choose to change the use to one that provides better returns. Until we change the way we value many parts of human existence, we will face this expanding dilemma. One place to start is by heavily taxing income that is greater than is needed for a normal family to survive.

ALAN PAGE, PH.D.
RESEARCH FORESTER
BELCHERTOWN, MASS.



Editor's Note: Below are excerpts from a letter sent to Yale University President Richard Levin on February 7 and President Levin's response.

Dear President Levin,

We were struck by a juxtaposition of two articles in the January 29 *Washington Post*, one a headline article entitled "Debate on Climate Shifts to Issue of Irreparable Change," and the other on how the State of the Union address has become little more than theatre and an extension of political campaigning. For us, this also brought to mind two excellent articles in the

[Fall 2005] issue of *environment*:

Yale: Gus Speth's piece, "The Heart of the Matter," and Richard Conniff's article, "As a Remedy to Global Warming, Do Forests Matter?"

Just when we think we've become worn down to the point of numbness, we find ourselves shocked anew at the utter lack of leadership on the part of our elected leaders and the active suppression of scientific information that could catalyze more effective action. Data from NASA's Goddard Institute for Space Studies have confirmed that 2005 was Earth's warmest year on record, surpassing 1998.

As we cast about looking for the leadership on this most pressing of issues, Yale is on the short list. We admire what Gus Speth has done since becoming dean of the School of Forestry & Environmental Studies, and admire the way you have helped get Yale University overall to step up to its responsibility to lead by example in its own physical plant redevelopment. Gus has gone beyond the bounds of F&ES to instill a new understanding and resolve on the part of other leaders at Yale. If each of us were not already a loyal supporter of Yale, this would certainly make us one.

That said, we have one further request: that you as Yale president become a leading

national spokesman for taking meaningful, national action on climate change.

We believe that the president of Yale can get some attention, particularly if you turn your own commitment to rallying the commitments of the presidents of other major U.S. universities to join you in calling for meaningful action on climate change that reflects our most current scientific knowledge.

V. ALARIC SAMPLE
PRESIDENT
PINCHOT INSTITUTE
WASHINGTON, D.C.
M.F. '80, M.B.A. '88, PH.D. '89
JOHN ECHEVERRIA
PROFESSOR OF ENVIRONMENTAL LAW
GEORGETOWN UNIVERSITY
WASHINGTON, D.C.
B.A. '76, M.E.S. '81, J.D. '81

Dear Dr. Sample and Professor Echeverria:

Thank you for your eloquent letter. I appreciate your request and I will take it to heart.

Meanwhile, with Gus' passionate voice always in our ears and increasingly in our minds and hearts, we are busy trying to move ourselves up on the "short list" of responsible institutions so that we can be a national model. As our task forces, such as the Yale Climate Initiative, the Yale Energy Task Force and the Student Task Force for Environmental Partnership, research and identify more environmental challenges, we are hurrying to make a difference on all fronts. We have to keep pushing up our numbers on energy saving (our residential colleges made a 9.1 percent improvement in one year!). We have to look at even more investment in renewable sources of power. We have to keep making strides. Otherwise, we will not be the kind of example that will allow us to challenge others from a platform of strength.

I took pride in reading your letter. I promise you that where and when I can, I will heed your call.

RICHARD C. LEVIN
PRESIDENT
YALE UNIVERSITY



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dean's message



Dean James Gustave Speth

By the Numbers

It is hard to reduce to numbers six years of effort and teamwork building our school, but I am going to try! The numbers – reflecting changes here between 2000 and 2006 – tell many interesting stories.

Annual Expenditures for Master's Student Scholarships

FY 2006	\$ 2,218,000
FY 2000	\$ 786,400

This tripling of our scholarship aid has made a wonderful difference, but we still are far from being able to do what Yale does for its undergraduates – ensure that all those admitted have the means to attend Yale. As a result, many of our most impressive applicants, in the end, never pass through our doors because they cannot afford it. Raising additional funds for scholarships is now our highest development priority.

Annual Grants and Contracts Revenue

FY 2006	\$4,699,500
FY 2000	\$1,735,700

Our faculty have greatly expanded the research grants we receive (mostly from federal science agencies like the National Science Foundation) and, correspondingly, the scale and scope of our research activities.

Number of Faculty (Resident Teaching Faculty)

FY 2006	35.5
FY 1999	26.0

The significant expansion of our regular faculty has allowed us to cover important new areas like environmental health and energy while not reducing forestry and other established centers of strength. In addition, we have a significant number of visiting faculty each year, often adding the perspectives of experienced practitioners, underrepresented minorities and leaders from abroad.

Number of Matriculating Master's Students

FY 2006	130
FY 2000	113

While the size of the faculty has increased substantially, the size of the student body has not. The majority of classes at the school now have fewer than 15 students.

Average Scholarship Gift

FY 2006	\$18,662
FY 2000	\$ 7,282

By raising new funds for scholarships while keeping student body size constant, we have been able to give bigger scholarships. Tuition this year is \$25,800; the inclusive fee (including living allowance) is \$41,465 for first-year students and \$39,600 for returning students. Bottom line: F&ES is expensive for the average person.

Number of Master's Applicants

FY 2006	469
FY 2000	351

The number of applicants to our four master's-degree programs has grown significantly. Still, interest in professional training in environmental management has not caught up (yet) with that for law, business or medicine.

Percentage of International Students in Incoming Master's Class

FY 2006	32%
FY 2000	26%

One of the great things about the school is its international diversity. I'd like to see our international students increase to about 40 percent of the total; we also need more students from Africa and the Middle East. Growing our international side is a key component of our ongoing efforts to build a truly global school of the environment.

Number of International Master's Applicants

FY 2006	146
FY 2000	104

The good news here is that applications from abroad continue to grow despite international criticism of environmental and other U.S. policies, visa problems and the cost of a Yale education.

Percentage of U.S. Minority Students (Self-Reported) in the Master's Program

FY 2006	14%
FY 2000	9%

While the size of our minority student body has grown, it remains too small. We are working on this challenge and on diversity issues generally. Meanwhile,

our Multi-Ethnic Student Association is one of our most active student groups each year.

Number of Courses and Seminars Offered

FY 2006	127
FY 2000	87

The additional faculty have made it possible for us to strengthen greatly the range and depth of our curriculum. We have moved in several directions, particularly toward more offerings addressing international issues and global-scale challenges such as climate change. (The numbers above do not include courses taught exclusively for Yale College undergraduates. We are now doing extensive teaching in Yale College, reaching hundreds of undergraduates each year.)

Total Annual Expenditures

FY 2006	\$26,410,700
FY 2000	\$12,900,400

As a result of expansion on many fronts, the school's overall budget has more than doubled. This type of growth has been wonderful for the school, but the pace of the past few years probably cannot be sustained, nor should it be. We still need to grow in certain dimensions, but we also need to slow down for a while and consolidate our gains.

New Fund-Raising Achievements (Total)

FY 2006	\$13,900,000 (est.)
FY 2005	\$12,157,354
FY 2004	\$16,084,797
FY 2003	\$ 8,521,356
FY 2002	\$26,579,409
FY 2001	\$10,250,461
FY 2000	\$ 5,861,222
FY 1999	\$ 3,303,323

The generosity and commitment of the school's supporters have made tremendous improvements possible, some of them reflected in these statistics. The gifts noted here have led to a new home for our school (the Kroon Building, to be completed in 2008, will be Yale's flagship green building; see sidebar at right), a half-dozen new professorships, our growing work with undergraduates and a major increase in scholarship and internship aid for our students. Counting this year, we have now raised close to \$100 million with the help of farsighted friends, and that has made all the difference.



Centerbrook Architects and Planners

New F&ES Home to Redefine the Green-Building Concept

The new home for the School of Forestry & Environmental Studies, as represented by an architect's model, foreground above, is scheduled to be ready for occupation in 2008. The building will be named for the environmental philanthropist Richard Kroon, Yale College Class of 1964, and will provide office space and vastly improved working conditions for about 75 faculty and staff, along with classrooms, a 175-seat auditorium and an environment center named for donors Carl and Emily Knobloch.

The Kroon building will be a long, slender four-story structure with a rounded roofline, running straight back into the embrace of Sachem's Wood. Because the intent is to let the architecture do much of the work of heating, cooling and lighting, the east-west alignment will maximize exposure on the southern side, toward Osborn Memorial Laboratories, above left, increasing solar heat gain in winter and natural lighting year-round.

Because of the sloping site, the glass wall on the south side will extend one floor lower than the wall on the north side. Among other things, having the bottom floor half-buried in the slope will help to avoid overwhelming the narrow site with the sheer mass of a 50,000-square-foot building. That's also one function of the rounded roofline, which will accommodate usable workspace.

The building is likely to have a colonnade walkway along the southern façade, and another, one floor up, on the north side, with both intended to encourage the connection between interior and exterior spaces. Paved service roads will be converted into courtyards on the north and south sides of the building. Freestanding stairwells with aluminum wind cowls on top will use a natural "stack effect" to drive the building's ventilation system. For symbolic reasons and also to meet the LEED (Leadership in Energy and Environmental Design) requirement for relatively local materials, the building will prominently feature timber from the school's own forests. One possibility: mechanized wooden shutters allowing the building to button itself up at night and hoard its energy.

The school is anticipating that the building will attain a LEED-certified platinum rating, the highest standard set by the U.S. Green Building Council, a partnership of builders and environmentalists.



Conservationists Thinking Big to Save the Last Great Places

By John G. Mitchell

“**M**ake no little plans,” the great American architect Daniel H. Burnham is supposed to have said. “They have no magic to strike men’s blood and probably will themselves not be realized.” *Think big!* It was a shot heard ’round the conference tables of the late 19th and early 20th centuries, not only in the venues of architecture and urban planning, but in commerce and industry and finance as well. As for those newfangled conservationists just beginning to scuff their sneakers in the boonies, thinking big seemed a bit premature. Since you had to start somewhere, small was beautiful. Waterfalls and butterflies. You filled the ark one species at a time. You saved the park by drawing a line around it. That was the prevailing conservation strategy, once upon a time. But old strategies evolve into new ones when one is confronted with challenges undreamed of a hundred or even fifty years ago: global warming, shrinking habitats trashed and fragmented in the most remote corners of the world, entire families of plants and animals snuffed out faster than science can give their individual species a proper name.

The Yellowstone-to-Yukon Conservation Initiative spans nearly half a million square miles.



At last, in response, the uppercase-C Conservation community has decided to eschew little plans for big ones. Now come staggering proposals to protect vast swaths of land many times larger and more complex than the world's greatest national parks. On such a scale, it is no longer enough to draw another line around a single core area, however sizable, but rather to connect a number of special areas along corridors that, in some cases, overlap international borders.

Lawrence Linden, a visiting lecturer at F&ES in 2004 and now managing director of the Goldman Sachs Group, has served as consultant on a number of large-scale conservation projects, principally in South America. He believes that a solitary protected area can never be large enough to be stable. "Look at Yellowstone," he says. "The park itself is arguably insufficient to sustain the wolf and the grizzly bear." According to Linden, effective conservation has evolved from a save-the-critter approach to an effort to assemble plans that can sustain both biodiversity and traditional human cultures within a larger region. Another devotee of going for the Big Picture is Peter Seligmann '74, co-founder and CEO of Conservation International, the organization that put biological hot spots on the map in the 1990s and now pursues strategic goals across some 40 countries on four continents. "On a regional scale," says Seligmann, "if you're looking for lasting solutions, you have to be engaged with the people who live there. That requires building economies around conservation, so that local people have a stake in conserving their natural heritage. If you don't do that, everyone loses."

At F&ES, the torchbearer for large-scale conservation is Timothy Clark, Joseph F. Cullman III Adjunct Professor of Wildlife Ecology and Policy who has taught a capstone course on the subject – subtitled "Integrating Science, Management, and Policy" – each spring for the last three years. In his writings and course work, Clark has not been timid about discussing the difficulties of achieving large-scale victories.

"[Our] institutions for science, management, and policy," he writes, "are not presently designed to address conservation at large scales, so learning and change have been slow to nonexistent despite many good-faith initiatives." For example, Clark notes that "ecosystem management" is still considered overly vague in some quarters, even though the concept "mushroomed" almost 20 years ago. "Some critics," he writes, "believe that it errs on the side of preservation. Still others see it as overly anthropocentric and utilitarian."

Among his efforts to help organizations bridge the gulf between science and management, Clark has been active with the Yellowstone-to-Yukon Conservation Initiative from its inception in 1993, and has worked on behalf of koala conservation in eastern Australia and protection for condors in the Andes.

With the help of such front-liners as Clark, we have assembled here a selective

"[Our] institutions for science, management, and policy are not presently designed to address conservation at large scales."

Tim Clark

review of some of the most ambitious large-scale conservation initiatives now being pursued around the world.

The Amazon

Because of its overwhelming size, its rich biodiversity and its vast treasure of largely undisturbed tropical rainforest, the Amazon basin – especially the portion of it lying within Brazil – has long riveted the attention of globally-aware environmentalists. In the United States, Earth Day orators 35 years ago referred to it as "the lungs of the world," in tribute to its photosynthetic

capacity to replenish the planet's precious supply of atmospheric oxygen. But political realities at the time didn't hold out much hope for the Amazon. In Brasilia, government engineers were plotting a system of highways that would skewer the basin from the Matto Grosso to the riverine city of Santarem and from the urban centers on the coast west to the mountains of Peru. It was said that a half-million people would be moved from the overcrowded northeast, at government expense, to tame and occupy the forests opened by the road builders.

Inevitably, several of the key highways were completed and some of the anticipated settlers managed to subsist and survive in the "green hell" of the interior, but Europeans and North Americans looked with disfavor on these intrusions into what they considered a "global commons," and so did such institutions as the World Bank. Over the years, the internal political



The Goldman Sachs Group



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Lawrence Linden, left, managing director of the Goldman Sachs Group, believes that a solitary protected area can never be large enough to be stable. Tim Clark, right, Joseph F. Cullman III Adjunct Professor of Wildlife Ecology and Policy, has been active with the Yellowstone-to-Yukon Conservation Initiative from its inception in 1993.

climate regarding environmental affairs in Brazil began to shift its direction. At the Johannesburg Earth Summit in 2002, Brazil formally entered a joint agreement with the World Bank, the Global Environmental Facility and the World Wildlife



Russell Mittermeier, Ph.D.

Peter Seligmann '74, chair and CEO of Conservation International, seen here with a common brown lemur, is a devotee of the Big Picture.

Fund (WWF) to establish the Amazon Region Protected Areas Program (ARPA), with a goal of securing, over 10 years, a network of protected lands covering 12 percent of the region. The big enchiladas of landsaving don't come any bigger than this: 193,000 square miles, an area the size of California. That same year Brazil established Tumucumaque Mountains National Park – ARPA's "flagship" – on 9.5 million acres situated along the northeastern border with French Guiana and Suriname, described rhapsodically as a place of "towering rock formations, plunging river valleys, undulating tropical forest, magnificent waterfalls, and crystal-clear pools." It is the world's largest tropical-forest national park, four times the size of Yellowstone. Then, just last year, two more big national parks were established in the state of Para, creating a biological corridor along the Xingu River drainage, from savanna ecosystems in the south to the rainforests of the central Amazon.

Matthew Perl, director of ARPA for WWF, explains that the hope is to include representative samples of biodiversity, often contiguous to indigenous lands. Overall,

"If you're looking for lasting solutions, you have to be engaged with the people who live there."

Peter Seligmann

the network would seek to set aside 70 million acres of new parks and reserves, direct improved stewardship of some 31 million acres of pre-existing protected areas, and designate 22 million acres of "extractive reserves" or other sustainable-use areas. Among Perl's colleagues in the ARPA effort is Guillermo Castilleja '83, Ph.D. '91, vice president for WWF field programs. "This is a very ambitious program," says Castilleja. "It is equivalent to building the U.S. National Park System in 10 years as opposed to 130." Parks, however, are only part of the strategy. Indigenous lands, he says, constitute 20 percent of the total area. Then there are the extractive reserves, in which public land is protected for use by local people, mostly in production of nontimber resources such as rubber and Brazil nuts. And finally, there will be a type of land use ARPA calls "logging concessions," wherein sustainable timber extraction will be tightly regulated and the cuts will not be converted to pasture or



Tumucumaque Mountains National Park in Brazil, delineated by the red line, is on 9.5 million acres situated along the northeastern border with French Guiana and Suriname.

WWF-Brazil

cropland. But can these heady goals be achieved? "Yes," says Castilleja. "We believe we can get to that 70 percent protection level in 10 years. We're greatly encouraged by what's been accomplished already."

Despite the accomplishments, however, Castilleja concedes some looming problems. Brazil is the second largest exporter of soy products in the world, and much of the soy is grown in the Amazon. Soybean acreage has been expanding in the southeast, along with cattle ranching. During the 1990s, the average annual deforestation rate in the Brazilian Amazon was about 7,000 square miles a year. That jumped to 10,000 square miles a year in 2002 through 2004, but fell off in 2005 due to reduced soy prices, better enforcement of forestry regulation and newly established protected areas acting as barriers to deforestation.

Amazon deforestation likewise concerns Lisa Curran, associate professor of tropical resources at F&ES. In a report published in March in the journal *Nature*, Curran and her co-authors warned that conservation strategies focused primarily on protected areas will be insufficient to slow deforestation of the Amazon rainforest.

"Expansion of the cattle and soy industries in the Amazon basin," the study claims, "has increased deforestation rates and will soon push all-weather highways into the region's core." Curran and her co-authors assert that in a business-as-usual modeling scenario, "highways currently scheduled for paving will be paved, compliance with legislation requiring forest reserves on private lands will remain low, and new [Protected Areas] will not be created." As a result, by 2050, 40 percent of the region's remaining forest cover could be lost. In a "governance" scenario, on the other hand, Brazil would enforce mandatory forest reserves on private lands through a satellite-based licensing system, and growing pressure from international markets and financial institutions would compel cattle ranchers and soy farmers to clean up their acts. Assumptions along these lines, the report concludes, would point to a huge saving of forest cover over the same time frame.

Transborder Protected Areas: Y2Y and Southern Africa

By some accounts, the poster child for the conservation community's new think-big approach to land conservation is the transborder ecoregion known as Yellowstone-to-Yukon, or Y2Y in the parlance of its dedicated boosters. The dimensions of this international landscape boggle the mind: nearly half a million square miles stretched along the Rocky Mountains spine from Wyoming's Bridger-Teton country south of Yellowstone National Park to the Yukon Territory's Ogilve Mountains near the Arctic Circle; 2,000 miles top to bottom, some places up to 500 miles across. This ecoregion includes headwaters for the rivers Columbia and Fraser, the Yellowstone and the Missouri, the South Saskatchewan, the Athabasca, the Mackenzie and the Yukon; home base for the greatest concentration of large carnivores in North America; the traditional territories of more than 30 First Nations and Native American tribes; and dozens of established national and provincial parks, refuges, sanctuaries and wilderness areas.

Y2Y is a loose consortium of more than 200 nonprofit organizations, businesses and charitable foundations, about evenly split between the United States and Canada. Douglas Chadwick, a Montana writer and wildlife biologist, spells out the initiative's mission in his introduction to a recent book on the region (*Yellowstone to Yukon: Freedom to Roam*, by Florian Schulz; Mountaineers Books). "The initiative's first aim," he writes, "is to round out the region's extraordinary collection of protected places with necessary buffer zones and fasten the whole assemblage together through habitat bridges. ... Once such a network is in place, step number two is to combine it with a plan for sustainable use of natural resources in adjoining landscapes." Such a plan would seek to replace the export of pulp and saw logs out of the region with local, value-added opportunities to manufacture furniture, veneers and other products to keep the money – and the jobs – in the communities where the trees grow.

"Since Yellowstone was declared a national park," Chadwick writes, science has demonstrated that "the notion of parks as outdoor museums where society can tuck flora and fauna away and come back at any time to find each perfectly preserved is as quaint as a corset. If anything, trying to protect nature in isolated sanctuaries is a recipe for extinction."

But by the same token, going for connectivity, Y2Y-style, can be a recipe for institutional frustration. The organization's myriad groups do not always see eye-to-eye on how to confront the larger regional issues. Management plans have been drafted, but some critics see them as overly technological and mechanistic, with insufficient participation by local stakeholders. "You can't just go on mapping parks and counting species," says one frustrated Y2Y observer, requesting anonymity for the sake of

"If anything, trying to
protect nature in isolated
sanctuaries is a recipe
for extinction."

Douglas Chadwick

maintaining his relationship with the initiative. "At some point you have to get down on the ground and engage people at every level."

Nevertheless, there has been some progress involving First Nations and Native American communities in the process. The Shoshone in Wyoming are working to protect water quality in the Wind River watershed. The Deh Cho First Nations are said to be promoting expansion of Nahanni National Park in the Northwest Territories, and Gwich'in peoples, farther north, are embracing the principles of conservation planning to assure the integrity of critical connections between wildlife habitats.



WWF-Brazil

Matthew Perl, left, director of the Amazon Region Protected Areas Program for the World Wildlife Fund, with Marcelo Creão, protected areas management specialist for WWF-Brazil, just outside the Tumucumaque Mountains National Park.

In the hope of maintaining habitat linkages throughout the region, Y2Y has identified a number of what it calls "critical cores and corridors," or CCCs. The Cabinet-Purcell CCC is one of these, an area reaching from the northern edge of the Bitterroot Range astride Montana and Idaho, across the Yaak Valley and the Purcell Mountains into the Cabinets of southeastern British Columbia. Threatened by logging and a recent surge in recreational tourism, this CCC is viewed as critical range for grizzly, cougar, lynx, badger, fisher and, perhaps the rarest of the rare, mountain caribou. So far, the Canadian group Wildsight has reported some progress in negotiating a habitat protection plan with one of the principal forest products companies working in the area. But according to Y2Y, progress on the U.S. side of the border "is not faring so well."

The difficulties of piecing together connections between protected areas on two sides of an international border are by no means limited to the Y2Y region, where the concept was first tested in 1932 when Glacier National Park reached across the line to shake hands with Waterton Lakes National Park in Alberta. Since the early 1990s, so-called "Peace Parks" have emerged – at least on paper – on other continents as well, most notably among a half-dozen nations clustered in southern Africa. Of

these, the flagship initiative is known as the Great Limpopo Transfrontier Park, which would link South Africa's Kruger National Park; Zimbabwe's Gonarezhou National Park; and a number of parks, sanctuaries and game reserves in Mozambique. Boosters of the endeavor predict that once it becomes operational – and that may still be years away – the Limpopo will stand as “a world-class ecotourism destination” where visitors will enjoy game-viewing opportunities and cultural experiences while hard-pressed local economies reap the benefits. Skeptics, on the other hand, see the Limpopo as a front for “politically controversial wildlife conservancies” beholden to foreign donors and international nongovernmental organizations not inclined to draw local communities into the planning process.

William Wolmer, an environmental research fellow at the University of Sussex in Great Britain, posed a rather biting question several years ago in a critique of the Limpopo for the *Journal of Southern African Studies*. “Is there a contradiction,” he asked, “between the promises of [transfrontier conservation areas] for economic renaissance, based on selling ‘Walt Disney’ African wildlife experiences to tourists, and the socio-economic development” of actual on-the-ground communities? Meanwhile, at F&ES, a doctoral candidate with field experience in southern Africa ponders the same dilemma. Catherine Picard studied community attitudes toward protected areas, largely around the Greater St. Lucia Wetland Park on the Zululand coast of South Africa, while she was working on her master's at the University of Michigan. Between there and Yale, Picard spent several years reviewing grant applications at the MacArthur Foundation. “We kept seeing more and more proposals to establish or connect transboundary ecoregions,” she recalls. “The science was there, all right, but there was rarely enough thought given to the organizational, political or cultural challenges that transboundary conservation must contend with. The social realities were just not as solid as the science.”

The Great Bear

And let us consider the Great Bear Rainforest of British Columbia, said to be one of the largest – if not *the* largest – temperate coastal rainforests left on Earth. From Bute Inlet opposite the north end of Vancouver Island, the Great Bear Rainforest sweeps up the coast 250 miles to the Alaska border, embracing along the way more than 20 million acres of mostly red cedar and Sitka spruce wildlands, tumbling salmon streams and remote valleys productive of prime habitat for grizzly and black bear, including the latter's rare subspecies, the so-called Spirit Bear, endowed with a recessive gene that colors this ursine critter white.

The effort to protect this rainforest from intensive clear-cut logging got under way a decade ago, spearheaded by Greenpeace, Sierra Club of Canada's British Columbia Chapter, Coastal Rainforest Coalition (now ForestEthics) and Rainforest Action Network, among other environmental organizations. The groups soon formed a joint initiative, the Rainforest Solutions Project (RSP), which aims to place some 5 million acres into reserves fully protected from logging and to develop ecosystem management plans for an additional 16 million acres of federal, provincial and First Nations lands. To achieve the management mission, RSP is counting on The Nature Conservancy (TNC) to help package a \$120 million endowment fund designed to assist ecologically sustainable business ventures in First Nations communities. So far TNC and a number of Canadian and U.S. foundations have nailed down almost \$60 million in private funds: the provincial government has pledged \$30 million to the endowment, and RSP hopes to secure the final \$30 million from the Canadian government. According to TNC, the private funds will be used to create restoration projects and stewardship jobs (such as “forest watchmen”) among First Nations stakeholders. Government funds, on the other hand, would be invested in such sustainable ventures as ecotourism, shellfish cooperatives



F&ES doctoral candidate Catherine Picard, overlooking New Haven from East Rock, has studied community attitudes toward protected areas.

and small-scale value-added forestry concerns. In the absence of such grass-roots opportunities, industrial clear-cutting continues on some First Nations lands, occasionally without the communities' consent and, according to Greenpeace, with little or no direct economic benefit to the indigenous peoples.

RSP looks pretty impressive on paper, but on the ground the prospects for success are daunting indeed. Studies by the Forest Action Network and the David Suzuki Foundation indicate that as of 2005 nearly 70 percent of the Great Bear Rainforest remained open to logging and mining and that more than half of all prime grizzly and salmon habitat in the central coast region lacks any protection whatsoever. And there are other threats beside the chain saw and drill bit: an explosion of salmon farming along the coast, with its associated problems of chemical pollution and the spread of parasites to wild native stocks; the prospect of oil and gas development offshore; and continued trophy hunting for grizzlies in some protected areas too small to guarantee “no net loss” of bears.

“The Great Bear Rainforest cannot be saved in pieces and it will not be saved until we can give real meaning to the connection between the economy and the environment,” TNC declared last year in an executive summary of its campaign. “The chance to ensure a healthy future

[here] reaches beyond the piecemeal preservation of a few isolated valleys and sets the stage for a broad-based transformation in land use and forestry practices. Ultimately, the opportunity in the Great Bear Rainforest is about more than the preservation of one beautiful place. This project is a model of what conservation must become in the 21st century – an inherent part of economies, environment and cultures. But we must act now, or our best chance to preserve the Great Bear Rainforest will be lost forever.”

The Bering Sea

When it comes to picturing large wild areas in need of protection, people generally color them a terrestrial green – or white, if a polar region should pop into mind. But the largest, wildest part of this planet happens to be, in a manner of speaking, maritime blue. And one would be hard-pressed to choose a swatch of it more worthy of protection than the Bering Sea. Sweeping north from Alaska’s Aleutian Islands to the far shores of Russia’s Kamchatka Peninsula, the Bering’s million square miles of shallow continental shelves and deep-water basins provide half of the annual seafood catch (mostly pollock) for the United States, and a third of Russia’s; and its aggregation of largely unspoiled coastal spawning streams and rivers accounts for the densest concentration of wild salmon in the world (five species in all, from the lordly chinook, or king, to the multitudinous pink, or humpy). The sea and its scattered islands support huge seabird populations – murre and auklets by the millions. Its waters welcome bowhead and northern right whales, the endangered Steller sea lion and the northern fur seal.

But now the debt of decades of resource exploitation is beginning to pile up. Halibut and crab populations have been slipping at the rate of 10 percent a year, and the turbot isn’t far behind. Sea otter populations have plummeted; sea lions are in decline. The suspected causes? Overfishing, for one; destruction of ocean-bottom habitat by

fish-factory trawlers, for another. Oil spills. Wasteful bycatch of nontarget species (half a billion pounds a year, by one estimate), not to mention the bycatch of seabirds impaled on the baited hooks of commercial longliners (though now much reduced in Alaskan waters, thanks to technologies developed by the fishermen themselves).

Working with government agencies in the United States and Russia, with commercial fishermen on both sides of the Bering

“Climate change will prove to be the most critical factor affecting life in the Bering Sea Ecoregion.”

Margaret Williams

and with local communities, WWF is spearheading an effort to staunch the environmental hemorrhage. Among the Fund’s top operatives are two F&ES alumnae who, though unrelated, happen to share the same name. Margaret Williams ’93, based in Anchorage, Alaska, is director of WWF’s Bering Sea Ecoregion Program. Laura Williams ’99 has just set up shop in Kamchatka to help frame the program from the other side of the pond. (Other F&ES graduates involved in Bering Sea conservation work include Randy Hagenstein ’84 of TNC; Eric Siy ’88, executive director of the Alaska Marine Conservation Council; and Guido Rahr ’94, president and CEO of the Wild Salmon Center.)

In their new assignments, the Williams women are closing a circle they started to sketch more than a decade ago. In 1993, WWF posted Laura to Russia to open an office in Moscow and assist with the

Margaret Williams ’93, based in Anchorage, Alaska, directs the World Wildlife Fund’s Bering Sea Ecoregion Program.

monitoring of that country’s vast network of scientific nature reserves, the Zapovedniks. Stateside, meanwhile, Margaret was appointed director of the Center for Russian Nature Conservation and soon became the founding editor of *Russian Conservation News*, the only English-language journal reporting on conservation issues in Eurasia. Now the two women are collaborating on a number of Bering Sea initiatives: salmon conservation; improving shipping safety (in the wake of a disastrous oil spill off Unalaska two years ago); promoting sustainable livelihoods for indigenous peoples through ecotourism and reindeer herding; and launching a “Climate Witness” program, in which residents from coastal communities in both countries monitor and report the observable effects of global warming in their own “backyards,” such as the retreat of sea ice (affecting the range and density of polar bear populations) and indications that tree lines may already be creeping northward. “In the long run,” says Margaret Williams, “and maybe not so long at that, climate change will prove to be the most critical factor affecting life in the Bering Sea Ecoregion.”

By most accounts, the buildup of greenhouse gases is likely to alter, over time, the dynamics of virtually every protected area and ecoregion on Earth. To be sure, some naysayers will point to the ups and downs of climate over the long history of life on this planet and, citing the icy



Randy Hagenstein

record of Pleistocene extinctions, argue that we've already been there and done that. But those were time frames measured in tens or hundreds of millennia – episodes during which some species had sufficient time to survive through adaptation. The fast-track warming trends of our own time are far less forgiving. "We can already see that some species are beginning to shift their ranges, generally northward," says Oswald Schmitz, professor of population and community ecology at F&ES. "And one of the critical issues is trying to anticipate what's going to happen next. As some places lose certain species, other places will gain them."

In a report published by the National Academy of Sciences in 2003, Schmitz and his co-authors assessed the extent of turnover of mammalian species that might be experienced in eight selected U.S. national parks should atmospheric CO₂ levels double over baseline levels. Their analysis indicated that the eight parks would stand to lose an overall average of 8.3 percent of their mammalian diversity, and that the two southernmost parks studied, Big Bend and Great Smoky Mountains, would suffer the greatest losses, largely because of changes in vegetation (Great Smoky, for example, shifting from a temperate deciduous forest ecosystem into a warm-temperate mixed forest type currently found farther south). Yellowstone, by contrast, was seen as gaining 49 mammalian species from points south, but losing none of the 53 species currently within its borders due to "a heterogeneous mix of forests and alpine habitat that should not be altered dramatically by climate change." In summary, the Schmitz report concluded, "the effects of global climate change on wildlife communities may be most noticeable not as a drastic loss of species from their current ranges, but instead as a fundamental change in community structure as species associations shift due to influxes of new species."

Elsewhere

There are a number of other large-scale conservation efforts in play around the world, too many to describe here. Yet the sad fact of the matter is that we now know the precise limits of the last of the Earth's last great places, and know too that there will be no second chances should we ever lose any. After that, the name of the game would no longer be conservation, but restoration. And heaven only knows if the human race has the smarts, the attention span and the staying power to beat the long odds on besting that kind of challenge.

Possibly the world's oldest-established wildland is the Chang Tang Wildlife Reserve in the Tibetan Autonomous Region of China, at 134,000 square miles one of the largest protected areas on Earth. Set aside in 1993 largely in response to the work of scientist George Schaller of the New York-based Wildlife Conservation Society, Chang Tang is a frigid, windy, desert-like plateau averaging 16,000 feet above sea level. Its rolling steppes are dominated by grasses, sedges and forbs sufficient to maintain populations of six wild ungulate species, including the chiru (Tibetan antelope), kiang (Tibetan wild ass), blue sheep and wild yak, not to mention such predators as the snow leopard and the brown bear. Though several thousand pastoralists maintain domesticated herds of yaks and goats along some fringes of the reserve, the Chang Tang is still regarded as one of the last rangelands anywhere that has not been degraded by domestic livestock grazing. But, like most protected areas, this one faces imminent threats to its ecological integrity. Commercial hunting has become a big problem as road builders begin to peck away at the preserve. Wild yak are taken for their meat, and the chiru is pursued for its wool, a fine-textured fiber, shatoosh, prized in the markets of South Asia.

In Central Africa, a consortium of organizations backed by the World Bank



Guillermo Castilleja '83, Ph.D. '91, vice president for World Wildlife Fund field programs, said he is "greatly encouraged by what's been accomplished already" by the Amazon Region Protected Areas Program.

has been working to protect the planet's second-largest tropical rainforest (after the Amazon) across the Congo Basin. The forest encompasses a million square miles, stretching west from the Mountains of the Moon in the Democratic Republic of Congo to the Atlantic coasts of Equatorial Guinea and Gabon. Among its diverse assemblage of some 400 mammalian species are forest elephants, gorillas, chimpanzees, bonobos, bongos and okapi, as well as more than 1,000 bird species and an estimated 10,000 species of plants, a third of which are said to be found nowhere else in the world. Much of the region has been trashed in the aftermath of civil wars, creeping urbanization, logging and commercial bushmeat poaching, yet corridors of undisturbed forest still link many large wilderness tracts already targeted for inclusion in a network of protected areas. At the 2002 Earth Summit in Johannesburg, South Africa, Gabon President Omar Bongo announced that he was establishing a system of 13 national parks that would

protect much of the forest in his country, or about one-tenth of the nation's total landmass. Africa watchers are crossing their fingers in hopes that Gabon's good example will inspire other republics in the Congo Basin.

Another great tropical rainforest ranges across the alluvial flood plains and lofty mountains of New Guinea. Conservation International rates it as the largest remaining wilderness area in the Asian-Pacific region. Shared by the Indonesian province of Papua and the independent nation of Papua New Guinea, the island's 300,000 square miles are home to thousands of endemic species, ranging from the storied bird-of-paradise to the tree kangaroo. According to Conservation International, earthquakes, volcanic eruptions and tsunamis have shaped and reshaped the landscape over millions of years, creating "pockets of biodiversity where unique plant and animal species thrive." In the isolated valleys of the interior, a certain cultural multiplicity thrives as well; New Guinea's indigenous Melanesians are believed to represent the most linguistically diverse people on Earth.

Not surprisingly, the island faces many of the same threats bedeviling other rainforest regions: logging of tropical hardwoods; large-scale hardrock mining operations; conversion of forests to monocultures of export crops such as palm oil; and, in the case of Papua, the continuing resettlement of Indonesia's teeming urban populations from overcrowded islands westward.

As F&ES's Clark and his colleagues continue tracking these large-scale conservation initiatives in the years ahead, increasing numbers of F&ES graduates no doubt will move on to work with some of these organizations, where making small plans is no longer allowed. ■

F&ES Program to Identify New Land Conservation Methods

By Stacey Stowe

Few environmentalists would have trouble advocating passionately on behalf of land conservation, but how many can persuade investors to pay for the property, devise a marketing plan to broaden support for land conservation or ensure the long-term sustainability of protected lands?

A new program at the F&ES seeks to prepare students to confront these and other challenges in a creative, comprehensive and pragmatic manner that goes beyond the traditional academic approach. The Yale Program on Strategies for the Future of Conservation is the result of a \$1 million gift by Forrest Berkley, a 51-year-old Yale College alumnus and inveterate hiker and naturalist who retired from the financial services industry in January and intends to offer "a little bit of money and a little bit of experience" to the goal of land conservation.

The first Berkley Conservation Scholar to be selected is Gordon Clark, an F&ES student who is preparing for a career in land conservation. Clark will work this summer with the Great Land Trust in Alaska. In addition to funding at least two internships every summer, the donation will fund two paid school-year research internships every year to examine the most innovative methods available for land conservation. F&ES faculty and staff will select the students.

"The program will balance the needs of the conservation community and the students' interests," said Bradford Gentry, a senior lecturer and research scholar in sustainable investments and director of the Research Program on Private Investment and the Environment. The new program,

which Gentry will direct, will connect both the summer interns and the research interns with land conservation organizations. This relationship will help prepare students for future careers in the field and provide land conservation organizations with the information and research needed to conserve land more effectively.

Gentry cited the need for student training in financial, legal, marketing and sociological methods that intersect with land conservation, since many F&ES graduates

"The conservation movement needs some big, new techniques to continue to conserve land for the next 30 to 50 years."

Jay Espy

go on to work for conservation organizations. Indeed, in 2005 10 percent of F&ES graduates took jobs with conservation organizations and 30 percent of F&ES students interned with them. In addition to the students selected for the Berkley-funded internships, students in Gentry's classes will conduct team research on some of the new methods.

Developers are gobbling up open spaces nationwide, as skyrocketing land values outpace charitable giving and federal funding for acquisitions dries up. Those working in the field of land conservation are "too

busy stopping bulldozers” and stretching a shoestring budget to buy and manage land to be able to focus on new techniques and long-range strategies, Gentry said. So, he explained, land conservation organizations will benefit from the practical and applied research F&ES students will undertake on their behalf. Berkley Scholars will explore whether land conservation can spur economic development, for example, or how it can shape transportation initiatives.

Underlying the argument for a comprehensive approach is the understanding that successful land conservation depends

on identifying the environmental, economic and social needs of an area. For example, will conserving land in an urban setting provide cleaner air or increase real estate values? Berkley Scholars will also look at how to market the idea of land conservation in communities where job growth and educational needs may trump an environmental focus. A community that is land-rich but cash-poor may see land conservation as a poor investment or merely as a luxury for the wealthy. Persuading a community of the economic advantages of preserving land, by explaining that jobs could result

from increased tourism or that real estate values could increase, is an important part of selling the concept of land conservation.

Berkley Scholars will also seek to expand tools for land conservation in the face of decreasing federal contributions, perhaps focusing on both the development of anti-sprawl legislation and new tax credits. Ensuring the permanence of preserved land will also be a focus of the program. Land conservation organizations need to determine a property’s “carrying capacity,” or how much public traffic a parcel can withstand before its ecosystem is affected, and what to do, for instance, if a land conservation easement is violated, Gentry said.

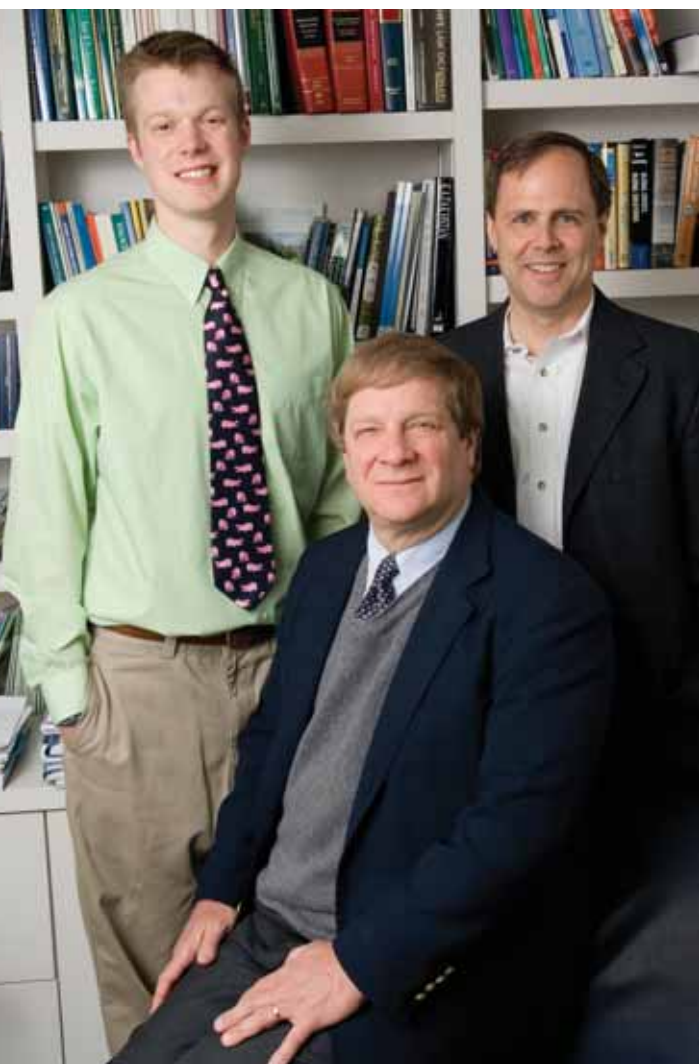
Gentry cited the new businesses that have cropped up around land conservation, such as those that manage land to protect biodiversity, which in turn helps support businesses such as ecotourism and bioprospecting for new drugs. The approach is to have the preserved land

“pay for itself,” he said.

Enter Berkley. Having retired last January from GMO, a Boston-based global investment management firm, where he worked in asset allocation, Berkley, who lives in Wayland, Mass., was looking for ways to combine his business acumen with his interest in land conservation (see sidebar on next page). He was the endowment manager for the Maine Coast Heritage Trust, and later contributed to the purchase of Marshall Island in Maine by the Trust, the organization that ultimately bought the entire 981-acre island. Berkley had planned to give a major unrestricted gift to Yale for his 30th reunion this year, but had a hunch that F&ES could leverage the efforts that the Trust and other environmental groups are making in the field of conservation innovation. Jay Espy, president of the Trust and a 1985 graduate of F&ES and the Yale School of Management, was excited by Berkley’s idea.

“He was intrigued with the depth of their programs,” Espy said. “I knew F&ES was not that well-endowed, and it was doing work closely related to Forrest’s interests.” After Espy contacted Dean Gus Speth about Berkley’s interests, Speth consulted with Gentry, who then developed a concept that became the Berkley-funded “Strategies for the Future of Conservation.”

“The conservation movement needs some big, new techniques to continue to conserve land for the next 30 to 50 years,” Berkley said. He has attended several of Gentry’s classes and has become increasingly fascinated with land conservation issues. His gift will provide \$700,000 for a permanent endowment for F&ES internships in land conservation. The remaining \$300,000 will fund an annual, national conservation leadership seminar for three years. The first took place this June at the Rockefeller Brothers Fund conference center in Pocantico Hills, N.Y., and was co-sponsored by the Land Trust Alliance. Gentry said the seminar will bring together conservation leaders, pension fund investors, “smart-growth” developers



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Forrest Berkley, center, whose gift has established the Yale Program on Strategies for the Future of Conservation, with Brad Gentry, right, director of the program, and Gordon Clark, the first Berkley Conservation Scholar.

Forrest Berkley Invests in F&ES to Realize a Personal Mission

By Stacey Stowe

and others, with the intention to spark innovative approaches to land conservation.

The nation's 1,500 land trusts have relied heavily on conservation easements to conserve property – Maine Coast pioneered their use 36 years ago – but Espy said it's not enough.

"We'd like to find the next-generation 'conservation easement,'" he said.

Gentry said that a second Berkley Scholar is likely to work this summer with the Maine Coast Heritage Trust, where Berkley is a board member. The Trust has a staff of 30 and no research department.

Espy said that marketing land conservation is an unexplored area that could benefit from the work of the Berkley Scholars. People who aren't considered environmentalists in the strict sense usually develop an appreciation for land conservation from their own surroundings, where they might hike trails in their neighborhood; ply local waters as fishermen or boaters; hunt in wetlands or woods; or simply derive pleasure from the aesthetic beauty of farmland or open spaces.

Another, perhaps more esoteric, appreciation is found among people who, while they may never visit a place like the Arctic National Wildlife Refuge, are impassioned by the fact that it is a wild and untouched landscape. Still others are persuaded to appreciate land conservation by seeing a link between a people and its land. Espy remembered being particularly moved by the efforts of the Nez Perce tribe to preserve 10,000 acres of their ancestral land in Washington state.

Espy said demonstrating the relevance of land conservation to all groups of people and focusing on what lands are important to the broad public are key factors to achieving the goal of conserving land.

"The vast majority of Americans don't know why land conservation is relevant to their lives," he said. "We need to think about that as we begin developing new approaches to conservation." ■

Forrest Berkley likes to spend his spare time in places where others get lost. Look for him in remote locations, not only far from the madding crowd, but beyond the modern world. He is now embarked on a pilgrimage to do some good for the environment, and when he escapes, whether to hike in Argentina with his older son or camp on islands in Maine, he is refueling himself for that journey, returning to special places to reinforce the importance of land preservation and conservation.

Berkley lives with his wife, Marcie Tyre, and their 12- and 7-year-old sons west of Boston on a nine-acre farm beside a working hayfield. They summer in Swan's Island, off the southern tip of Mount Desert Island in Maine, and camp on uninhabited Marshall Island.

Berkley's parents instilled a love of the outdoors in him as a child. His father, a medical researcher and college professor, and his mother, a high school chemistry teacher, named him Forrest to reflect their love of wooded places. "My parents were conservationists long before it was popular," said Berkley, now 51, sandy-haired with a solid build and an easy smile. "They really wanted to live in the woods and were opposed to development."

He grew up on five wooded acres in Little Falls, N.J., 15 miles and a world apart from Times Square. His family joined a local hiking club when he was 12, and family vacations meant being packed into the station wagon with his sister and two brothers, destined for one of America's national parks.

"We drove to Florida several times, tent camping along the way until my teenage sister said she wouldn't do it again until we got a car trailer," he said, laughing at the memory. "I loved it."

Berkley entered Yale wanting to become a math professor, but decided on law school when he graduated in 1975. However, he deferred his admission to Harvard Law for two years to work at a New York City law firm to pay for graduate school. He completed Harvard's joint M.B.A./J.D. program in 1982, but not before a dose of adventure, taking a year off to explore Nepal, New Zealand and Peru. "Life can be absolutely magnificent in places very far from civilization," he said.

At Harvard, Berkley met Marcie, who was earning her M.B.A. Upon graduating, he joined the Menlo Park (Calif.) office of Bain & Company, a global business consulting firm. A principal attraction of the Bay Area was its proximity to hiking trails in Yosemite Valley and the Sierra Nevada. But Marcie received an offer to teach at Harvard Business School and enter its doctoral program. In 1983 they moved back East, and three years later he joined GMO, a relatively young money management firm in Boston.

In over 20 years with GMO, Berkley saw the firm grow from 18 people to 350 and from \$1 billion in assets under management to \$115 billion. For many years, Berkley was responsible for the firm's holdings in Japanese stocks, which were sold off in the late 1980s. In 1988, Yale hired GMO to manage a portion of its endowment in foreign stocks. Berkley met David Swensen, chief investment officer for Yale, who urged him to consider donating to Yale. In 1994, Swensen introduced Berkley to Jay Espy of the Maine Coast Heritage Trust, when the Trust was seeking an asset allocation manager to invest its \$15 million endowment. Soon, Berkley found himself wanting to help with the Trust's programs to conserve land. The Trust has protected over 125,000 acres and 250 coastal islands its 35-year history.

Berkley, who said he had "no real experience giving money to charity," had previously donated several thousand dollars a year to Dwight Hall at Yale to help New Haven's homeless population and to the Maine Coast Heritage Trust. Before he gave \$1 million to F&ES, Berkley made a contribution to the Trust to help fund a part of the \$6.3 million purchase of Marshall Island.

In January, Berkley retired from GMO. Today, he is trying to combine his environmental interests with his business experience. "I'm on a mission for the rest of my life to make a difference," he said. "And I'm investing in Yale to help make that a reality." ■

New Index Grades Countries on Current Environmental Performance

By Alan Bisbort

When his Environmental Sustainability Index (ESI) took the world by storm last year, Daniel Esty, J.D. '86, wasted little time in preparing for an encore. (See "The 2005 Environmental Sustainability Index: Gaining Momentum and Believers," Spring 2005.)

A year later, in January 2006, he used the same springboard that launched the ESI – the World Economic Forum in Davos, Switzerland – to launch its companion, the Environmental Performance Index (EPI), which is already on track to equal the reception given the ESI. Within days, *The*

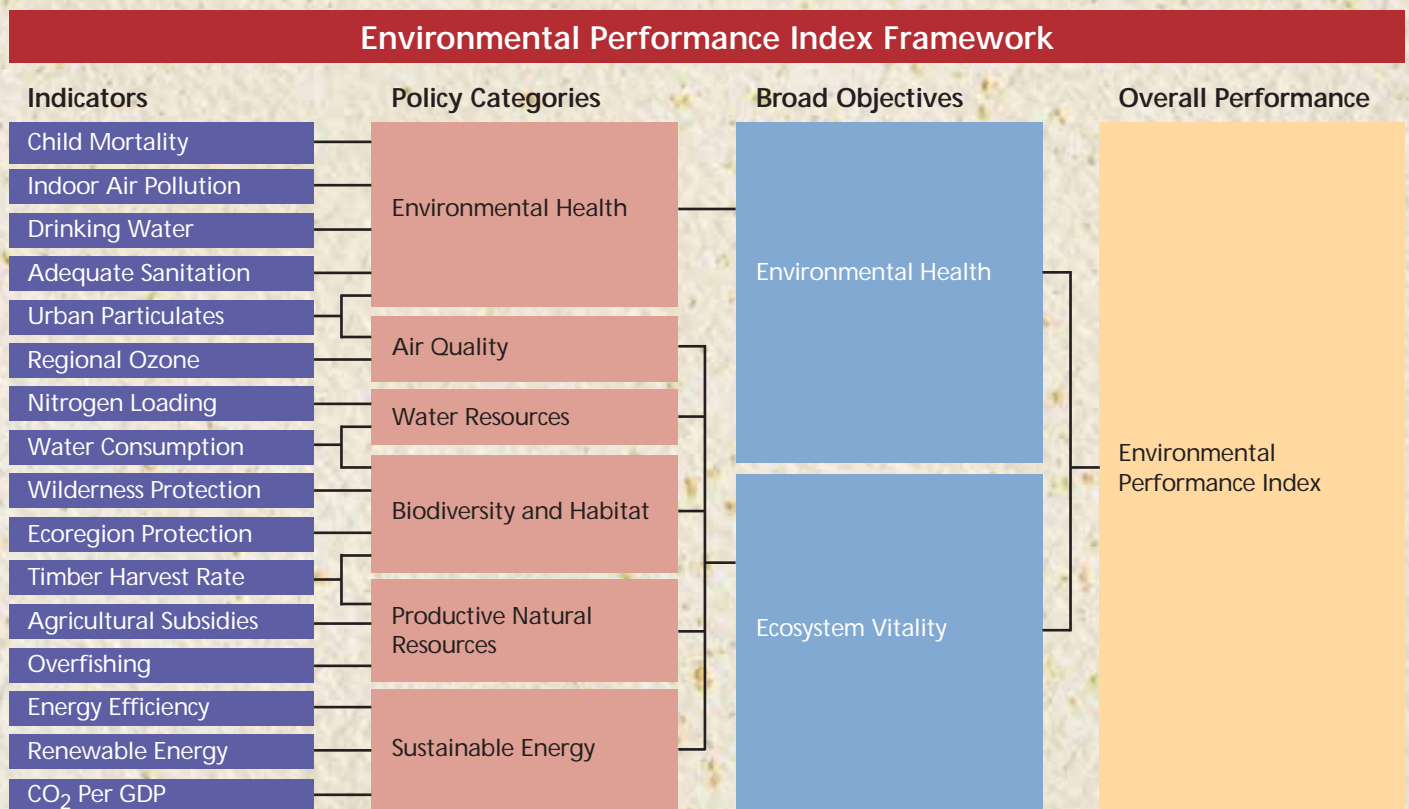
New York Times and *International Herald Tribune* had run major stories on the EPI, and hits on the EPI website topped 300,000 by early February.

Esty, Hillhouse Professor of Environmental Law and Policy, explained: "Our ultimate aim is to make our work policy-relevant. Even though the two are important complements, the EPI gets closer to that point than the ESI. The ESI is a relative ranking, but the EPI is outcome-oriented and focused on current performance. It's also pared down, with 16 rather than 76 underlying indicators. These things make it more attractive to governments."

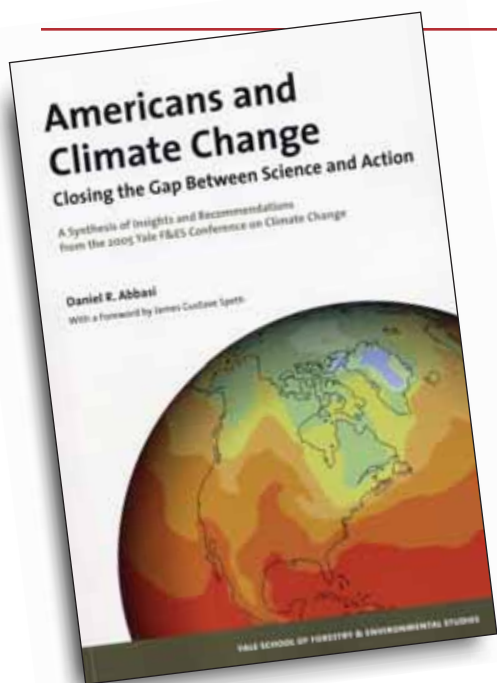
The EPI ranks 133 countries (13 fewer

than the 2005 ESI, due to a lack of data) based on their performance within six policy categories: environmental health, air quality, water resources, biodiversity and habitat, productive natural resources (e.g., farmland, forests, fisheries) and sustainable energy. Each category is, in turn, measured by two to five indicators, or data sets. Each indicator measures the distance a country is from an established policy target, based on goals set by treaties, by international organizations or simply by the best available science (e.g., by definition, the optimum target for sustainable energy is

continued on inside back cover



Galvanizing National Action on Climate Change



Editor's Note: Last October, F&ES convened 120 leaders and thinkers from across the United States in Aspen, Colo., to address one of the greatest practical and intellectual challenges of our time – climate change. One result is a newly published report, **Americans and Climate Change: Closing the Gap Between Science and Action**, which is a synthesis of insights and recommendations. An edited excerpt is printed here. The full report was authored by Associate Dean Daniel Abbasi, with a Foreword by Dean Gus Speth, and published by the F&ES Publication Series. You can download a copy at <http://environment.yale.edu/climate>.

Why has the robust and compelling body of climate-change science not had a greater impact on action, especially in the United States?

From the policy-making level down to personal voting and purchasing decisions, our actions as Americans have not been commensurate with the threat as characterized by mainstream science.

Meaningful pockets of entrepreneurial initiative have emerged at the city and state levels, in the business sector and in “civil society” more generally. But we remain far short of undertaking the emissions reductions that scientists say are required if we are to forestall dangerous interference in the climate system on which civilization depends.

Part I of the report is a synthesis that highlights eight selected themes from the conference, each of which relates to a cluster of diagnoses, recommendations and important lines of debate or inquiry. Part II describes the diagnoses and 39 recommendations from the eight working groups. The eight themes and 10 of the most prominent recommendations are spotlighted below.

Scientific Disconnects

We are only aware of climate change as a human-induced phenomenon because of science. Given this scientific “origin,” the default tendency of those who seek to propagate the issue throughout society is to preserve its scientific trappings: by retaining scientific terminology, relying on scientists as lead messengers and adhering to norms of scientific conservatism. Such practices can cause profound disconnects

in how society interprets and acts on the climate-change issue, and they deserve our remedial attention.

From Science to Values

Given the challenges of propagating the science of climate change throughout society, many people now favor shifting to a values-based approach to motivating action on the issue. Religious communities, in particular, are increasingly adopting the climate-change issue in fulfillment of their stewardship values. Yet a science-to-values repositioning, whether religious or secular, carries risks that need to be understood and managed.

Packaging Climate Change as an Energy Issue

Frustrated by the inability of climate change to break through as an urgent public concern, many believe it is best to finally admit that the issue cannot stand on its own. Climate change can be packaged with other issues that have generated more public concern to date – and energy security is a leading candidate. This is a promising strategy, but it also risks de-emphasizing climate-change mitigation as an explicit societal priority precisely when it needs to move up on the list.

Incentives

It is tempting to reduce the challenge of promoting action on climate change to matters of communication and strategic positioning. Yet this will usually only take us part of the way. Translating awareness into action depends on identifying – and selectively modifying – the deeper incentive structures at play in our society. Harnessing

climate-change objectives to the material incentives to modify energy supply and use patterns is an important part of the equation. But a more thorough domain-by-domain analysis of career and organizational incentives yields additional levers for fashioning a broad-based set of strategies.

Diffusion of Responsibility

After evaluating the incentives operating within each of the eight societal domains represented at the conference, it is now worthwhile to reassemble the pieces and identify patterns cutting across them. Doing so yields the sobering insight that we are experiencing diffusion of responsibility on climate change. While no single individual or domain can plausibly be expected to take solitary charge on this encompassing problem, many who could assume leadership appear to think it is someone else's prerogative, or obligation, to do so. The result: a leadership vacuum.

The Affliction of Partisanship

Climate change is a partisan issue in America. The policy stalemate in Washington, D.C., has left those committed to action uncertain about whether a partisan or bipartisan strategy is more likely to succeed going forward. Partisanship has had profound spillover effects, chilling public engagement on climate change throughout our society and compelling many people to take sides instead of collaborating to craft policies and actions as warranted by the science.

Setting Goals

Those working to promote societal action on climate change need to do a better job of promoting convergent strategies by dispersed and often uncoordinated actors and commensurate with a real solution to the problem. In order to guide and motivate needed actions, these goals should be generated collaboratively, scientifically calibrated, quantifiable, trackable and easily expressible. They should include not only emissions targets but also, given the crucial importance of "public will," attitudinal targets.

Leveraging the Social Sciences

The facts of climate change cannot be left to speak for themselves. They must be

actively communicated with the right words and in the right dosages, packaged with narrative storytelling that is based rigorously on reality, personalized with human faces, made vivid through visual imagery – and delivered by the right messengers. Doing this will require that climate-change communications go from being a data-poor to a data-rich arena. Social-science methods have not been adequately applied to date – and that must change, given the stakes.

Part II of the report describes in detail the diagnoses of the science-action gap that were made by each of the eight working groups, and subsequently refined in mixed-group formats. It also lays out each of the 39 recommendations, providing supporting rationales and, in some cases, points of debate. The recommendations represent the output of concentrated dialogue among a thoughtful and diverse group of Americans, but sign-off should not be construed, as they were not submitted to a vote or any consensus-building procedures. The following are 10 of the most prominent recommendations to emerge.

Recommendation #1: Create a new bridging institution to actively seek out key business, religious, political and civic leaders and the media and deliver to them independent, reliable and credible scientific information about climate change (including natural and economic sciences).

Recommendation #7: Educate the gatekeepers (i.e., editors). In order to improve the communication of climate science by the news media, foster a series of visits and conferences whereby respected journalists and editors informed on climate change can speak to their peer editors. The objective is to have those who can credibly talk about story ideas and their craft reach out to their peers about how to cover the climate-change issue with appropriate urgency, context and journalistic integrity.

Recommendation #11: Religious leaders and communities must recognize the scale, urgency and moral dimension of

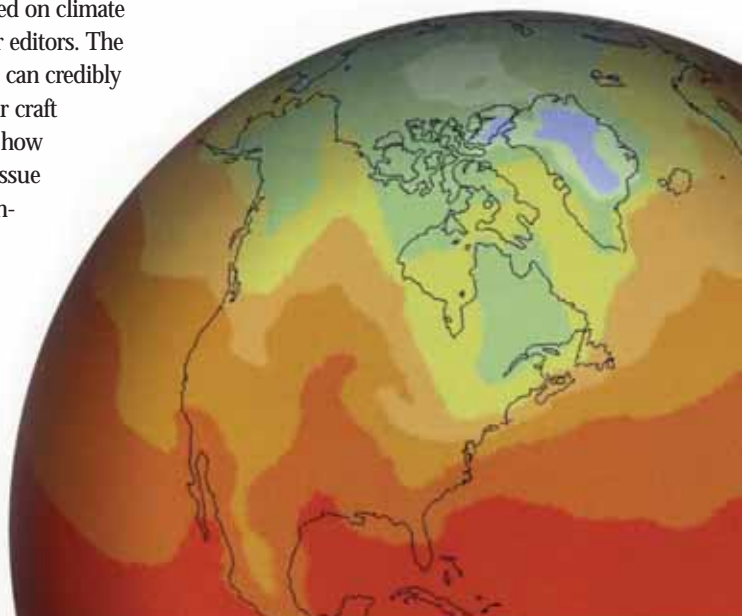
climate change and the ethical unacceptability of any action that damages the quality and viability of life on Earth, particularly for the poor and most vulnerable.

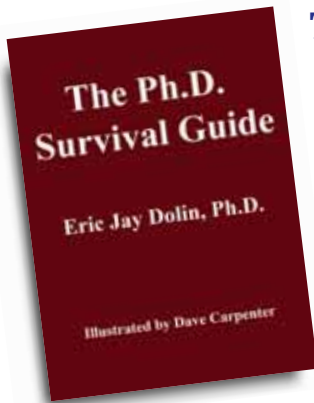
Recommendation #20: Design and execute a "New Vision for Energy" campaign to encourage a national market-based transition to alternative energy sources. Harness multiple messages tailored to different audiences that embed the climate-change issue in a larger set of cobenefit narratives, such as reducing U.S. dependency on Middle East oil (national security), penetrating global export markets with American innovations (U.S. stature), boosting U.S. job growth (jobs) and cutting local air pollution (health).

Recommendation #25: Create a new overarching communications entity or project to design and execute a well-financed public education campaign on climate-change science and its implications. This multifaceted campaign would leverage the latest social-science findings concerning attitude formation and change on climate change, and would use all available media in an effort to disseminate rigorously accurate information and to counter disinformation in real time.

Recommendation #26: Undertake systematic and rigorous projects to test the impact of environmental communications in all media (e.g., advertising, documentary feature films) on civic engagement, public opinion and persuasive outcomes. Use

continued on inside back cover





The Ph.D. Survival Guide

Getting a Ph.D. is an intellectually exciting experience, but it can also be very challenging. Roughly 40,000 doctoral students graduate every year in the United States, and most of them bear the scars of what is too often a lonely

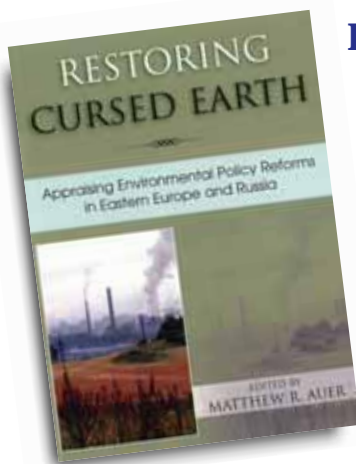
and difficult rite of passage.

Eric Jay Dolin '88, who holds a doctorate from MIT, presents the lighter side of the process in *The Ph.D. Survival Guide*.

In his book, Dolin teaches doctoral students how to pick a school based on its location, plead for acceptance, identify subspecies of *Homo doctoratus*, avoid professorial deadwood, select courses that aren't lethal, qualify for a platinum copying card, raise jargon to an art form, interact with unsympathetic friends and family members, footnote one's way to nirvana, suck up to secretaries, survive the dissertation defense without crying and re-enter the real world. *The Ph.D. Survival Guide* blends humor with advice that will help doctoral students graduate more or less in one piece. The book is published by iUniverse. To purchase a copy, visit www.iuniverse.com.

Working Forests in the Neotropics

Neotropical forests sustain a wealth of biodiversity, provide a wide range of ecosystem services and products and support the livelihoods of millions of people. But is forest management a viable conservation strategy in the tropics? Supporters of sustainable forest management have promoted it as a solution to problems of biodiversity protection and economic stagnation. Detractors insist that most conservation strategies are a waste of resources and that forest management actually hastens deforestation. *Working Forests in the Neotropics: Conservation Through Sustainable Management?* highlights the major factors that contribute to or detract from the chances of achieving forest conservation through sustainable management. Daniel Zarin '90, an associate professor in the School of Forest Resources and Conservation at the University of Florida, is co-editor with Janaki Alavalapati, Francis Putz and Marianne Schmink. The book is part of Columbia University Press' Biology and Resource Management Series. To purchase a copy, visit www.columbia.edu/cu/cup.



Restoring Cursed Earth

Among the most costly and complicated chapters in the former Eastern bloc countries' transitions to democracy are the cleanup and restoration of the environment. Even as Communist-era environmental problems – such as pollution from heavy industry – fade in significance, new threats have emerged. Urban sprawl, increasing pollution from mobile sources and other problems familiar to Western European citizens now plague the East. These problems are compounded by the lack of transparency and accountability in former Eastern bloc environmental regulatory institutions and the general weakness of environmental authorities and non-governmental organizations vis-à-vis powerful prodevelopment interests.

Restoring Cursed Earth: Appraising Environmental Policy Reforms in Eastern Europe and Russia considers how rule making, sanctions, incentives and programs shape environmental protection efforts, and whether and to what extent these

emerging policy structures are promoting environmental well-being for citizens in Russia, the Czech Republic, Hungary, Romania and Estonia. In addition, informal institutions such as illegal and corrupt acts, language and ties of affection between family and friends are explored as key determinants of environmental reforms. The book, edited by Matt Auer '94, Ph.D. '96, is published by Rowman & Littlefield. To purchase a copy, visit www.rowmanlittlefield.com.



It's a Long Road to a Tomato

Already in his early forties and not entirely content with his lot, Keith Stewart '80 traded life in New York's corporate grind for an upstate farm. Starting as a one-man operation, short on experience and with modest expectations, Stewart soon found that the agrarian life, despite its numerous challenges, suited him well. His new business flourished. Today, he has a crew of six to eight seasonal workers, and grows about a hundred varieties of vegetables and herbs. What began as a yearning – “to live on a piece of land, closer to nature; to work outside with my body as well as my brain; to leave behind the world of briefcases, computers, corporate clients, and nonopening windows” – has become a life more full, more varied, more demanding and more exhausting than he imagined, but “always more real.”

Stewart sells everything he grows directly to consumers and restaurateurs, and in doing so has developed a loyal and growing following of his Rocambole garlic, varied herbs, heirloom tomatoes and other organic produce. In *It's a Long Road to a Tomato: Tales of an Organic Farmer Who Quit the Big City for the (Not So) Simple Life*, Stewart presents complementary essays that address his midlife development as a farmer; some of the nuts and bolts and how-tos of organic vegetable growing and selling in an urban market; humorous and philosophical stories about domestic and wild farm animals; and insights into the political, social and environmental issues surrounding agriculture. To purchase a copy of the book, published by Marlowe & Company, visit www.amazon.com.



Get Hired!

Fifty percent of employees in the federal government – the nation's largest employer – will be eligible to retire by 2010. As a result, federal recruitment programs for students, recent graduates,

women, minorities and experienced professionals have been popping up across the United States faster than new Starbucks stores. In *Get Hired! How to Land the Ideal Federal Job and Negotiate a Top Salary*, job seekers can find dynamic domestic and overseas openings and learn how to win over hiring managers and negotiate top salaries. Lily Whiteman '88, a career coach at the U.S. Mint and a columnist for *Federal Times*, based her insider's guide on successful techniques used by hundreds of applicants she coached and on guidance from scores of hiring managers who serve as the gatekeepers of federal jobs. The book describes over 100 fast-track internship and recruitment programs, simplifies and demystifies the federal hiring system, reveals how to impress hiring managers on paper and in person and describes mistakes that doom most applications. The book is published by FPMI Solutions. To purchase a copy, visit www.amazon.com or call the publisher (1-888-644-FPMI).

Environmental Leadership Equals Essential Leadership

In *Environmental Leadership Equals Essential Leadership: Redefining Who Leads and How*, former F&ES Dean John Gordon and Joyce Berry, dean of the College of Natural Resources at Colorado State University, assert that there is no single model or theory that adequately describes environmental leadership. They contend that the creation of useful visions of the future (those that identify achievable goals and that solvable problems and what to do about them) is the first step in essential leadership; that solvable problems can be defined by specifying five components – a decision-maker or class of decision-makers, the objective or objectives of the decision-maker, alternative ways of achieving the objectives, doubt about which objective to choose, and the context in which the decision takes place; and that the complex nature of environmental problems focuses on collaborative effort, so diversity and inclusiveness are always elements in their solution. Yale University Press published the book. To purchase a copy, visit <http://yalepress.yale.edu/yupbooks>.



Yale Program to Give Developing World Access to Global Scientific Research

By Alan Bisbort

For the past three years, Paul-Bendiks Walberg has had the “brain-drain migration” on his mind. This phenomenon – when the best and brightest of a nation or region are compelled to travel abroad for education, research and job opportunities, never to return home – is a direct result of what scientists around the world call “the Great Information Divide.”

That “divide” refers to the near total lack of access to the global scholarly record (scientific journals, monographs and A&I databases) in the developing world. As globalization continues apace and development issues go unaddressed in these impoverished nations, the gap widens. For three years, Walberg, a 2002 graduate of F&ES and the Yale School of Management, has pondered a way to bridge that divide within the environmental sciences.

“You could say I’m almost obsessed with this problem,” he said.

Though Walberg smiles at his single-mindedness, the situation is no laughing matter to him.

“In a majority of countries in the developing world, it’s remarkably difficult to conduct scientific research,” he said. “Without access to the literature, scholars don’t know what’s happening in their field of study, and if they’re interested in conducting research that adds to the scientific record, they risk duplicating work someone else has already completed and wasting years of effort.”

This information gap, particularly at the university level, can paralyze institutional development. “Without a stable group of

qualified faculty, institutions of higher learning have great difficulty educating environmental leaders and specialists,” he said.

Oswald Schmitz, professor of population and community ecology and associate dean for academic affairs at F&ES, has been concerned about the information divide since the 1990s, when he began conceiving plans for “distance education,” in hopes of offering full courses in ecology via the Internet.

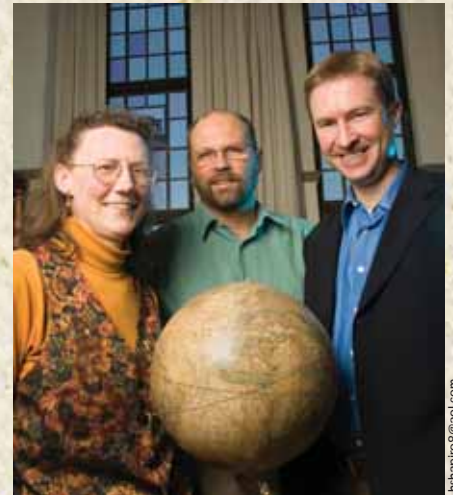
“These countries are always playing

“The most critical environmental issues are in these developing countries with huge populations, huge poverty and conflict.”

Oswald Schmitz

catch-up,” said Schmitz. “The most critical environmental issues are in these developing countries with huge populations, huge poverty and conflict. It’s the part of the world that needs the material the most. We educate and train students from other countries here, but when they go home they find that there are no tools with which to work. It’s especially bad in Africa.”

Walberg’s “obsession” intersected with Schmitz’s “distance” idea while he was a student at F&ES. “I started the Center for Biodiversity Conservation and Science,



Paul-Bendiks Walberg '02, right, will manage the OARE program with Kimberly Parker, head of Yale University Library's electronic collections. Oswald Schmitz, associate dean for academic affairs at F&ES, will be a co-director of the program.

and needed someone who knew the business side and knew about conservation,” said Schmitz. “Paul had taken some of my courses, and was uniquely trained with that combination. He was energetic and experienced. And he’s proven he’s a valuable asset.”

Indeed, upon graduation, Walberg became intrigued by the rapid growth of online publishing of scholarly resources and the profound lack of scientific libraries in Central and South America, where he conducted research. He became interested in the possibility of creating an online library in the environmental sciences for developing countries. Three professional contacts proved vital to shaping the idea: Kimberly Parker, head of Yale University Library's electronic collections; Maurice

Long, liaison to leading publishing houses and the International Association of Scientific, Technical and Medical Publishers; and Barbara Aronson, program manager of HINARI (the Health Inter-Network Access to Research Initiative), a World Health Organization program in which Yale University Library has played a leading role. HINARI has strengthened public health services in developing countries by providing access to research in the medical sciences.

Now, Walberg's digital Internet library, called Online Access to Research in the Environment (OARE), is ready for prime time, a fact that was verified late last year when OARE received grants of \$250,000 each from the William and Flora Hewlett Foundation and the John D. and Catherine T. MacArthur Foundation. OARE will be co-directed by Schmitz and Ann Okerson, associate university librarian for collections and international programs, and managed by co-organizers Walberg and Parker.

Through OARE, a secure Internet portal, approximately 900 public institutions in 110 developing countries will receive free or deeply discounted access to the online scientific literature of leading international publishers. In the project's first phase, due to be launched in October, 70 nations with per capita gross national products (GNPs) under \$1,000 will receive free access to literature in environmental economics, law and policy; chemistry; biology; ecology; meteorology; oceanography; geology; hydrology; climatology; geography; forestry; fisheries; environmental biotechnology and engineering; energy; and other subjects. Key participating publishers include Elsevier, Blackwell, Taylor & Francis, Springer, John Wiley, Cambridge University Press, Oxford University Press, National Academy of Sciences, American Association for the Advancement of Science, Nature Publishing Group, Annual Reviews and many others. The portal will be available in several languages, including Arabic, English, French, Portuguese and Spanish, and will offer a range of scientific databases and search engines to facilitate identification of information buried in thousands of articles.

The consortium of institutions involved in OARE has expanded to almost 40, including leading publishers, foundations, universities, multilateral organizations and nongovernmental organizations. "We expect the project to launch with 700 to 900 serial titles from 20 major scientific publishing houses," said Walberg, adding that annual subscription fees to these titles can run as high as \$3,000. "Together, eligible institutions would pay somewhere in the neighborhood of \$200 million each year for access to these resources were they located in the United States. The scale of publisher generosity is quite profound," said Walberg.

Participants are located in Africa, Asia, Latin America, the Caribbean and Eastern Europe. The diversity of the eligible institutions is as impressive as the list of countries. The following organizations are typical of those found on OARE's 24-page list: Madagascar's Université d'Antananarivo, Côte d'Ivoire's Ministère de l'Environnement, Kenya's National Academy of Sciences, Peru's Amazon Research Institute, Colombia's Universidad de Antioquia, Honduras' Secretaria de Recursos Naturales y Ambiente, Fiji's Ministry of Fisheries and Forests, Royal Nepal Academy of Science and Technology, and Bangladesh's Institute of Development Studies.

"There will be some gatekeeping. It is a secure portal, not a free-for-all," said Schmitz. "You have to register through an institution or agency that is participating. The intent is to empower leaders in these countries. They are the stakeholders in their own countries, and only they can solve their problems."

Walberg and Parker will continue to build and manage the project with key contributions from partners in the United Nations Environment Programme, the U.N. Food and Agriculture Organization, the World Health Organization, Cornell University and leading scientific publishers around the world. If all goes well in the first phase, OARE will initiate a second phase next year, with material going to 45 more countries that have GNPs between \$1,000 and \$3,000. ■

Grant to Promote Yale-India Environmental Ties

A three-year, \$825,000 grant will establish a research and exchange program between F&ES and The Energy and Resources Institute (TERI) in India.

The collaborative program, "Building Capacity for Environmental Resource Management in India," funded by the V. Kann Rasmussen Foundation of Boston, will emphasize teaching, training and research in the areas of energy, climate change and carbon sequestration, environmental law and policy, joint forest and watershed management and industrial ecology.

"The new partnership will seek to produce a new generation of decision-makers and leaders in India who will take the country in the direction of sustainable development, sensitize midcareer public policy officers in India toward environmentally sound development and management practices, and build lasting professional ties between the TERI School and Yale," said TERI's Director General Rajendra Pachauri.

Pachauri said that India, with a population exceeding 1 billion that accounts for one-sixth of the world's population, must make economic development and environmental conservation a policy and resource priority. He said income growth and direct consumption will attract global industry, and resource management models established in this context will be critical to preserving environmental wealth and promoting economic strength. "There is a need to train and nurture expertise in environmental management, and this program is an effort to bridge the gap," he added.

Dean Gus Speth said, "Through the framework of this collaborative program, the TERI School and



F&ES will establish a long-term program of research and exchange between faculty and students at both institutions. By drawing upon the comparative strengths of the two diverse institutions, the program will create new knowledge and foster the development of skills, techniques and teaching materials that are relevant to the environmental problems facing India and other developing countries.”

Yale to Offer 'Green' Building Design and Development Program

A new advanced-degree program that puts a “green” spin on architectural design will be offered at Yale University in the fall.

“Few universities are in a position to do this better than Yale,” said Robert Stern, dean of the Yale School of Architecture. “The long leadership traditions of the schools of Architecture and Forestry & Environmental Studies, with the unmatched potential offered by their combined intellectual expertise and physical facilities, uniquely position these schools, and thus Yale, to establish a singularly innovative and relevant academic program in sustainable, restorative environmental design.”

Sustainable, restorative environmental design seeks to minimize adverse effects on the natural environment and human health and enhance the beneficial contact between people and nature in buildings.

“Much of current design and development, especially in urban areas, has fostered environmental degradation, excessive waste, pollution and unsustainable resource use, while at the same time separating, if not alienating, people from the natural environment,” said Stephen

Kellert, Ph.D. ’71, Tweedy/Ordway Professor of Social Ecology at F&ES.

Students in the four-year, 126-credit program will take 90 course credits at the architecture school and 36 credits at the environment school, and upon graduation they will receive master’s degrees in architecture and environmental management.

Study Finds No Safe Level for Ozone

Even at very low levels, ozone – the principal ingredient in smog – increases the risk of premature death, according to a nationwide study that was published in the April issue of the journal *Environmental Health Perspectives*.

The study, sponsored by the Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention, found that if a safe level for ozone exists, it is only very low or natural and far below that specified in current U.S. and international regulations. A 10 parts-per-billion increase in the average of the two previous days’ ozone levels is associated with a 0.3 percent increase in mortality. The current study builds on research published in November 2004 in *JAMA: The Journal of the American Medical Association*, which was the first national study of ozone levels and mortality rates.

“This study investigates whether there is a threshold level below which ozone does not affect mortality. Our findings show that even if all 98 U.S. counties in our study met the current ozone standard every day, there would still be a significant link between ozone and premature mortality,” said Michelle Bell, lead investigator of the study and assistant professor of environmental health at F&ES. “This indicates that further

reductions in ozone pollution would benefit public health, even in areas that meet regulatory requirements.”

Bell and her co-investigators found that even for days that currently meet the EPA limit for an acceptable level of ozone – 80 parts per billion for an eight-hour period – there was still an increased risk of death from the pollutant.

An effort is now under way by the EPA to consider whether more stringent standards for ozone are needed. The agency is mandated to set regulations for ozone under the Clean Air Act. Ozone, a gas that occurs naturally in the upper atmosphere, is created in the lower atmosphere when vehicle and industrial emissions react with sunlight. Levels typically rise when sunlight and heat are highest in the summer.

“Over 100 million people in the United States live in areas that exceed the National Ambient Air Quality Standard for ozone. Elevated concentrations of ozone are also a growing concern for rapidly developing nations with expanding transportation networks,” said Francesca Dominici, one of the co-authors of the study and an associate professor of biostatistics at Johns Hopkins University.

The study is available online at <http://ehp.niehs.nih.gov/docs/2006/8816/abstract.html>.

Study Says Metals in Earth Not Enough to Meet Global Demand

Researchers studying supplies of copper, zinc and other metals have determined that these finite resources, even if recycled, may not meet the needs of the global population, according to a study published in January in the *Proceedings of the National Academy of Sciences*.



The study found that if all nations were to use the same services enjoyed in developed nations, even the full extraction of metals from the Earth's crust and extensive recycling programs may not meet future demand.

The researchers – Robert Gordon D. Eng. '55, professor of geophysics and of applied mechanics and mechanical engineering; Thomas Graedel, Clifton R. Musser Professor of Industrial Ecology at F&ES; and Marlen Bertram of the Organisation of European Aluminum Refiners – suggest that the environmental and social consequences of metals depletion become clear from studies of metal stocks (those in the Earth, in use serving people and lost in landfills) more so than from tracking the flow of metal through the economy.

“There is a direct relation between requisite stock, standard of living and technology in use at a given time,” said Gordon. “We therefore offer a different approach to studying use of finite resources – one that is more directly related to environmental concerns than are the discussions found in the economics literature.”

Using copper stocks in North America as a starting point, the researchers tracked the evolution of copper mining, use and loss during the 20th century. Then the researchers applied their findings and additional data to a model of global demand for copper and other metals, assuming all nations were fully developed and used modern technologies.

According to the study, “Metal Stocks and Sustainability,” all of the copper in ore, plus all of the copper currently in use, would be required to bring the world to the level of the developed nations for power transmission, construction and other services and products that depend on copper.

The researchers estimate that 26

percent of extractable copper in the Earth's crust is now lost in nonrecycled wastes. For zinc, that number is 19 percent. Prices do not reflect those losses because supplies are still large enough to meet demand, and new methods have helped mines produce ever more material. So, the study suggests, these metals are not at risk of depletion in the immediate future.

However, the researchers believe that scarce metals, such as platinum, face depletion risks this century because of the lack of suitable substitutes in such devices as catalytic converters and hydrogen fuel cells. The researchers also found that for many metals, the average rate of usage per person continues to rise. As a result, the report says, even the more plentiful metals may face similar depletion risks in the future.

The research emerged from collaboration among researchers funded by the National Science Foundation Biocomplexity in the Environment-Materials Use: Science, Engineering, and Society program.

Special Issue of the *Journal of Industrial Ecology* Focuses on Ecoefficiency

Disputes over the trade-off between the environment and the economy are a central feature of contemporary politics. Whether the threat is global warming or toxic substances, the tension between cost and environmental benefit is often palpable.

Some of these disagreements can be avoided through a better understanding of ecoefficiency – the actual value of an investment in environmental improvements. Ecoefficiency is the focus of a special issue of Yale's *Journal of Industrial Ecology*, which offers pathbreaking

analysis of this key concept.

“Through calculations of ecoefficiency, our grasp of the relationship between cost and environmental value can be sharpened,” said Dean Speth. “The research presented in this issue represents a major advance in this important tool.”

Articles in the Fall 2005 special issue examine how ecoefficiency can be used as a practical tool for analysis and as a framework for making difficult choices. The ecoefficiency of activities and choices – for production and consumption, and even for economic sectors and regions – can be quantified. Central developments described in this special issue include ways to quantify the environmental impact of activities, with articles on data envelopment analysis and the maximum abatement cost method.

Using these techniques, journal contributors examined the ecoefficiency of small businesses in South Korea, of the steel and aluminum industries in the United Kingdom, of a region in Finland, of different options for solid-waste management and of different parts of the same firm. Other articles examine sustainable-value creation by firms, the role of ecoefficiency in corporate planning and investment and the ecoefficiency of advanced loop-closing (recycling) techniques in Japan.

Gjalt Huppel, head of the Department of Industrial Ecology, Institute of Environmental Sciences, at Leiden University in the Netherlands, and Masanobu Ishikawa, professor of environmental and economic systems analysis at Kobe University in Japan, served as guest editors. Ebara Corp. provided funding for the issue. The articles in the special issue are available online at <http://mitpress.mit.edu/JIE/eco-efficiency>.

Dean Speth Wins Book Award for Nonfiction

Dean Gus Speth is the winner of the 2005 Connecticut Book Award for nonfiction for *Red Sky at Morning: America and the Crisis of the Global Environment*. In the book, he argues that the international community must take urgent action to address global-scale environmental threats or face an era of environmental decline.

"Time is running out," wrote Speth, former chair of the Council on Environmental Quality during the Carter administration and founder of the World Resources Institute. "We are on the verge of reaping an appalling deterioration of our natural assets. Only unprecedented action taken with a profound sense of urgency can forestall these consequences."

The book, published in March 2004 by Yale University Press, outlines steps in eight areas that, taken together, would constitute the needed transition to sustainability. "These transitions require genuine partnership between countries of the North and South, as well as actions far outside the traditional areas of environmental policy," wrote Speth. "Collectively, they will do three things of immense importance. They will directly attack the underlying drivers of deterioration. They will greatly enhance the prospects for success of treaties and other agreements by altering the context in which the agreements are operating. And they will facilitate a very different, more hopeful and powerful way of doing the business of global environmental governance."

The paperback edition of *Red Sky at Morning*, published in March 2005, contains an Afterword that reviews the mounting evidence of

serious climate change and proposes a 10-point plan of action that does not depend on Washington leadership.

The Connecticut Book Awards were presented on December 5 by the Connecticut Center for the Book (CCB), a program of the Hartford Public Library and an affiliate of the Center for the Book in the Library of Congress. The CCB's mission is to celebrate books, writers and readers who engender and sustain the life of the imagination and to highlight authors, illustrators, printers, publishers and the literary heritage of the state of Connecticut.

Gift to Promote Biodiversity Conservation in Tropical Forests

An environmental leadership and training program to promote biodiversity conservation in tropical forests in Asia and Central and South America has been established at Yale University with a \$4.8 million gift from the Lisbet Rausing Charitable Fund.

"The worldwide environmental crisis reflects deep disparities in the capacities of nations, institutions, communities and individuals to develop and implement solutions that sustain both human societies and the biosphere," said Dean Gus Speth. "The future success of conservation efforts requires a major enhancement of social capital in the developing world."

The program's co-principal investigators are Mark Ashton '85, Ph.D. '90, professor of silviculture and forest ecology; Lisa Curran, associate professor of tropical resources; Amity Doolittle '94, Ph.D. '99, lecturer, associate research scientist and program

director of the Tropical Resources Institute; and Brad Gentry, senior lecturer in sustainable investments.

The Tropical Resources Institute at F&ES, in partnership with the Center for Tropical Forest Science of the Smithsonian Tropical Research Institute, will coordinate the program, which will build the environmental conservation and management capacity of individuals, communities and institutions in regions of high biological diversity in tropical forests.

The program will focus on the training of field workers in conservation; park managers; officials concerned with energy, infrastructure services and natural resources; and environmental policy makers and community leaders.

Short courses, workshops and field trips will take place at the program's principal sites in Panama City and Singapore, where Yale and the Smithsonian already work together, as well as at field sites in South and Southeast Asian and Central and South American regions.

Based in London, the Lisbet Rausing Charitable Fund supports activities of high scholarly, cultural or social worth. The fund's principal trustees are Lisbet Rausing, a historian and a research fellow of Imperial College in London, and Peter Baldwin, a professor of history at the University of California, Los Angeles.

"Conservation is an urgent need, and it is of the greatest importance to support the people directly involved in protecting threatened environments," said Rausing and Baldwin. "Yale is to be congratulated on producing this program." ■

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

Learning to Read the Fields

During the catastrophic years of American bombing followed by the horrors of the Khmer Rouge regime, the Jarai farmers of the Cambodian highlands were forced to abandon their villages and their traditional farming practices. They returned to both. Jonathan Padwe wants to know the secret of their success and what that says about their ability to survive their latest challenge, modernization.



By Marc Wortman

Most evenings Jonathan Padwe '01 sits down for a meal with an extended family of rice farmers in the village of Mhang in Cambodia's northeast highlands. Virtually everything they eat they grew in the fields that they have carved by hand out of the surrounding forests. Padwe raves about the mashed pumpkin with mint and the heady fermented rice beer they drink during the annual harvest celebrations. He is grateful for how welcome he has been made to feel by the 200 Jarai villagers of Mhang. "They're amazing," he says.

The truly amazing thing is that they are there at all. Starting in 1968, American forces at war against the Viet Cong and the North Vietnamese army began bombing the region in a failed attempt to cut off supplies being brought into Vietnam along the Ho Chi Minh Trail through the Cambodian highland forests. Bombs rained down on the highland farmers. The results, says Padwe, were "catastrophic" for the farmers and their agricultural system. The Jarai are one of several Cambodian indigenous minorities living in the highlands that practice a farming technique known as "swidden agriculture."

Unlike the paddy-based rice farmers of the very rainy lowlands, highland ethnic minorities fell patches of hilly deciduous

A chamkar, or swidden, is an agricultural field created by felling trees, slashing brush and burning the downed vegetation to clear a way for planting. Farmers live in houses in their chamkars throughout the planting season, returning to live in their villages once the harvest is in.

forest to create new rice fields known as "swiddens." To help ensure a bountiful harvest in a region marked by hot, dusty seasons that alternate with heavy rains and mud, the fields carved out of the forest are planted with many different varieties of upland rice and other crops. After a swidden becomes too difficult to weed, it is allowed to revert to forest, and another section of the forest must be cut down by hand to form new swiddens.

U.S. bombing killed large numbers of Jarai and drove many others out of the region. Then the Khmer Rouge, under dictator Pol Pot, came to power. The remaining Jarai were forced to abandon their highland farms and move into the lowlands. Countless Jarai villagers died of starvation, in forced labor camps or by execution. Many centuries of unrecorded swidden agricultural methods, along with seed stores and swiddens returned to forest, were lost.

Then in the 1980s, after Vietnam ousted the Khmer Rouge, the Jarai people returned to the highlands. After nearly a decade and a half of disruption of their traditional farming practices and village life, a remarkable renaissance occurred – swidden farming returned to the highlands. "Somehow in the 1980s," Padwe says, "a group described as poor and

uncivilized reintroduced a highly calibrated, diverse and complex agricultural system after a 10-year hiatus."



Jonathan Padwe travels four hours by motorcycle on rutted mud roads and another four hours on foot through forest trails from Ban Lung, the capital of Ratanakiri Province in Cambodia, to reach the village of Mhang.

History in the Fields

Padwe has been living in Mhang since last year, where he is attempting to understand how those villagers who returned to their lands managed to re-establish swidden agricultural practices and quickly restore production of a large, exceptionally diverse crop base that includes many varieties of rice that had been thought lost. According to Padwe, "The level of success the Jarai and other highland groups have had with their crop reintroductions rivals or surpasses the heavily funded, centralized efforts made

Jonathan Padwe '01, right, and an agricultural extensionist of a local nongovernmental organization visit farms in Padwe's project area.



by state planners and nongovernmental organizations in Cambodia's lowlands."

"How," he asks, "did the Jarai ethnic minority put their system of swidden agriculture back together again after the catastrophe they endured?"

By studying the travel of rice seed varieties along the networks that connect Jarai farmers in Cambodia to their distant relatives and among other highland ethnic minorities in Vietnam, Padwe hopes to demonstrate the importance of these networks for the resilience of upland farming systems. He is also trying to understand the connections between history and agriculture, and to see how agricultural fields – in the absence of a written record – might, in fact, be a sort of historical document.

He recalls a villager telling him, "You Westerners record your history in books, but for us our farms and gardens tell the story of our past." With training, Padwe hopes he "might learn to read" the history written in the swiddens.

That reading may not only help him understand their past; it could also point toward what the future may hold for the highland people. The advance of globalization has reached into even the remote highland villages. A lucrative market exists for cashew nuts grown by Jarai farmers, bringing cash into their lives for the first time. Through his daily interactions with the Mhang villagers, Padwe is looking to understand the impact of development and modernization on the still-fragile rebirth of the Jarai culture.

A Path Into a Roadless Country

To get to Mhang, Padwe must travel four hours by motorcycle on rutted mud roads and another four hours on foot through forest trails from Ban Lung, the provincial capital of Ratanakiri Province

and the region's only urban center – though still not much more than a truck stop. Only recently have electrification and cell phone service begun to reach beyond Ban Lung. Padwe spends several days at a time in Ban Lung, writing, computerizing data and contacting his wife, Jenny Grimm '01, who works with the Cambodian government to develop sustainable-forestry programs.

After agreeing to his research project, the villagers of Mhang helped Padwe build a small house. In the village, extended families live together in seven bamboo and thatch longhouses, and a few Khmer families, newly arrived from the lowlands, live in their own houses. He spends his days visiting the family swiddens. He records the different rice varieties being grown and asks the farmers where they got their seeds and what they grew before the Vietnam War and the rise of the Khmer Rouge.

Much of his time is also spent learning the Jarai language. The families back from the fields make fun of his difficulties mastering their language as they sit together for their meals in the evening by firelight. He enjoys the gentle teasing. "I feel indebted to them," he says, speaking by telephone from Ban Lung. "They have made me feel so welcome."

Living with native peoples is not new to Padwe. He spent much of the 1990s working with indigenous peoples' social movements in Latin America, including four years living with the Ache-Guayaki Indians in Paraguay. While completing his master's degree at F&ES, he took classes with Michael Dove, Margaret K. Musser Professor of Social Ecology and Padwe's dissertation advisor, and other F&ES and anthropology department faculty specializing in Southeast Asia. He began reading about the differences between the Latin American and Southeast Asian ethnic



minorities, and gradually his interests turned to Cambodia and highland agricultural practices.

While his research is still in its early stages and much of his time must go toward learning the language and getting to know the villagers, he has begun to gather evidence about the networks that made the Jarai's restoration of swidden agriculture possible. He has also been inquiring into the nature of the Jarai culture, about which little is known. "The Jarai are perceived as primitive," he says, "but they have a strong culture with lots of subtleties."

This summer Padwe will return to

New Haven with Grimm for the delivery of their first child. They plan to return to Cambodia in the fall. When Padwe next reaches Mhang, he anticipates seeing many changes. The arrival of a cash economy from the sale of cashews through middlemen from Ban Lung has set off land speculation. "Things are changing really, really quickly," he says. Relations among family members and between villages have soured over decisions to sell land, which can undermine the fragile swidden system. "It's ironic that highland society, which survived the horrors of war, is now facing such problems as a result of the peace." ■

Logs kept in place by inverted y-branched posts allow motorbikes to pass a flooded forest north of the Sesan River. Isolated areas like this have avoided some of the negative impacts of Cambodia's development process over the past 10 years. Even so, land-grabbing and the expropriation of natural resources by entrepreneurs pose a great challenge for highland communities.

a Rainforest's Endangered Species – Its Shamans

By Jackie Fitzpatrick

Mark Plotkin '81 was just 24 years old when he set out to make his first solo trip into the Amazon jungle. A graduate student at F&ES, he wanted to go to the rainforest of Suriname to study the medicinal plants used by the Afro-American Maroons. It was 1979, and \$200 was available for F&ES student research. He knew that wouldn't be enough, so he went to talk to Dean Charles Henry Wheelwright Foster. The next day, the dean had a \$1,000 check waiting.

"I'll always owe him," he said. "When I look back now, that was one of those turning points."

Near the end of that first solo trip, his guide told him, "When you come back to learn more about plants, you must go deeper into the forest to learn from the Indians." He was back the very next year, with the country on the brink of a civil war, plunging into the rainforest because, he said, "if the forest is the library, the Indians are the index."

When Plotkin first arrived, he was called the *pananakiri*, or the alien – a young, white visitor with a seemingly strange but insatiable curiosity about the plant life and the ways of the healers, or shamans, of the region. Though welcomed by his new guide named Koita, he wanted to learn from the shamans of the Tirio tribe

and needed permission from a skeptical chief to do so. Plotkin met with the chief, who instructed him to stay in a small hut on the edge of the village while he considered his request. After sunset, Plotkin discovered that all the water had leaked out of his canteen, so he left to find the river. On his way back he got lost, and hungry, tired and disoriented, with snarling hunting dogs outside the huts of many of the Indians, he ducked into what he thought was an empty hut, only to find a pregnant Indian woman in a hammock. Frightened of this man who could not fully communicate with her, she began to sob. He stood frozen with fear, when someone crawled into the hut.

"My friend, are you lost?," his guide, Koita, asked. He then led Plotkin back to his hut.

The next morning, Koita returned, telling him the chief had agreed to his request. Soon, Plotkin was walking through the jungle with one of the most powerful shamans in the village, called the Jaguar Shaman, who "read plants" as others might read a newspaper. As he led Plotkin through

the forest, the Jaguar Shaman paused at herbs; bushes; trees; the liana, whose sap was used to thwart children's fevers; and the palms used to staunch the bleeding of

severe cuts. Plotkin experienced firsthand the shaman's healing prowess when he came down with a severe ear infection and high fever. The shaman peeled some of the ivory-colored fungus off the bark of an overturned log, squeezed it in his fist and dripped the sap into Plotkin's ear. He also burned a smoky, aromatic fire in his hut, washed Plotkin with a warm solution and, said Plotkin, chanted a "slow mournful dirge." In

three days, he was fine.

From those first solo trips, it became clear to Plotkin that he had found his life's passion. He wanted to be certain that this land and knowledge were preserved. Over the past 25 years, he has returned again and again to the rainforest, and he is no longer *pananakiri*.

Now he is called *Jako*, or "brother." Today, at 50, Plotkin is one of the

"Natural history and exploration have always been my passions. Others outgrew it. Not me!"



nation's pre-eminent ethnobotanists and an avowed conservationist. Last November, *Smithsonian* magazine named him one of the "35 Who Made a Difference"; others chosen included Steven Spielberg, Sally Ride, Bill Gates and Wynton Marsalis. "I'm very pleased and proud," he said. "That's a cool group of people."

Plotkin is president of the Amazon Conservation Team (ACT), a nonprofit organization that he and his wife, Liliana Madrigal, founded. ACT seeks to protect the biological and cultural diversity and health of the tropical rainforest and its peoples, and has established programs in Brazil, Colombia and Suriname. The group works with indigenous peoples on economic

development opportunities, territorial rights and improving health care based on traditional practices. ACT has worked with 25 different Indian tribes, teaching them how to map rainforest acreage. "We've mapped and improved protection of 40 million acres of rainforest," he said proudly.

The story about Plotkin in the *Smithsonian* states: "From his very first visits to indigenous villages, Plotkin understood that shamans – tribal elders who use plants for healing – were actually the rainforest's most endangered species."

That concern led to ACT's development of the Shamans and Apprentices Program, in which elder shamans pass on their knowledge to the next generation.

Left to right, Yaloefuh, a Trio shaman, Plotkin '81 and Korotai, a Trio shaman's apprentice and son of the great Trio Shaman Nahtahlah.

Twelve years after its inception, the apprentice program is thriving, with more than 70 apprentices trained and four functioning traditional health care clinics established in Suriname. Plotkin adamantly points out that ACT's work is not-for-profit, and that it does not develop new drugs or work with pharmaceutical firms. He is equally passionate about the need for conservation of the tropical rainforest, so that more can be learned from "an oral tradition

that stretches back deep into the mists of prehistory.”

Plotkin believes that Western culture could potentially benefit from the shamans' practices in the fight against AIDS and the common cold. “The fact is, no one system has all the answers, but a melding of the two might bring us closer to finding cures,” he writes in his book *Tales of a Shaman's Apprentice: An Ethnobotanist Searches for New Medicines in the Amazon Rain Forest*.

Plotkin said the new generation once looked upon their breechcloth-clad elders with disdain, turning their attention toward Western culture, but that is changing. The program matches shamans with young people from their tribe. Some of the apprentices are part of the lineage of a family of healers. In another case, “a kid might have been healed and wants to do that work,” Plotkin said. Others feel called to heal, and still other apprentices are exceptionally smart young people chosen by shamans to carry on the tradition. Training to be a shaman is, in some ways, more process-oriented than medical school, he said, and most apprentices work with the elder shaman for at least four years.

While the shamans have extensive knowledge of medicinal plants, they are also trained in the laying on of hands, in meditation techniques and in the use of ritual in healing processes. They pass on

the sacred songs, and are reviving traditional dances and building traditional meeting houses for clinics and conservation training centers.

Over the years, Plotkin said, he has seen infertility cured “again and again.” He's watched shamans use medicinal plants and other techniques to regulate diabetes. Having faced intense skepticism of shamans' practices and abilities when he first started, he is pleased to see that the focus in the United States has shifted away from a solely Western perspective in medicine and health toward a connection between the mind, body and spirit. “If we are to embrace the whole person in Western medicine, the doctor's office of the future must include doctors, herbalists, shamans, pet therapists, etc.”

The staff of ACT works to do just that from its headquarters, housed over a kebab shop in Arlington, Va. But Plotkin still travels to the Amazon, as jazzed by fieldwork as he was when he was at Yale. What keeps him going? “The fact that more and more Indian tribes want our assistance, and the fact that this work is more fun and personally rewarding than anything else I can think of,” he said. “Working with people who live so close to nature deepens and widens your spiritual view. These are the most generous people in the world. They cure your illness and don't charge anything.

If you cross paths in the jungle, they'll insist on sharing their food even if it means they go hungry. By our economic yardstick, they represent some of the poorest people in the world, but they are phenomenally generous.”

In his travels, he has been bitten by a vampire bat, has unwittingly eaten a quite tasty meal of rat and was given a cherished jaguar tooth hunting charm by his guide, Koita. *Tales of a Shaman's Apprentice* is in its 27th printing, and his other books have met with similar critical acclaim. He played a lead role in *Amazon*, an IMAX film that was nominated for an Academy Award in 1998. When the awards night approached, he had the choice of heading to Hollywood or taking his young daughters on a trip to the Amazon. The Amazon won.

That life has found him here is not very surprising. As a boy growing up in New Orleans, his dream day was searching for snakes and turtles in the nearby swamps, knee-deep in mud until the sun started to fall. He was most excited about obtaining a driver's license because that meant he could venture further afield in search of new reptiles and amphibians. “Natural history and exploration have always been my passions,” he said. “Others outgrew it. Not me!”

He first discovered his passion for ethnobotany in a night course at Harvard, and then grew serious about his focus at F&ES. “It was the perfect place for me. I took a year of hard-core forestry classes and then branched out to Spanish, economics and the history of Latin America,” he said. “I absolutely loved it.”

Gathering information and sharing knowledge remain central tenets in his life. So he will be back in the Amazon again, slinging his hammock between trees, ready to learn more from the people and a rainforest teeming with possibility. “It's been an incredible ride,” he said. “And my experience at F&ES proved pivotal.” ■



Plotkin canoeing on the Sipaliwini River with Shaman Amasina in tow.

Critic of U.N. Environmental Program Offers Plan for Its Reform

By Alan Bisbort

In 2002, Klaus Toepfer, then-executive director of the United Nations Environment Programme (UNEP), said, “The state of the environment tells us whether our policies and programs are effective.”

The state of the world’s environment, by most measures, is in decline – climate change is intensifying, species are disappearing at an accelerated pace, fish stocks are dwindling, coral reefs are suffocating, and so on. Clearly, policies and programs are not working – at UNEP and elsewhere.

Maria Ivanova ’99, Ph.D. ’06, director of the Global Environmental Governance Project at the Yale Center for Environmental Law & Policy and an assistant professor

“We cannot know how to improve unless we know where we are and how we got there.”

Maria Ivanova

at The College of William and Mary, has placed a wake-up call to the United Nations (U.N.) to apprise it of this disconnect from reality. Ivanova prepared an analysis in the form of a report called “Can the Anchor Hold? Rethinking the United

Nations Environment Programme for the 21st Century,” which was officially released at the World Summit in New York in September 2005. (The full report is available at www.yale.edu/gegproject.)

While stewardship of the global environment is a Herculean task to place on any institution’s shoulders, UNEP, Ivanova argues, is uniquely positioned to carry it. Created in 1972, it was meant to be “a central coordinating mechanism in the United Nations to provide political and conceptual leadership, to assess the state of the global environment and to contemplate methods of avoiding or reducing global environmental risk and of working out joint norms.”

UNEP is an “anchor institution” for the global environment. Anchor institutions, said Ivanova, have four roles: to oversee the monitoring, assessing and reporting on their particular issue; to set agendas for standards and guidelines; to develop institutional capacity to address existing and emerging problems; and to develop new ideas. Though they aren’t alone in working on global issues, anchors are the glue that holds such efforts together. On that score, UNEP, which began with such promise, has lost its grip.

“The key thing is that UNEP, created in 1972, has never been systematically reviewed externally,” said Ivanova. “We cannot know how to improve unless we know where we are and how we got there.”

The report grew out of an F&ES class



Maria Ivanova ’99, Ph.D. ’06

that Ivanova co-taught in the Fall of 2004 with Gordon Geballe, Ph.D. ’81, associate dean for student and alumni affairs, and Mohamed El-Ashry, founder and former CEO of the Global Environment Facility (GEF), a principal funding source for developing countries to implement environmental projects with global impacts. The class, “International Environmental Organizations: UNEP and Global Governance,” was the third in a series led by Geballe that takes students to an international conference of significance. (See “Yale Delegation Addresses World’s Environment Ministers,” Spring 2005) Past classes have gone to Durban, South Africa, for the Fifth World Parks Congress and Bangkok, Thailand, for the World Conservation Congress.

“This was probably one of the most challenging classes at F&ES, and it shows

the school's commitment to the global environment," said Ivanova. "When we advertised the class, so many students showed up that they had to fill out applications, submit CVs and go through an interview. It was supposed to be a seminar class with 15 students, but everyone was so good, we accepted 26.

"The students knew going in that they would be taking two classes in one. One was to learn about global environmental governance, and the other was to perform an objective assessment of an organization located 7,000 miles away, something that had never been done before. It was difficult, and the students did an excellent job."

Experts in the field concur with Ivanova's assessment. Jakob Stroem, deputy director of the Department for Global Development in the Swedish Foreign Ministry, said, "[The report] argues effectively for a rational approach to strengthening UNEP. ... This represents the best available introduction to UNEP's problems and possibilities." Alex Shakow, former director of external affairs at the World Bank, said Ivanova and colleagues did a "terrific job." And Calestous Juma, professor of the practice of international development at the Kennedy School of Government at Harvard and former head of the Convention on Biological Diversity, said, "I like this report very much. Its diagnosis is to the point."

Ivanova gives UNEP its due for having facilitated important multinational agreements like the Convention on Migratory Species, the Montreal Protocol and conventions on biological diversity, climate change, desertification and international trade in endangered species. She also praises its Global Environment Outlook, the scientific arm of UNEP, for identifying emerging issues, putting the issues in a broader perspective and raising awareness among policy makers.

But the organization itself has been in a state of suspension since the Rio Earth Summit of 1992. The El-Ashry-led GEF

and the U.N.'s Commission on Sustainable Development (CSD), based in Washington and New York, respectively, supplanted UNEP's leading role.

"In practice, the GEF provided the resources for global environmental projects, and the CSD being in New York proved an attractive venue for environmental ministers and officials," said Ivanova. "UNEP, at the time, did not have any forum in which to gather environmental ministers and encourage them to think collectively about the global environment."

That was one of the things Toepfer corrected when he was appointed to head

"This report would be
a good place for a
new leader to start."

UNEP by Secretary-General Kofi Annan in 1998. He created the Global Ministerial Environment Forum, which meets in a different venue every other year and attracts environmental officials from all over the world.

"Collaboration and coordination do not just happen," the report states. "They have to be encouraged, facilitated and sustained."

UNEP's budget (\$215 million, compared to \$3.2 billion for the United Nations Development Programme) and status as a program, rather than a "specialized agency," limit its status and influence within the U.N. hierarchy. Programs are subsidiaries of the General Assembly, whereas specialized agencies are separate, autonomous intergovernmental organizations with governing bodies independent of the U.N. Secretariat and the General Assembly. The World Health Organization, the World Trade Organization and the International Labor Organization are examples of such independent agencies.

"UNEP was originally given a program status not to constrain it, but to make it flexible and integrative. Its creation, while taken for granted today, was less than certain in the 1970s. There was a general feeling among governments – even among the most vocal proponents of a new intergovernmental entity – that there was no need for the creation of a big agency in the field of the environment. UNEP was envisioned as a policy center that would influence and coordinate the activities of other U.N. agencies and grow into its mandate as new issues emerged on the global agenda," said Ivanova. "It didn't quite work out that way."

Setting agendas and managing the policy process constitute another shortcoming. UNEP has initiated global agreements involving stewardship of the global environment, but the report calls the program a "back-seat driver" on developing a plan to manage climate change.

Further evidence of a program adrift is found in a U.N.-initiated internal evaluation that cited low "staff morale and esprit de corps" and confusion among staff and stakeholders as to what UNEP's role should be.

Despite the criticism, UNEP under Toepfer made progress. During his four-year tenure, Toepfer expanded the program's donor base to 100 countries – twice as many as in 1995. And the ability of the institution to stand up to scrutiny is an indication of a willingness to change. Likewise, Ivanova said that she would not have spent so much time and energy on the project if she did not think UNEP has the potential to become a major player in global environmental governance.

Ivanova said the installation of UNEP's new executive director, Achim Steiner, who took over for Toepfer on June 15, 2006, and is the former Director General of the World Conservation Union, is an opportunity for the agency to re-imagine its role. "The Yale report would indeed be a good place for him to start," said Ivanova. ■

1946

Class Secretaries:

Paul Burns pyburns@lycos.com
David Smith david.m.smith@yale.edu

1947

Class Secretary:

Evert Johnson
swede-doc@mindspring.com

1948

Class Secretary:

Francis Clifton fhcpyfor@webtv.net

George Hindmarsh sends word that his wife, Jan, recently fell and broke her hip, but she is slowly recovering at the Life Care Center in Punta Gorda. He writes: "I am fishing and golfing when I am not visiting her, but I'm just a so-so cook." ■ **Hap Mason** writes: "I am still managing my tree farm in Massachusetts, and exploring ways with my heirs to keep it in productive forest without a perpetual conservation restriction. Also, I am fighting with some local parties to get a biomass generating plant in Russell."

1949

Class Secretary:

Frank Armstrong farmst1037@aol.com

1950

Class Secretary:

Kenneth Carvell kencarvell@aol.com

1951

Class Secretary:

Peter Arnold arnoldp@nccn.net

Peter Ingersoll gave F&ES a Keufel & Esser ("K&E") box compass, which belonged to his cousin, the late **Charles (Ingy) Ingersoll Arnold '41**, and most likely was one of his first tools in starting his forestry education. "I doubt if anyone uses the K&E anymore. Anyway, I hope it finds a home back where it first started its useful life." *Editor's Note: The compass was given to Mark Ashton '85, Ph.D. '90, professor of*

silviculture and forest ecology, who maintains a historical forestry instruments collection in Marsh Hall. The compass and letter from Peter Ingersoll can be found there.

1952

Class Secretary:

Milton Hartley redheded@olympus.net

1953

Class Secretary:

Stanley Goodrich slmygood2@cox.net

1954

Class Secretary:

Richard Chase RACHase@aol.com

1956

Class Secretary:

Jack Rose jackrose@iopener.net

1958

Class Secretary:

Ernest Kurmes ernest.kurmes@nau.edu

Orville (Doogie) Darling writes that he was inducted into the Arkansas Foresters Hall of Fame by the Society of American Foresters on June 9. The hall is located in the forestry school at UA Monticello, and he is the 14th member. He is also on the board of directors for Deltic Timber, based in El Dorado, Ark. They manage 450,000 acres of timberland, operate two sawmills and have a real estate development in Little Rock.

1959

Class Secretary:

Hans Bergery hberg16@aol.com

1960

Class Secretary:

John Hamner jgham@bulloch.com

1961

Class Secretary:

Roger Graham

1962

Class Secretaries:

James Lowe Jr.
Larry Safford lsaffordnh@earthlink.net

1963

Class Secretary:

James Boyle jim.boyle@orst.edu

1964

Jim Anderson has been elected a fellow of the Society of American Foresters.

1965

Class Secretary:

James Howard jhoward@sfasu.edu

1968

Class Secretary:

Gerald Gagne
Gerald.gagne@sympatico.ca

At its 2005 convention in Victoria, B.C., the American Rhododendron Society awarded **Keshab Pradhan** a gold medal and its Pioneer Achievement Award, the latter its highest, for his efforts in the conservation of rhododendrons and other natural resources in the Himalayas of Sikkim.

1969

Class Secretary:

Davis Cherington cheringvt@aol.com

1970

Class Secretary:

Whitney Beals wbeals@neforestry.org

1971

Class Secretary:

Harold Nygren tnygren@juno.com

1972

Class Secretary:

Ruth Hamilton Allen
ruth.allen@aehinstitute.com

David Miller, executive director of the Harford Land Trust (Md.) since its founding 15 years ago, retired on December 31, 2005. David became

class notes



involved with environmental issues in Harford County in 1988 when he was a consultant with the Deer Creek Watershed Association, working with private landowners on voluntary long-term conservation plans. In 1991, he was one of the founders of the Trust. As the only private conservation organization in Harford County that purchases land to preserve it from development, the Trust has acquired 415 acres by purchase and gift. His wife, Trudy, is an academic advisor at Harford Community College. They have three daughters: Jeanette, an M.D. at Mercy Hospital in Baltimore; Sarah, a social worker in the Cambridge, Mass., public school system; and Laura, an artist in Washington, D.C.

1973

Class Secretary:

Lauren Brown leb481@aol.com

Deborah Hill, Ph.D. '77, writes: "I am in the process of designing and building a 'green' building on my farm, which will be a combination of living space (primary residence) and educational space. Ultimately I want to use my farm to teach people about agroforestry and permaculture."

■ **Sam Hopkins'** wife, Debbie Hopkins, passed away on February 11, after living 10 years with breast cancer. They were married 29 years. Sam and Debbie have two children, Mark and Claire. ■ **Lloyd Irland, Ph.D.**, enjoyed the arrival of his second grandson just before Christmas. Late in summer, the family was in Michigan for the marriage of his oldest son. In late October, he visited Oregon State University to deliver the Starker Lecture. While there, he saw **Darius Adams '68**. He was co-author of a report that was issued late last year on the impacts of forestland ownership turnover in the Northern Forest region, issued by the Manomet Center. Three weeks after release of the report, the authors were briefing a Maine legislative committee on the results. In the fall term, he taught

"Financial Analysis for Land Measurement" at F&ES. ■ **Tom Kohlsaatt** reports that he is now leading a major conservation-planning project with the South Carolina Department of Natural Resources (DNR). Along with all 50 states and several U.S. territories, the DNR has developed a "Comprehensive Wildlife Conservation Strategy" that provides plans for addressing the conservation needs of over 1,200 species of vertebrates and invertebrates. Of course, conservation in protected and managed forest habitats figures prominently in the strategy. Tom plans to retire at the end of 2006 and take up the banner of conservation through other venues.

1976

Brad Seaberg has been elected a fellow of the Society of American Foresters.

1977

Class Secretary:

James Guldin jguldin@prodigy.net

1978

Class Secretaries:

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

1979

Class Secretary:

John Carey carey@aya.yale.edu

Vicki Arroyo and **John Carey** were wed on December 17, 2005, at the Unitarian Universalist Church of Arlington in Virginia. John is a senior correspondent in the Washington bureau of *BusinessWeek* magazine, while Vicki is the director of policy analysis at the Pew Center on Global Climate Change. ■ **Chris Brown** made time in his busy schedule at the U.S. National Park Service in Washington, D.C., to help **Susan Braatz '80** celebrate her 50th birthday in Italy.

1980

Class Secretary:

Sara Schreiner-Kendall
sara.kendall@weyerhaeuser.com

Susan Braatz writes: "I've been outposted from Food and Agriculture Organization headquarters in Rome to its Asia and Pacific regional office in Bangkok until the end of 2006 to coordinate a project on forest rehabilitation in the December 2004 tsunami-affected countries. Great challenges, great colleagues and great food in Bangkok!" In other news, Susan had a reunion of sorts in Italy in August to celebrate her big 5-0. In attendance were **Chris Brown '79** and **Susan Shen**. ■ **Star Childs** was cited as one of several "defenders of New England forests" by *Yankee* magazine in recognition of the role of his family's century-long preservation and management of the Great Mountain Forest and support of F&ES. Star is continuing the forest management program initiated by his father, **Ted Childs '31**. ■ **David Kittredge, Ph.D. '86**, is an associate professor of forestry in the Department of Natural Resources Conservation at the University of Massachusetts, extension forester for the state of Massachusetts and policy analyst at the Harvard Forest. In October he presented a lecture, "Wildlands and Woodlands: A Vision for the Forests of Massachusetts," in Bowers Auditorium at F&ES. ■ **Ellie Lathrop** writes: "Unbelievable as it may seem, I was the only member of the Class of 1980 to take **Roger Clark** up on his offer to hike the Grand Canyon rim-to-rim. It was a fantastic trip. My husband, Al Deichsel, myself and two other interesting couples had Roger as our personal tour guide, with the excellent support of other staff from the Grand Canyon Trust. Roger was in his element and readily shared his tremendous knowledge of the Canyon's ecology and geology with his eager followers. There were maybe a couple of plants and one

birdcall that he couldn't identify, but I forgave him. A huge benefit of reunions is reconnecting with special people from a formative life stage and creating new memories together." ■ **Tom McHenry** writes: "I am continuing the 'practice' of environmental law in Los Angeles, with continuing advice from a variety of classmates: **John Echeverria '81** on conservation easements and blow-dry technique; **Sara Schreiner-Kendall** on forest policy; **Laura Snook, Ph.D. '93**, on Rome apartments and Indonesian surf spots; **Susan Braatz** on Italian restaurants and ceramics; **Bob Comer** on politics, in general; **Ken Olson** on life choices; **Amy Nurick** on pony semen and memorial tree planting (no, really); **Dave Kittredge, Ph.D. '86**, on faculty appointments, ice fishing and home-brewed beer; **Kinny Connell** on Vermont politics and commitment; **Janet Hess** on what not to watch on television; **Sue Shen** on international environmental policy; **Star Childs** on men's shirt wear and sauna temperatures; **Curtis Rand** on movies and women; **Rick Kelley** on nothing; **Jane Sokolow** on everything; **Lisa Speer** on the future of nonprofit environmentalism; **Natasha Atkins** on bird ID; **Jim Thorne, Ph.D. '85**, on biodiversity conservation in the Appalachian Forest; **Patti Kolb Millet** on Sierra forestry; **Louise Richardson** on Montana; **Roger Clark** on hiking the Grand Canyon; **Tom Hatley** on all matters spiritual and historical; **Trish Johnson** on all reunion matters practical and financial; **Peter Lewis** on the California Conservation Corps; **Charlie Nilon**, who has of yet failed to make me understand urban forestry; **Kathy Parker, Ph.D. '85**, on the virtues of patience, good humor and generosity; **Ruben Rangel** on limits to the digital photo album; **Al Sample, Ph.D. '89**, who never lacks for ideas; and **Keith Stewart**, who regales us every reunion with stories we have never heard before about **Steve Berwick, Ph.D. '74**." ■ **Curtis Rand** writes: "I was elected to a

two-year term as first selectman in Salisbury, Conn. I continue to work in consulting forestry in southern New England, and teach a full-year forest ecology course to seniors at Salisbury School. I loved our reunion, especially catching up with old buddies, and **Dave Kittredge's** home brew. **Sara Schreiner-Kendall** will definitely be at the next reunion." ■ **Susan Shen** has made a return to the World Bank headquarters after spending five years in China and Cambodia. ■ **Laura Snook, Ph.D. '93**, is director of the Program on Understanding and Managing Biodiversity at the International Plant Genetic Resources Institute (IPGRI) in Rome. "It's interesting and challenging to learn more about genetics and ex-situ conservation (in gene banks), but I miss working in wild forests. Luckily, Jonathan and I are living in a top-floor 'tree house' apartment in the historic Trastevere neighborhood, looking right into the crown of a massive Pinus pinea (and over one of Rome's oldest and most beautiful churches). We were sorry that **Suey Braatz** moved out of Rome for an 18-month assignment in Bangkok just as we arrived, but we look forward to her return." ■ **Jane Sokolow** is working as a consultant to the OASIS project (Open Accessible Space Information System) for New York City (www.oasisnyc.net). The project is about to move to the CUNY (City University of NY) Graduate Center and become part of the Center for Urban Research. In November, the project and website were featured on the front page of *The New York Times* Real Estate section as a premier website resource for learning about neighborhoods in New York City. Jane now has two grandchildren – Isabel, 2, and Teddy, just under a year old, who live in Arlington, Mass. – to keep her busy. Jane says, "We manage to get up to the farm in the Catskills most weekends, and the fruits of our meadow-clearing, bush-hogging and cutting are beginning

to show. The meadows now look much the way they did at the turn of the century, when farming was in its heyday up there. We are battling the big issue of gambling in the Catskills (Sullivan County). The governor proposed five casinos – all in Sullivan County – as a way to reimburse the Indians for lands taken. One is still looming, but we are working on all fronts to stop any from happening." ■ **Keith Tait** writes: "We (Elsie, baby Isla and me) are counting our blessings and loving our lives in North Creek, N.Y., nestled in the Adirondacks. After 21 years at Pfizer, with the Corporate Environmental Health & Safety Group in New York City, I'm beginning a new phase of life. How refreshing and very exciting applying the knowledge and skills from the past to new endeavors."

1981

Class Secretaries:

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

Ann Hooker Clarke, D.F.E.S. '92, is a lawyer in the NASA Strategic Planning section.

1982

Class Secretaries:

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

1983

Class Secretary:

Stephen Broker lkbroker@snet.net

1984

Class Secretaries:

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

Nora Devoe married Ashley Sparrow, an Australian plant ecologist, in Reno in September. They had been associated on the faculty of the University of Canterbury at Christchurch, New Zealand. He is now at the University of Nevada,

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where Nora is stationed on the regional BLM range management staff. **Carol Stoney**, **Alice Eichold '89** and **Ruth Yanai '85, Ph.D. '90**, attended the wedding. Early in the winter, Nora was on temporary assignment at the BLM national office in Washington, D.C.

1985

Class Secretary:

Alex Brash alex.brash@parks.nyc.gov

1986

Class Secretary:

Caroline Norden
cnorden@maine.rr.com

Akira Osawa is moving in August from the faculty of Ryukoku University to a professorship in the Division of Forest Science in the Graduate School of Agricultural Sciences at Kyoto University. He will continue his studies of stand development and carbon dynamics in the management of forest ecosystems. His field studies of boreal forests in permafrost regions of northwest Canada and Siberia are about to be extended to Alaska. He has also started collaborating with Chinese ecologists in arid regions of western China.

1987

Class Secretaries:

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

1988

Class Secretaries:

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

Carlos Rodriguez-Franco, D.E., and **Heidi McAllister** now have a son, Benjamin, and live in Silver Spring, Md. Carlos is an international affairs specialist in the Office of International Research Programs of the U.S. Department of Agriculture in Beltsville, Md. He works with programs throughout the Americas. Heidi does part-time consulting for the Peace Corps.

1989

Class Secretaries:

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

Laurie Kelly and her husband, Tom Stroka, are living in Ilkley, W. Yorkshire, England. After doing forestry work in Botswana, she enrolled in a doctoral program in social policy at the University of Hull in England. She is planning to go back to Botswana and Tanzania in 2006 to do a study of programs for preventing HIV/AIDS in teenagers.

1990

Class Secretaries:

Judy Olson Hicks
Carolyn Anne Pilling
capilling@gds.org

1991

Class Secretaries:

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

1992

Class Secretary:

Katherine Kearse Farhadian
farhadian@aya.yale.edu

Gary Tabor writes: "After seven years working with the Wilburforce Foundation (six years full-time and one as consultant), I am the new North America director for the Wildlife Conservation Society (WCS), succeeding Bill Weber. The North America program is part of the global WCS mission to advance conservation management and policy through science. The program consists of some 50 staff; the center of gravity of the program will be moved from New York to Bozeman, which represents a new approach for the institution. I'll be helping WCS improve conservation science communication and outreach. We face an immense challenge in North America in the devaluation of science in public policy, and I think WCS can help redress

this issue for wildlife and wildland conservation. It's all about building effective partnerships to promote conservation on the ground."

1993

Class Secretaries:

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

Kenny Fergusson is the operations manager for Huber Resources. ■ **Jennifer Hartwell** has been appointed associate executive director of the organizational leadership programs in the College of Professional Studies at Quinnipiac University. In her new position, Jennifer will be responsible for developing and teaching courses for the new master's degree program in organizational leadership. Jennifer and her husband, Sam, have two children: Benjamin, 5, and Mae, 4. ■ **Eleanor Sterling, Ph.D.**, director of the American Museum of Natural History's Center for Biodiversity and Conservation, recently served as co-curator of the museum's exhibit "Voices From South of the Clouds." The exhibit, sponsored in part by The Nature Conservancy, provided a photographic tour of the northern Yunnan Province of China. Yunnan is experiencing unprecedented tourism and immense environmental change. The main goal of the exhibit was to help the indigenous people make a record of their endangered traditions and landscapes, and to provide a voice to the people of Yunnan. The "Voices" exhibit was housed at the Akeley Gallery. ■ **Jamison Suter** writes: "I have been living in England for eight years now, and have bought a 1750s house on a river in the historic Fenland town of March, a short commute from Cambridge. It provides endless things to fill up my weekends. I'm ripping out old, but sadly rotten walls and ceilings made of wattle, lime and reed, and trying to fill gaps so the cold North Sea winds coming

off the Fens don't chill the house unbearably. I just completed eight years as a program manager with the environmental nonprofit Fauna & Flora International. This had me focused mostly on several war-torn countries in West Africa – Côte d'Ivoire, Guinea and especially Liberia. Because of my (American) nationality, I could not serve on the U.N. Security Council's Panel of Experts on Liberia, although I played critical, behind-the-scenes roles advising the international diplomatic and donor communities on the role of the Liberian forest sector in supporting regional instability from 2000 to 2004. I also assisted in raising in excess of \$5 million for restarting conservation and establishing a socially and biologically defensible protected-area network for Liberia, which due to civil wars and poor governance missed out on the international wave of protected-area creation that has washed across most of the world since the mid-1980s. Then in January, I left this job to join the international mining giant BHP-Billiton as an environment and community programme manager for West Africa. I am working mostly on developing the environmental and community development programs for a proposed iron mine in the Guinean Nimba Mountains, which is a UNESCO Biosphere Reserve and a natural World Heritage Site. It's a highly controversial and emotive project, where I am sure to be the target of eco-campaigners. However, this is a superb example of how an extractive industry, iron mining in this case, is trying proactively to be environmentally and socially responsible; mining could actually be the solution to protect the Nimba Mountains' sensitive environment."

1994

Class Secretaries:

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

Brooke Barrett has been working in New Orleans since November on the city's restoration with the New Orleans Regional Transit Authority (RTA). His job, through a Chicago engineering firm, is to aid the RTA in identifying needs and accessing the federal aid that is available. brookebarrett@yahoo.com

■ **Geoffrey Blate** writes: "I finally completed my Ph.D.! I defended my dissertation in November and graduated from the University of Florida in December. It was such a long journey that my wife, Sujata, insisted that I revel in the moment. So, she led an entourage of family to the commencement ceremony. I must say that we had an excellent celebration. We needed it after such a tough two years. Both of my in-laws have

recently succumbed to cancer. Now that I'm done with the Ph.D., I'm exploring job options. I went to the Yale career fair in D.C. in February. It was great to catch up with **Josh Foster '93**. **Don Chen '99** was also there with Meena. I hang out with them as often as I can. I had several nice phone conversations recently with **Susan Helms Daley '93**. Last spring, I got to hang out with **John Peterson '92**, who was in town for an EPA-sponsored competition that he won. Last summer, I had the pleasure of meeting Hannah, daughter of **Jennifer Pitt '93**. Sujata and I also spent some wonderful days with **Dave Moffat** and **Carol Hall** at their place in Canada. Recently, I bumped into **Matt Auer, Ph.D. '96**, at the U.S. Forest Service. I'm looking forward

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MULTICULTURAL ALUMNI SHARE THEIR EXPERIENCES



This spring, the school hosted its third annual multicultural alumni career panel in conjunction with an open house for students admitted to the master's program. The panelists talked about their current work and their experiences with diversity in their respective environmental fields, and gave advice to U.S. multicultural students contemplating an environmental career.

Above, left to right: Nicholas Shufro '94, manager of the Washington federal practice for PricewaterhouseCoopers; Nicole Smith Chevalier '99, program associate for the Emily Hall Tremaine Foundation; Philip Rigdon '02, deputy director of the Department of Natural Resources, Yakama Nation; Michelle Huang '05, environmental educator for the Common Ground High School/New Haven Ecology Project; Bryan Garcia '00, director of energy market initiatives for the Connecticut Clean Energy Fund; and moderator Brandi Colander, a candidate for a joint master's/law degree.

The panel and a dinner that followed were co-sponsored by the Multi-Ethnic Student Association, IEM Student Interest Group, Admissions Office, Dean's Office, Career Development Office and the Office of Alumni/ae Affairs.



to an upcoming visit from **Bill Mott '93.** ■ **Guido Rahr** is president and CEO of the Wild Salmon Center of Portland, Ore., which strives to protect the best salmon ecosystems of the Pacific Rim. "Our years working with partners in Russia have established us as the leading Western nongovernmental organization addressing salmon conservation in the Russian Far East. We're ensuring that the unspoiled salmon rivers of this vast region are spared the sort of devastation that has occurred elsewhere." On Sakhalin, an island north of Japan, the center has worked to limit the impact of oil and gas industries and establish a multistakeholder salmon conservation initiative, including government agencies and indigenous people. Wild Salmon Center staff, University of Montana researchers and Russian scientific colleagues recently returned from an expedition on the Samarga River in the Primorski region of the Russian Far East. The area contains millions of acres of untouched forests and outstanding biological complexity. They are now completing an in-depth assessment of the river basin and choosing key areas for protection from logging. The center has also launched the Hoh River Trust with its partners in the Olympic Peninsula, which protects 4,800 acres of some of the more pristine salmon-rearing tributaries and off-channel habitat remaining in the United States. ■ **Rajesh Thadani, Ph.D. '99,** writes: "I am no longer executive director of CHIRAG after six years there. While I am a member of the governing board, I have moved back to Delhi, in part because my son now needs to get started with school. I am a consultant here, and also doing some research on forestry-related issues." ■ **Mike Webber** writes that he and his wife, Sue, moved to Trinity Pawling School in Pawling, N.Y., three years ago with their boys, Larry, 7, and Joe, 5. Mike is teaching chemistry and AP environmental science, and

he loves it. He coaches football and baseball. Sue is a registered nurse at New Milford Hospital in Connecticut. They live on campus during the academic year, and spend summers in Old Saybrook. mwebber@trinitypawling.org

1995

Class Secretaries:

Marie Gunning mjgunning@aol.com
Ciara O'Connell
ciaramoconnell@aol.com

Felton Jenkins vacationed in Ketchum, Idaho, where he and his wife, Karen, visited with **Guido Rahr '94** and his family. They also visited **Molly Goodyear '93** and her husband, Mike, for cross-country skiing and dinner. ■ **Laura Meyerson, D.F.E.S. '00,** participated in a seminar hosted by the Urban Resources Initiative, "Modeling Invasions of Northeastern Forests by Exotic Tree Species."

Patrick Martin '98 led the seminar.

■ **Ciara O'Connell** and her husband, John Nowaczyk, welcomed their second child, Quinn, on August 2, 2005. He joins Ryan, 6. The family lives in Wilmington, Del. ■

Ragnhildur Sigurdardottir, Ph.D. '00, writes: "I just coordinated the largest musical event ever held in Iceland (see <http://this.is/nature>). We got artists such as Bjork, Sigur Ros, Mum, Damon Albarn (lead singer of Blur and Gorillaz), Damien Rice and many more. It was amazing, with the Reykjavik stadium filled with 6,000 people. **Robert Wolf '02** came for a visit and photographed the event."

1996

Class Secretaries:

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

David Casagrande has a new job as a tenure-track assistant professor at Western Illinois University. ■

Rachel Husted O'Malley and **Brian O'Malley '99** are married and living in the Washington, D.C., area. ■

Cathryn Poff is back on the East

Coast, working for Voice of America as a reporter. She has been doing TV and radio work for the past five years.

■ **Anne Reynolds** is on staff with Environmental Advocates of New York. When she heard of Yale's greenhouse gas reduction strategy, she wrote, "Such good news. My organization has been working hard for three years on our Cap Carbon in New York Campaign, which pushed Governor Pataki to work with Northeast governors on the Regional Greenhouse Gas Initiative (www.rggi.org). No CO₂ rules on the books yet, but RGGI is a ray of hope, as is Yale's action. And we need rays of hope." You can learn more about the Cap Carbon in New York campaign by visiting <http://www.eany.org/>.

1997

Class Secretary:

Paul Calzada pcalz@metro2000.net

Jon Kohl writes that he and his wife, Marisol, welcomed baby Dion into the world at noon on May 4, 2006, in Tres Rios, Cost Rica. To read more, visit www.jonkohl.com/personal/dion/dion.htm. Jon is a consultant in park planning and a writer and editor.

■ **Jeannie McLain** saw **Jill Ory** at her cousin's wedding in Portland, Ore., in May 2005 (see photo at www.yale.edu/environment/alumni/index.html). "We spent just about the entire reception catching up on old times. I finished my Ph.D. in microbial ecology at Duke University in May 2002, and then started a joint postdoctoral position with the USDA-Agricultural Research Service and Columbia University that June, working on the microbiology of trace gas production and consumption in soils of the southwestern United States. In the fall of 2004, I started a permanent research microbiologist/soil scientist position with the Agricultural Research Service in Phoenix, Ariz. My research focuses on developing new and safe methods to use reclaimed wastewater for

municipal and agricultural irrigation, which is particularly relevant to the parched Southwest. Jack and I live in Maricopa, Ariz., on four secluded acres with our three (very spoiled) German Shepherds and one (especially spoiled) Doberman.” ■ **Cristin Tighe** writes: “I am now in my fourth year of my Ph.D. at Johns Hopkins University, writing my prospectus now – yes, on malaria. I also own and run a yoga center in D.C. I’m still working on women and children’s health issues on many levels.”

1998

Class Secretaries:

Nadine Block
nadineblock@alumni.williams.edu
Claire Corcoran
corcoran_claire@hotmail.com

Claire Corcoran writes: “I visited the New York Botanical Garden in December with my family and looked up **Todd Forrest**, vice president of horticulture, who gave us a wonderful tour. We also had the pleasure of a visit from **Marie Claire Paiz** last fall while she was in New England for a conference. She lives in Merida, Mexico, with her husband, Tim, and works for The Nature Conservancy.” ■ **Todd Forrest** recently became the youngest vice president of horticulture in the history of the New York Botanical Garden. He is well-respected for work he did on the renovation of the Benenson Conifer Arboretum, which opened a year ago, and is considered one of the rising stars there. ■ **Joseph Guse** has completed his Ph.D. in economics from the University of Wisconsin at Madison, and he and his wife, Lucy Lyons, have moved to Virginia, where he is an associate professor at Washington and Lee University. ■ **Lisa Mastny** is senior editor at the Worldwatch Institute, an independent research organization that works for an environmentally sustainable and socially just society. Worldwatch has launched its China Watch news service, which reports on developments in energy,

agriculture, population, water, health and the environment in China. This new online feature is a joint initiative of Worldwatch and the Beijing-based Global Environmental Institute, made possible through the support of the Blue Moon Fund. China Watch will draw the world’s attention to new developments in China that could have a major global impact. ■ **Leticia Orti** has left her job as a manager at IRG (International Resources Group) in Washington, D.C., where she managed a number of environmentally related USAID projects, and has moved back to New York City. ■ **Joe Taggart** and **Wendy Barber Taggart**, and their daughter, Caroline, welcomed Eleanor Grace Taggart to the world in January.

1999

Class Secretaries:

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

Nicole (Smith) Chevalier writes: “I work for the Emily Hall Tremaine Foundation based in Meriden, Conn. It is a family foundation that provides grants to organizations nationwide in the fields of contemporary visual art, environment and education. I manage the art and environment grant-making programs. I am living with my husband, Samuel, in West Haven, where we recently bought a house.” ■ **Jennifer Heintz** has begun a new line of work – boutique owner. 3 Leos Vintage Boutique opened in downtown Hartford in late November. The 1,000-square-foot boutique is full of one-of-a-kind items from the 1940s through the 1980s, including men’s and women’s clothes, hats, bags, jewelry and accessories. Jennifer writes: “More than a funky, new vintage boutique serving brisk business, 3 Leos is a store with a mission. Through a partnership with a local nonprofit organization called The Work Bank, the store will become

a job training site for retail and sales skills for underserved populations.”

2000

Class Secretaries:

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

Brenda Torres-Barreto has been named executive director of the Santa Clara Audubon Society. She is responsible for the overall management, and represents the chapter before local governments on issues of wildlife and habitat, land use and environmental impacts. Brenda works closely with volunteers and other conservation organizations to develop and implement a wide variety of education and advocacy programs. ■ **Scott Williams** participated in an alumni career panel at F&ES.

2001

Class Secretaries:

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

Andrea Brewer is in southern California, specifically the Mojave Desert, helping to manage environmental compliance for the Department of Defense. She just got promoted to senior air quality specialist, and will be managing air quality compliance at the Air Force Research Laboratory at Edwards Air Force Base (read Rocket Lab). ■ **Leigh Cash** is a policy analyst for Constella Group, LLC. She is working for its business unit, Constella Health Sciences, in Atlanta. (www.constellagroup.com). “After getting settled, I am guessing that I will apply for a part-time degree program in public health either through Emory University (10 minutes from my new office) or through distance education at Johns Hopkins.” In her spare time, Leigh enjoys twisting and sizzling at her local Bikram yoga center and loving her two dogs, Tango and Fonzie. James

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class notes



still works with computer networks in Connecticut and New York. ■ **Adam Chambers** is working in Austria for the International Institute for Applied Systems Analysis on a European Union capacity-building/climate project with China and India. ■ **John Daly** and his wife, Joy, had a boy, Kieran Christoferson Daly, on February 20. ■ **Dechen Dorji** sends his greetings from 8,100 feet. ■ **Mary Ford** is living in Davis, Calif., where she is the senior manager for Project Wild, a wildlife education program (www.projectwild.org). She is managing a national network of educators, so she has a broad perspective on the field of environmental education. ■ **Jenny Grimm** and **Jonathan Padwe** have been living in Cambodia for the last year and a half. Jon continues fieldwork toward his Ph.D. by living in a very remote highland village quite far off the beaten track in the hills between Cambodia and Vietnam (see story on page 24). Jenny works on community-based sustainable forestry methods in a joint project between the Tropical Forest Trust and the Wildlife Conservation Society. ■ **Katy Guimond** is working on her Ph.D. in the Geography Department at U.C. Berkeley. ■ **Scott Hedges** and wife, Anne, had a second daughter last October. ■ **Pete Hill** has taken on a new line of work – video choreography. ■ **Chris Kemos** is a legal research attorney in the Law and Motion Department of the San Francisco Superior Court. ■ **Lisbet Kugler**, who is still sailing quite a bit, works for ERM (Environmental Resources Management) in Annapolis, Md., but spends time at the ERM D.C. office, where **David Vexler '02** also works. ERM is a global environmental consulting firm, and the D.C. office does a lot of international development work. Lisbet last wrote us from a dusty rural airport in Kinshasa, Congo. ■ **Pradeep Kurukulasuriya** defended his Ph.D. a short time ago, and got a job at the

United Nations Development Programme in New York. He and his wife, Sharmila, had their first child, a girl. ■ **Christian Lentz** is doing dissertation research in Vietnam for another year to get (another) degree from Cornell's Department of Development Sociology. Christian and Adriane got married last September. ■ **Jeffrey Luoma** is in New York now still playing forester, teaching a 9-year-old girl to stand on his shoulders and ride a very small bicycle, playing in a Canadian bag-pipe band and acting in a local musical. jwluoma@hotmail.com ■ **Jeff Morton** will celebrate his second wedding anniversary with **Tori Derr '95, Ph.D.** They are expecting their first child in early April. In addition, Jeff qualified for the Boston Marathon. ■ **Lech Naumovich** is in north Oakland, Calif., and is attempting to start a nonprofit field-based restoration school (www.goldenhour.org). He also has been enjoying teaching, volunteering, planting trees and generally celebrating life. ■ **Quint Newcomer** has recently taken a job (while still in the very last stages of finishing his dissertation) at the University of Georgia as station director, resident scientist of its Costa Rican campus and director of study abroad programs to Costa Rica. He will also have adjunct faculty status in the UGA Institute of Ecology's River Basin Center. He is based in Athens right now, living in a cabin on a privately owned, 300-acre oak-hickory forest, but spends a good bit of his time in Costa Rica. His daughter just turned 9. She spent last summer with him in New Haven and had a great time – daily walks through the trails along the Mill River in East Rock Park, etc. ■ **Chris Nyce** and his wife, Rukmini, had a daughter, Rasa Lila Nyce, on September 30. They moved in March to London for two years. "I recently transitioned from the Forest Service to the Department of State, where I am now serving as a Foreign Service

officer in the Economic Cone. Although this is quite a departure from my natural-resource-oriented career, I hope to someday apply myself to environmental issues in Latin America and Africa." ■ **Kristen Ohlson-Khein** and her husband, Calvin, welcomed their daughter, Sofia Mea, into the world in November. They are all well. Kristen and Calvin live in Mt. Vernon, and work as foresters for the Washington State Department of Natural Resources. ■ **Jen Osha** has an adorable son, Elijah Storm. She is living in Salem, W. Va., where she is ending a two-year job teaching environmental studies and global issues at Salem International University. "I will be continuing work against mountaintop removal coal mining this summer through my nonprofit, Aurora Lights, as well as bringing a group of students to stay with the Huaorani in Ecuador for three weeks at the beginning of the summer. Beginning in the fall, I will be a full-time doctoral student in geography and political ecology at WVU." ■ **Robert Powell** writes: "I am teaching at Clemson University in the Park and Protected Area Management Program. rbp@clemson.edu ■ **Shimona Quazi** is in Bangladesh, where she was teaching college for a few years; however, she quit this year and has been running a consultancy since. She is applying to grad schools as well, and is considering taking next year off to mess around and travel in the region before she has to blow all of her savings on textbooks. ■ **Liana Reilly** moved to Colorado last year and became a homeowner last June. She lives in the mountains and needs four-wheel drive in the winter to get home and to navigate through seven feet of snow sometimes. So, there is amazing cross-country and downhill skiing, as well as incredible hiking and lots of other outdoor activities. She works for the National Park Service in Denver. ■ **Luis Rodriguez** is teaching at the

Universidad San Francisco de Quito in Ecuador, and managing a couple of projects on the side. He got married and has two kids. Maria Camila is a year and a half, and baby Julian is under a year old. ■ **Diane Russell** is with the biodiversity team at USAID in Washington, D.C. ■ **Abby Sarmac** and **Matt Clark** are getting married at a vineyard in McMinnville, Ore., on July 1. Abby is a program officer at the Lemelson Foundation in Portland, and her regional focus is on Latin America. Matt has rediscovered downhill skiing. ■ **Tracy Scheffler Melbihess** is working for the U.S. Fish and Wildlife Service, Office of Endangered Species, in Albuquerque, N.M. ■ **Lisa Schulman** was married in October 2004 to Dotan Ziv. They live in Whitehouse Station, N.J. She switched roles at Merck & Co. in May 2005, and is now an analyst supporting global procurement for clinical trials. They are expecting a baby around June 6. ■ **Lincoln Vaughan** is living in Rhode Island, but occasionally goes over to New Haven to salvage books out of the library. ■ **Ray Wan** is with Earthjustice. He bought a place in the San Francisco Bay Area. ■ **Allison Willcox** married Tom Guinan last December at the Immaculate Conception Church in Portsmouth, N.H. Allison is employed at ENTRIX Environmental Consultants. They honeymooned in Mexico, and live in Waltham, Mass. ■ **Mark Wishnie** retired from the project in Panama and will keep us posted on what comes next.

2002

Class Secretaries:

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

Mahua Acharya is with the World Bank's Carbon Finance Unit in Washington, D.C., working on the Clean Development Mechanism of the Kyoto Protocol. ■ **Cesar Alcazer**,

having finished an IUCN-related project (an environmental-flows toolkit; <http://iucn.org/places/medoffice/cdflow/>), is working for CENTA (Centre for New Water Technologies), a company belonging to the Andalusia Regional Government that deals mainly with public participation in water issues and watershed management. In addition, Cesar is involved in a project to advise on the implementation of environmental-flows regimes in the rivers of Catalonia (northeast of Spain), where he is originally from. Cesar and **Paola Amador** are living in Seville, where Paola is freelancing. ■ **Dimos Anastasiou** writes: "I have just returned from Vienna, Austria, after two great weeks at Boku for a project called AGRIDEMA (www.agridema.net). To continue this research, I will be going to Valladolid, Spain, where the lead project partner is located. The hosting institution for AGRIDEMA is the National Agricultural Research Foundation of Greece. Also, I am a subcontractor for a public equivalent body – the Fthiotida Development Agency/Prefecture of Fthiotida/Greece. ■ **Viviana Araneda** is the head of the Asia and Oceania Department at the Chilean General Directorate for International Economic Affairs. ■ **Catherine Bottrill** writes: "I am with the Environmental Change Institute in Oxford. My brother and sister are living in London this year, so we have been taking advantage of the scene together. I am researching a novel concept called personal carbon allowances (a bit like emissions trading but for individuals). Last December my family spent Christmas in Bangladesh with a Christian tribal community, where we enjoyed the tranquility of the countryside (the last sanctuary for a species of Langa monkeys). We celebrated with their version of caroling door-to-door, which involves drinking choo (rice wine), dancing and singing all night until you drop." ■ **Sarah Canham** was profiled in the January issue of

Career World, a Weekly Reader publication, for her work as a botanist. She is roaming the forest around Jackson, Wyo., in the shadow of the Tetons. ■ **Beth Cullen** works on lake issues for King County, Seattle, and was recently helping to develop the new shoreline policy for the county. Beth has been appointed to a two-year term on the board of directors for the Washington State Lakes Protection Association. She is coping with Seattle's infamous rain by heading into the mountains of Washington and British Columbia with her skis. ■ For the past three-plus years, **Mike DeBonis** has been the urban and community forestry coordinator for the Maine Forest Service. But, he is moving to New Mexico to become the Southwest region director for the Forest Guild. ■ **PJ Deschenes** is working on the redevelopment of a 1,400-acre former military base in South Weymouth, Mass., and a 6.5-acre mixed-use, transit-oriented development in the heart of Boston for BlueWave Strategies, a consulting firm that he helped start after graduating from F&ES. ■ **Erika Diamond** is greatly enjoying her first year at Harvard Business School. She is staying plugged into her "green" side by having helped to fund-raise for the "International Development and the Social Enterprise" conference. Now that she is settling into Boston life, she is hoping to see more of **Kendra Kinscherf** and **Neal Etre**. Neal is an associate at Industrial Economics, and Kendra is in law school. ■ **Matt Eddy** married Sarah Pelmas in July 2005, and they live in San Francisco. Matt is a biology and environmental science teacher at the Bay School, a new independent day school located in the Presidio National Park. ■ We recently heard from **Roberto Frau-Rodriguez**. He's still in the Mexican Megacity, surrounded by amazing people, art, food and urban stimuli. He writes: "I am quite happy, healthy and in love – what more can I ask for? On the job front,

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class notes



I am teaching an undergrad class in sustainable development at the Tecnológico de Monterrey. Adjunct professorship gives me the chance to brush up on some of the things I learned at F&ES. I love it. I also work on a variety of environmental projects as a freelance consultant.” ■ **Derik Frederiksen** is running Sealaska’s small, but growing, Environmental Services Unit. Having enjoyed the festivities of **Kim Thurlow** and **Marc Stern**’s wedding in the Bahamas and Disneyland’s 50th anniversary with daughter Ella, Derik considers himself a lucky man. Ella is in first grade and doing wonderfully. ■ **Michael Funaro** and **Zhanna Beisembaeva-Funaro** moved back to the United States from Kazakhstan in May 2005. Michael and Zhanna, with their daughter, Danna (a third grader now), live in New York City. Michael works for the New York City Department of Health. ■ **Kensuke Fuse** is developing a 10-year environmental action plan for Fujitsu’s worldwide 160,000 employees. Ken recently got engaged and will be getting married this fall. ■ **Kate Giese** loves her work with the Wood River Land Trust and is living outside Sun Valley, in southeastern Idaho. ■ **Dima Glazkov** is in Ukraine and is an energy and infrastructure analyst with the World Bank. Dima hopes to make a shift to the energy sphere by concentrating on energy efficiency and infrastructure projects. Before joining the World Bank, he was a senior environmental consultant at a Dutch consulting firm, Tebodín Consultants and Engineers, on a range of environmental projects. His wife, Natalya, and 2-year-old Daniel, are with him in Kiev. ■ **Cassie Hays** is in Tanzania doing her dissertation research. Her supervisor has moved to the London School of Economics, so she is planning on writing her dissertation in London. ■ **David Howlett** is working on a Ph.D. in agroforestry at the University of Florida, where he is finalizing his

dissertation project, which will work out the carbon budget for a silvopastoral system in northwest Spain. ■ **Libby Jones** has been having an incredible time in Papua New Guinea, where she has been for most of the last three years. She is doing tropical rainforest research with the Wildlife Conservation Society for her Ph.D. at F&ES. ■ **Stephanie Jones ’01** and **Christian Binggeli** are happily settled in the Boston area with their daughter, Hanna. Christian has his own business as a consulting forester, and has started working with **Ben Urquhart ’05**. Besides working with private forest landowners, Christian finished a restoration and management plan for Franklin Park in Boston. ■ **Nancy Kong** is a legal advisor for EcoSecurities in Oxford, and handles most of the firm’s Chinese contracts. ■ **Liz Levy** is a senior environmental analyst for Winslow Management Company, an environmentally responsible investment company in Boston. Through the matchmaking of **PJ Deschenes**, Liz is engaged to a college friend of his, Ryan, a chemical engineer studying at Tufts. Liz is looking forward to an annual reunion of F&ES friends with **Gwen Busby**, **Laura Meadors**, **Nalini Rao** and **Emily Noah**. ■ **Phil Marshall** is making good progress with his doctorate at F&ES. ■ **Greg McLaughlin** is working with local landowners and organizations to improve stream flows for salmon habitat for the Washington Water Trust in Seattle. He and his wife are enjoying Gryphon, who is almost 2 years old. ■ **Doug Morton** is basking in the joy of parenthood with the arrival of Eleanor. Doug’s work on deforestation, forest fires and development scenarios in the Brazilian Amazon with NASA and the University of Maryland continues to go well. On the side, Doug is working toward a Ph.D. in geography at the University of Maryland. His research is examining the effects of climate change and fire on vegetation competition and succession at the

boundary between savanna and forest in the southern Brazilian Amazon. The whole family is planning on spending the summer in Brazil. ■ **Chris Nelson** recently participated in an alumni career panel at F&ES. ■ **Ramsay Ravenel** is working at Marshall Street Management, a private investment firm that focuses on environmental markets. Ramsay is focusing on carbon and renewable energy markets. He spent the fall of 2005 in Oxford helping EcoSecurities, a portfolio company in the carbon market, prepare for an IPO on the London Stock Exchange. ■ **Rachel (Novick) Roth** is expecting her first child this summer, and says she should be finishing her Ph.D. in a year or so. ■ **Carrie (Magee) Sargeant** is living in New Jersey, and recently married Anderson Sargeant. She is directing the implementation of Camden’s environmental mitigation and landscape master plan. ■ **Marc Stern** and **Kim Thurlow** are living in the Bahamas, where they celebrated with F&ESers at their wedding last summer. Marc defended his dissertation in October, is consulting for a couple of environmental education centers in the United States, and is doing some management effectiveness work for The Nature Conservancy’s (TNC) global marine program while job hunting. Kim is still working with TNC and just finished a management planning training with the Bahamas National Trust. They are expecting their first baby in May. ■ **Becky Tavini** is a forestry consultant in Italy for the U.N. Food and Agriculture Organization’s Forestry Department, assessing partner-country forest programs and creating forest-related websites. She occasionally sings and plays piano in a Beatles/REM cover band. She made it back to New Jersey for **Carrie Sargeant**’s wedding. ■ **David Vexler** became a happy father in the fall to his first daughter, Ania. He is working for ERM consultancy, based in Washington, D.C., but is doing a lot of work in Latin America.

2003

Class Secretaries:

Brian Goldberg
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Ruth Baker is in her first year of a Ph.D. program in geography at the University of Minnesota. She is examining winter precipitation pattern changes in the Midwest in response to global warming. ■

Ryan Bennett has started with a new company called Greenrock Capital, a boutique investment firm specializing in renewable energy project finance. They are located in the San Francisco Bay Area. ■

Andrew Clack is a research associate at the Smithsonian Natural History Museum's Laboratories of Analytical Biology. His work involves degraded DNA analysis and high-throughput processing of DNA sequences for the institution's "barcoding of life" project. After completing his M.Sc. at Oxford, Andrew spent a year at the University of Cincinnati, working on landscape genetics of Darwin's finches (using modern and museum specimens). This fall he'll begin Ph.D. work at McMaster University's Ancient DNA Center in Hamilton, Ontario. ■

Naamal De Silva writes: "Over the past two years, I've been working at Conservation International, first with the marine rapid assessment program and now in supporting priority-setting work for Asia and the Pacific. I travel mainly to Indonesia, China, the Philippines and Australia, and enjoy my work, though all the travel makes for a rather unsettled existence." ■

Aspasia Alexandra Dimizas writes: "I got married on August 28, 2005, to Demetris Maurides. We're living in Athens, where I'm the program development officer for the Mediterranean Wetlands Initiative." ■

■ **Brian Goldberg** is enjoying Bangkok's chili peppers, diverse foods, UNDP work and time spent visiting F&ES friends in the region.

■ **Bishop Grewell** graduated from Northwestern Law School in May. In August, Bishop will move to Denver for a year to clerk on the 10th Circuit Court of Appeals, and then plans to return to Chicago to work for a firm for a couple of years. In other news, Bishop attended the wedding of **Ben Hodgdon** and **Margarita Fernandez '04**. ■ **Cherie Lim** is a client service coordinator and environmental assessor for JMK Environmental Solutions (www.jmkenv.com), based in San Fernando, Calif., working in the field of environmental due diligence and assessment. ■ **Krithi Karanth** is in India for six months doing doctoral research. Her first three authored publications came out in 2005 and 2006 in *Biological Conservation*, *Journal of Biogeography* and *Economic and Political Weekly*.

■ **Ruiko Kato** attended the wedding of **Orawan (Wan) Vorakanonta** and **Chavanond (Ob) Intarakomalyasut '04** in Bangkok, and got together with a small group of Asian F&ES alumni. She writes: "Life is fantastic in Tokyo, and I have the ideal job of handling greenhouse gas emissions-reduction projects all over the world." ■ When **Pete Land** isn't attending F&ES weddings, he is still in Vermont running Tamarack Media with **Bill Finnegan**. ■ **Ted Lanzano** and **Monica Araya** were married in Chile last December. They had a great wedding and honeymoon. Ted is still working at EPA Region 8 in Denver, and Monica just started a new assignment working on solid-waste issues in Central America. ■ **James Lucas** is working with Triton Logging in Victoria, B.C. He and his wife, Deb, are expecting their first child in May. ■ **Nicole Maywah** is an information analyst for the World Bank Water and Urban Cluster in the Latin America and Caribbean region. She will provide technical assistance and analytical work, facilitate policy dialogue and participate in other operational activities, such as lending to countries on water infrastructure,

and will be stationed in D.C. ■ **Brenden McEneaney** moved to L.A. in September and is doing some residential green-building consulting, as well as managing a store that sells environmentally friendly building materials. ■ **Flo Miller** is living in Vermont and working for the Center for Whole Communities. ■ **Terry Miller** writes: "Kate, Ruby (the wonder mutt) and I continue to love life in Portland. Our baby is due in July." ■ **Fuyumi Naito** has been assigned to a task force to make asbestos victims relief law in the Ministry of Environment of Japan. "Writing articles of the bill was very technical and tough, but now I can relax, since the bill passed both the lower house and the upper house."

■ **Abdalla Shah** resides in Tanzania, and is a national coordinator for the Nile Transboundary Environmental Action Project. ■ **Liz Shapiro** is in Oaxaca, Mexico, completing the fieldwork for her dissertation on the community-level impact of payment for environmental service projects.

■ **Jay Shepherd** is a real estate development manager with Weston Solutions, based in Washington, D.C. ■ **Scott Threadgill** writes that Logan Kai Threadgill was born on February 27. Pictures of the baby are available on the F&ES Alumni/ae Affairs website. ■ **Veda Truesdale** is a policy analyst and planner with the New Jersey Department of Environmental Protection. She deals mainly with land use, smart growth, affordable housing and environmental justice in New Jersey. ■ **Orawan (Wan) Vorakanonta** is an operations analyst with ExxonMobil Limited in Bangkok, Thailand.

2004

Class Secretaries:

Keith Bisson keith.bisson@aya.yale.edu
Daniela Vizcaino
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Jessica Barnes is in the second year

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class notes



of her Ph.D. in sustainable development at Columbia. "I'm living in Park Slope, Brooklyn, with **Sarah Vogel '03**. I'm going to Syria this summer to continue planning my doctoral research, and am looking forward to hopefully finishing classes this semester." ■ **Cecilia Blasco** writes: "I have a real job with the Mexican Fund for the Conservation of Nature in their Xalapa offices. It's a longish commute from my home in the rafting village of Jalcomulco, but I feel very lucky to get a job in my field without having to move to Mexico City. I'm the program coordinator for the growing watershed management program, so I even get to use the stuff I learned at F&ES. The work environment is demanding and efficient, so I am learning a lot and have great colleagues. My primary duties are to manage the Fund's growing watershed management portfolio. This is my dream job in my dream place, so I am very happy and feel it was worth the long wait." ■ In July 2005, **Suzette Carty** became an environmental performance analyst with Brown-Forman. Suzette will be working to solidify Brown-Forman's operations around the globe, as well as guiding other corporate areas toward creating value while minimizing environmental impacts. ■ **Jonathan Cook** has been working with the World Wildlife Fund's (WWF) Macroeconomics Program Office since July 2004. He is helping to manage several projects with WWF offices around the world that assess and address the impacts of trade liberalization on the environment. During various travels to Southeast Asia, one of his focal areas, Jonathan has been lucky enough to catch up with far-flung F&ESers like **Margarita Fernandez**, **Kevin Woods**, **Hahn Chou** and **Teak Seng '03**. Jonathan writes, "Home base is Washington, D.C., which is a better place to live than I was brought up to believe." ■ **Juan Espinosa** writes: "I am back in Colombia, my home

country, and I'm still adjusting. The good news is that I got a wonderful job as environmental policy officer at World Wildlife Fund Colombia, based in Bogotá. I will be working on climate change, toxics and sectoral and infrastructure megaprojects, and their impacts on WWF's priority conservation areas in the Andes, Orinoco basin and Chocó ecoregion (biodiversity hotspot in the Pacific coast of the country). I'm also very excited about my girlfriend, **Hannah Stutzman '05**, being here in Bogotá with me. She recently got a job at Conservation International Colombia." ■ **Yuko Kurauchi** writes: "I've moved to Nairobi to work for the World Bank on the Western Kenya Community-Driven Development and Flood Management project and Natural Resource Management project." ■ **Rosemarie Mannik** writes: "I've been all over the world since graduation. Initially, I took six months to backpack through Mongolia, Tibet, Nepal and India. While in Mongolia last year, I had the chance to volunteer for a fish conservation project. My original plans to be in Australia early this year were altered when I sustained a leg injury while in India. I decided to fly to Sweden, where I stayed with family while awaiting an operation and then undergoing post-op recovery. The operation was a complete success, and I'm back on my feet and back to my original Australian plan. I am in Brisbane, Australia, and I'm putting out feelers for jobs. If possible, I'm looking to obtain a job that involves computer analysis of environmental data using GIS and remote sensing." ■ **Tambi Matambo** writes: "I got married in D.C. to Marc Neilson. We met in Zambia six years ago. I am taking a leave of absence from the Global Environment Facility for a while." ■ Since November, **Ken Odaka** has been working in Guangzhou, southern China. Before that, he was studying Chinese in Beijing for a year, with the help of a Richard Light Fellowship that was offered by

Yale University. Ken writes, "As an account executive of Hakuhodo (Japan's second-largest advertising agency), I am working for Toyota, our client. I have been involved in Toyota's launch campaign project in China. Unfortunately, what I have been doing has nothing to do with the environment so far. I am getting experience in public relations and mass media; I used to make news programs for a Japanese TV station before I started my graduate study at Yale. After this campaign in China, I am hoping to find an environmental job." ■ **Neha (Menon) Sami** writes: "This is my second semester here at the University of Michigan as a Ph.D. student. My research focuses on land use and peripheral city growth in developing countries. I will be going to India over the summer break to do some predissertation research work to pick sites for my dissertation." ■ **Daisuke Sasatani** writes: "I am in Seattle pursuing my Ph.D. at the Center for International Trade in Forest Products (CINTRAFOR) at the University of Washington. My current project focuses on the residential housing industry in East Asia and the trends in the international lumber trade." ■ After a six-year leave of absence, **Daniela Vizcaino** will move back to her hometown of Caracas, Venezuela, to work for Conservation International Venezuela as its coordinator for the Guyana Shield Program. She will oversee ecotourism and conservation enterprise projects, working with local nongovernmental organizations and indigenous groups in southern Venezuela. ■ **Xue Wang** is manager of the Critical Ecosystems Partnership Fund for Conservation International in China. xwang@conservation.org.cn

2005

Class Secretaries:

David Cherney david@nrcooperative.org
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Virginia Lacy virginia.lacy@yale.edu
Benjamin Urquhart
benjamin.urquhart@yale.edu

Ines Angula writes: "I've been doing volunteer work for a nongovernmental organization in D.C., but I finally got a paying job for a short-term project about forest certification for the Latin American program at the World Wildlife Fund." ■ **Jocelyn Hittle** is a program associate at the Orton Family Foundation Rocky Mountain Office in Denver. She is working with **Ken Snyder '94**. ■ **Christopher Hudak** is a Fulbright Scholar and is doing research in Mongolia. ■ **Pole Kale**

is the national project coordinator for a United Nations Development Programme/Papua New Guinea government project on biodiversity conservation, climate change and land degradation. ■ **Amy Kimball** received a Fulbright Scholarship to conduct research in Canada. ■ **Robyn Meeks** is a Fulbright Scholar and is doing research in the Kyrgyz Republic. ■ **Beth Owen** writes: "I moved from D.C. to Maine, and finished my Knauss Fellowship at

National Oceanic and Atmospheric Administration. I am the education coordinator for the Maine Sea Grant College Program at the University of Maine in Orono." ■ **Angela Lopez Quiros** is an enforcement coordinator with the Texas Commission on Environmental Quality, working with regulated entities on a self-reporting, self-audit program to improve compliance with environmental regulations.

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LECTURE SERIES RECOGNIZES DIVERSE ENVIRONMENTAL LEADERS

Environmentalism shares with the Civil Rights Movement a central characteristic – empathy, according to Michel Gelobter, executive director of Redefining Progress, a think tank dedicated to shifting the economy and public policy toward sustainability.

"Empathy is what makes us reach out when we see a wounded bird. It is what calls to us when a child suffers from poverty or asthma. Empathy is also the central component of every point in the short list of big solutions," he said.

Gelobter said environmental organizations and funders must spend 15 percent of their budgets supporting new ventures that foster deep social change, including those that affect national security and joblessness. He also said that environmentalists must speak of community values, foster new leadership and build alliances. "Cross-sector partnerships are critical to our success," he said.

Gelobter spoke at F&ES as part of the "Shades of Green: Recognizing Diverse Environmental Leaders" lecture series sponsored by the F&ES Multi-Ethnic Student Association, the Dean's Office, the Industrial Environmental Management and Energy Student Interest Group and the Westies Student Interest Group.

Other speakers in the series were Michael Dorsey '96, an assistant professor at Dartmouth College and a member of the board of directors of the Sierra Club; Joshua Feldmark, executive director of the Center for Environmental Citizenship; Jerome Ringo, president of the Apollo Alliance and chair of the board of the National Wildlife Federation; Monserrate (Monsi) Roman, chief environmental microbiologist at the NASA Marshall Space Flight Center in Huntsville, Ala.; and Robert Stanton, former director of the National Park Service.

Roman said that her culture and background as a Hispanic, her work with people of many different backgrounds, the balance she is trying to achieve between work and family and her contributions to the community have helped her achieve many of her professional



Michael Dorsey '96



Joshua Feldmark



Michel Gelobter



Jerome Ringo



Monserrate (Monsi) Roman



Robert Stanton

goals. She is NASA's chief microbiologist for the International Space Station's Environmental Control and Life Support Systems Group. "It is NASA's goal to enhance life on Earth through, among other things, the enhancement of knowledge and the development of technology for space exploration," she said. "Environmental controls and life support systems are a very important part of that."

Roman said that although it is "not easy to be successful" in a work environment where others are not used to having Hispanic women as co-workers and as competitors for positions and promotions, it is important for students to choose work in a technical area that they really like. "Always do your best; never feel intimidated by the unknown or unfamiliar within your area of expertise," she said. "You have the power to shape your career and your future, and no one can take that away from you."



Radovan Aksentijevich '62 (1930-2006), a retired chemical engineer who survived prison camps in post-World War II Yugoslavia, died of lung cancer on March 8 at his son's home in Bethesda, Md. Radovan was a resident of both Bethesda and Brussels, Belgium. The son of farmers, he was sent to school in the nearby town of Valjevo and was able to pay his way by tutoring other students and exchanging goods and livestock. After World War II, he became a target of Yugoslavia's newly installed communist dictatorship, was declared an enemy of the nation at age 18, and was thrown out of school and sent to labor camps for "retraining." In 1955, he graduated from the forestry school at the University of Belgrade. He escaped from Yugoslavia in 1958 and stayed in a refugee camp in Belgium until 1959, when he obtained a visa to the United States. He learned English quickly, landing a factory job in Elizabeth, N.J. He eventually became an accountant with Bank of America in New York City. He received a scholarship to F&ES, and he earned a master's degree in polymer chemistry from Syracuse University. From 1964 until his retirement in 1986, he lived in Belgium, where he worked for several American chemical companies, including Occidental Petroleum, Hooker Chemical and CPC International. In retirement, he lived in Brussels and with his son in Bethesda, where he promoted the anti-communist movement Ravno Gorski Pokret in the Serbian community. His survivors include his wife of 46 years, Beatrice, of Brussels and Bethesda; three children, Natasha of Brussels, Ivan of Bethesda and Sofia of Chicago; and eight grandchildren.

Robert Burkholder '50 (1924-2006), of Tucson, Ariz., died on January 16 at the age of 81. Robert graduated from Ephrata (Pa.) High School in 1942 and from Pennsylvania State University with a B.S. in forestry in 1949. He was also a member of Xi

Sigma Pi forestry honorary society. In December 1942, he enlisted in the U.S. Air Force, and was called to active duty in April 1943 as an aviation cadet. He flew 81 combat missions in Europe, 34 missions in a B-17 Flying Fortress (457th Bomb Group, 750th Bomb Squadron) and 47 missions in a P-51 Mustang (364th Fighter Group, 385th Fighter Squadron, 1st Scouting Force) after completing fighter transition training. He was awarded six stars to the European Theater of Operations ribbon for the Air Offensive Europe and Central Europe Campaigns, two Distinguished Flying Crosses and nine Air Medals. After graduation from college, he served for approximately 32 years with the U.S. Forest Service as a national Forest Staff Officer and Regional Employee Development and Training Officer. He retired and moved to Tucson in 1979. He is survived by a son, Robert Burkholder, and daughter-in-law, Virginia Rae (O'Brien) Burkholder; two stepgrandchildren; and loving and caring neighbors.

John Carroll '48 (1917-2004) came from northern Connecticut, graduated from the College of the Holy Cross in 1940 and studied at Johns Hopkins University. In World War II, John was a Coast Guard lieutenant in the Pacific Theater. He resided in Catonsville, Md., where he died on December 17, 2004, at the age of 87. His widow is among his survivors.

George Diehl, Ph.D. '35 (1908-2006), died on March 10 at the Lincoln Park Manor nursing home in Kettering, Ohio, at the age of 97. George was born in Cincinnati, the eldest child of George W. and Caroline Steinmetz Diehl. He received his B.A. and M.A. degrees from the University of Cincinnati, and subsequently earned a Ph.D. from the Yale School of Forestry. He taught biology for 43 years at the Lawrenceville School in New Jersey, and co-authored a science textbook

used at the school. In 1996, he was awarded the school's Outstanding Masters Award by the alumni association. He was well-known for the walking tours he conducted to view the trees on campus, many of which he planted himself. He married Nan McAuley of New Hope, Pa., in 1947, who was a nurse at the school. She preceded him in death. He is survived by a sister, Dorothy Diehl Smallwood, of Kettering; a sister-in-law, Ruth Diehl of Cincinnati; and numerous nephews and nieces.

Harlan Fitch '52 (1917-2005) died on October 5 in Groton, Mass., at the age of 88. During World War II, Harlan served in the Army as an artillery officer. A 1951 graduate of the University of Maine, he was a consulting forester and surveyor in Massachusetts throughout his life. Louise, his wife of 54 years, is among his survivors.

Margaret Rasmussen King '85 (1957-2005) died of lymphoma on December 16 at the age of 48. Peggy was foremost a loving mother and wife and touched the lives of all who knew her. She worked in three fields: conservation, foundations and university administration. As the scientific assistant to Thomas Lovejoy at the World Wildlife Fund, she worked in the Washington, D.C., office and in the field in Brazil. She also worked as assistant director of the Tropical Resources Institute at Yale (and supported TRI as an alum), and as a consultant to the College of Natural Resources of the University of Minnesota. She was a steward in the world community, serving on the boards of the American University of Cairo, as well as the Gillette Children's Hospital and the Dodge Nature Center, both in St. Paul. She was also active in various family and private foundations. Born in St. Paul, she was a graduate of St. Paul Academy and Summit School and earned a B.S. from Lewis and Clark

College before coming to Yale. She was preceded in death by brothers Michael and John Rasmussen, maternal grandparents Margaret and Frederick Weyerhaeuser and stepgrandfather Reuell Harmon, as well as by paternal grandparents Walter and Mary Harriet Rasmussen. She is survived by her loving husband, Larry King '85, and her beloved children, Megan, Crockett and Leonard; her parents, Ginnie Weyerhaeuser and William Rasmussen; her stepfather, George Andeweg; her siblings, Steven Rasmussen, Mary Rasmussen, Thomas Rasmussen, Anne Zaccaro, Charlie Rasmussen, Ellen Middleton, Kristin Rasmussen, John Rasmussen and Elizabeth Rasmussen; and her sister- and brother-in-law, Sally and Ken Hall; as well as many aunts, uncles, cousins, nieces and nephews.

Andrew Mazurak '36 (1911-2003) came from Michigan and was a 1933 forestry graduate of Michigan State. After a stint with the U.S. Forest Service in South Dakota, Andrew started his doctoral studies at the University of California, Berkeley, where he also taught soil physics. In 1948, he received a Ph.D. and joined the faculty of the University of Nebraska. He became a professor of agronomy in 1960, and retired in 1977. He remained in Lincoln, Neb., where he died on September 3, 2003, at the age of 92.

Tandy Miller '87 (1959-2005) died on December 7 of breast cancer. Tandy was born and raised in Riverdale, N.Y., and attended the Fieldston School. She held an undergraduate degree in biology from Brown University. At Yale, she was a joint-degree student at F&ES and the Yale School of Management. She married Keith Michaelson in 1987 and moved to Westport, Conn., in 1988. After the birth of her two children, she pursued a degree in clinical psychology from the Derner Institute at Adelphi University, during which time she was

diagnosed with cancer. She completed her doctorate in clinical psychology while undergoing treatment for her illness. As assistant clinical professor of psychiatry and clinical director of the Prevention through Risk Identification, Management and Education clinic at the Yale School of Medicine, she was internationally recognized for innovations in the early detection of and intervention in schizophrenia. She and her colleagues at Yale produced their own version of a structured clinical review, known as the Structured Interview for Prodromal Syndromes (SIPS), which has been translated into 15 languages and is used worldwide. In addition to her professional work, she devoted herself to several civic activities. When her children were young, she served on the board of the Children's Community Development Center in Westport; later, she served as a Girl Scout leader with her daughter's troop. Additionally, her commitment to Project Return in Westport spanned several years. She is survived by her children, Gillian and Evan Michaelson, both students at the Hopkins School in New Haven; her parents and three sisters.

Richard Ricard '37 (1912-2005) came from Toledo, Ohio. Richard received an A.B. from the University of Michigan in 1933. From 1937 to 1941, he supervised the forest survey of Ohio for the Works Progress Administration. Then he went to work with the Tennessee Valley Authority. In 1943, he joined the Navy and served as a lieutenant in the South Pacific. After the war, he returned to the TVA and led various branches concerned with management of resources and land units. In 1970, he went to Washington, D.C., to serve as director of the Field Service Branch of the Department of Housing and Urban Development. He retired to Ventura, Calif., where he died on August 18.

David Rock '55 (1931-2005) died at his home in Troy, Vt., on December 31 at the age of 74. Before coming to Yale, David earned a B.S. degree from Antioch College in Yellow Springs, Ohio, in 1953. His forestry career began in South Strafford, Vt., with the New England Forestry Foundation. At Berea College in Kentucky, he managed a 6,000-acre working forest and taught farm forestry. He worked for a year in New Hampshire as assistant state research forester, then joined the U.S. Forest Service, working in the Warm Springs Ranger District of the George Washington National Forest in Virginia and in Upper Darby, Pa. In 1964, he went back to Antioch to serve as associate director of the Glen Helen Nature Preserve, and as instructor and then associate professor of biology. He taught conservation, land use and fly fishing, and led two three-month-long, land-use study camping trips, called Conservation Caravans, through the western United States. At Glen Helen, he led hundreds of field trips, worked with the Yellow Springs High School forest program and conducted what many remember as his nighttime "tree-feeling" walks. He also served on the Yellow Springs Planning Board. In 1973, he and his family moved to Troy, where he again worked for his first employer, the New England Forestry Foundation, and began teaching woodlot management for the newly created School Administrative District 3 adult education program. Soon after, he became an adjunct instructor of forestry topics at nearby Unity College, where he stayed until 2003. In 1984, he became a private consulting forester, serving hundreds of woodlot owners throughout central Maine, until complications resulting from a prostatectomy caused him to retire in 2004. He was an active member of the Maine Association of Consulting Foresters, and earned his 50-year pin as a member of the Society of American Foresters in 2005. He served as a director for the Waldo County Soil and Water Conservation

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District, and was on the Troy Planning Board for 30 years. He leaves behind his wife of 37 years, Judy Goodell Rock; a daughter, Jennifer, a biologist in North Wales, United Kingdom; and a son, Timothy Rock, a broker and financier, and daughter-in-law, Kristin Buccelata Rock, a physician's assistant, in New York City. The family was together in Troy when he died.

Arthur Smith '51 (1924-2005) was from Iowa. During World War II, Arthur was in the Marines in the Pacific Theater and in Japan. He graduated from Simpson College in 1949. He was a forester with Boise Southern in Deridder, La., and also a lobbyist at the Arkansas and Louisiana state legislatures. He was 81 when he died on December 6 in Baton Rouge, La. He is survived by his second wife, Kathleen; a brother; and a daughter, two sons and four stepsons.

Edward Smith '50 (1925-2005) came from Marblehead, Mass., and attended Dartmouth College. Edward received a forestry degree from the University of Massachusetts in 1948. After graduating from F&ES, he was a wood technologist for Mengel in Louisville, Ky. Then he became an actuary in the casualty-property department of Travelers Insurance Co. and a member of FCAS. He served in the Navy in World War II. He is survived by his wife, Attrude Lewis Smith; a daughter, Susan (James) Smith; and a son, Douglass (Cheryl Ann) Smith. He was devoted to his grandchildren: Anna, Robbie and Jeffrey Glassman, and Douglass, Lewis and David Smith. He loved to watch their athletic contests and to hunt, fish, canoe and take long walks in the woods.

Jordan Shelley Tanz '85 (1953-2006) died on March 20 following heart surgery at the Royal Jubilee Hospital in Victoria, B.C. Jordan received his Ph.D. from the University of British Columbia in 1991. He was an area manager for Procter &

Gamble Cellulose and a lecturer in forest management at Lakehead University. He also worked for T.M. Thomson and Associates (1991-1993) and Cortex Consultants (1993-2006) in Victoria. He will be remembered for his effectiveness in facilitating high-profile multistakeholder processes (B.C. Forest Genetics Council, Forest Science Board), modeling timber supply impacts and training in forest resource analysis (Forest Management Institute of British Columbia, Ministry of Forests and Range). His curiosity about life and his ability to make the complex simple (and fun!) endeared him to his youngest students (Keewaydin canoe camp), to whom he introduced a love of the outdoors, the skills of a competent paddler and the respect and acceptance of one another. To his adult learners, he taught the intricacies of timber supply and forest estate modeling. To his colleague Melissa Hadley, "Jordy was a consummate professional and a generous individual, embodying all that we honor in a professional forester and human being – competence, independence, integrity, accountability, compassion, loyalty and stewardship." He is survived by his wife, Petra; his children, Jeff and Katie; his parents, Dr. Mitchell Tanz and Mrs. Alice Tanz; his brothers, Peter, Robert and Tim; his sister, Lili Rosenbaum; and a multitude of friends.

John Van Camp Jr. '47 (1918-2005) died on November 6 in Zion, Ill., at the age of 86, following a prolonged illness. A graduate of Purdue University, John was a well-known landscape architect in the northern Illinois area, and served as city forester for several towns. He was the owner and operator of Van Camp Landscape Contractors and Midwest Shadetree Consultants. He was a member of the Wisconsin Arborists Association and, at times, served as its president. He was a World War II veteran of the Navy, serving from 1942 to 1945 and participating in the D-Day landings at Omaha Beach. He is survived by his

son, Douglas Alan (Ella) Van Camp; and daughter, Karen Van Camp; four grandchildren, Brad (Dana) Van Camp, Amy (Brent) Smith, Brian (Ashley) Van Camp and Michael Van Camp; and three great-grandchildren, Kenneth, Douglas and Kristen Smith. He was predeceased by a brother, William.

Hamlin Williston '42 was a native of Hartford and a 1940 Harvard graduate. Hamlin began his studies at the Yale School of Forestry with the Class of 1942, but joined the Air Force in World War II. He received his degree in 1946. He served as a flight control officer in the Pacific, and took part in the capture of Iwo Jima. When he finished his work as a student at Crossett Experimental Forest, he started a career in the United States Forest Service (USFS) in research at the Crossett forest. During the Korean War, he returned to active Air Force service. In 1955, the USFS transferred him to Oxford, Miss., to do research and extension work for the Yazoo-Little Tallahatchie Flood Prevention Project. In 1971, he was transferred to Alexandria, La., and subsequently to Jackson, Miss., as softwood management specialist of the State and Private Forestry Relations Branch for the Southeastern Area. When he retired from the Forest Service in 1980, he returned to Oxford as a consulting forester for 11 years. An expert on Southern pine forestry, he authored two books and more than 150 technical articles. This brought him election as a fellow of the Society of American Foresters and the Distinguished Service Award for Mississippi of its Gulf States Section. For a decade, he was on the Mississippi Forester Registration Board. He was active in church and charitable work in Oxford. He had a nearby tree farm, but also enjoyed a summer home in Stoddard, N.H. He was 86 when he died in Oxford on March 5, leaving Elizabeth, his wife of 60 years, and four children and 10 grandchildren.

Climate Change...

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these to inform new creative work on multi-media climate-change communications.

Recommendation #28: Improve K-12 students' understanding of climate change by promoting it as a standards-based content area within science curricula and incorporating it into other curricula and teacher certification standards. Use the occasion of the state reviews of science standards for this purpose, which are being prompted by the states' need to comply with the Fall 2007 start of high-stakes science testing under the No Child Left Behind Act.

Recommendation #29: Organize a grass-roots educational campaign to create local narratives around climate-change impacts and solutions, while mobilizing citizen engagement and action. Kick the campaign off with a National Climate Week that would recur on an annual basis.

Recommendation #33: The Business & Finance working group at the conference composed these principles: analyze and disclose financial risks and opportunities related to climate change; develop a companywide plan to address climate-change risks and opportunities; convene board-level sessions to inform and educate executives and members on climate change; require major suppliers to adopt principles for corporate engagement on climate change; and engage in policy dialogue at the state, regional and national levels in support of market-based, long-term reductions in greenhouse gas emissions, while limiting manipulation of scientific information.

Recommendation #36: Create a broad-based Climate Action Leadership Council of 10 to 12 recognizable and senior eminent leaders from all key national sectors and constituencies to serve as an integrating mechanism for developing and delivering a cohesive message to society about the seriousness of climate change and the imperative of taking action. The council would include leaders from business, labor, academia, government, the non-governmental organization sector, the professions (medicine, law and public

health) and the community. They would be chosen on the basis of their credibility within their respective sectors, but also across society at large. ■

The Yale F&ES Project on Climate Change is now promoting implementation of the recommendations. Visit <http://environment.yale.edu/climate> to learn more and register to participate.

Environmental Index...

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100 percent, and that for childhood mortality due to environmental factors is 0). On some issues, like adequate drinking water supplies, most countries are close to the target; on other issues, like sustainable energy, most are far from it.

Esty is quick to note: "The environmental world has not done enough to define standards or targets. This is itself a problem." He also makes clear that the appeal of the EPI does not minimize the importance of the ESI – the former focusing on pollution control and natural resource management outcomes for which governments can be held accountable, and the latter presenting a more complete, long-term picture of environmental sustainability.

To make the EPI more useful to participating countries, rankings are offered for a variety of peer groups, including by income level, geographical proximity and political groupings (e.g., free-trade areas).

New Zealand was ranked first in the 2006 EPI, followed by Sweden, Finland, the Czech Republic and the United Kingdom, clearly reflecting the seriousness with which each of these countries' governments takes environmental policy. The United States ranked 28th in the EPI, representing strong performance on some issues but weak results on some others. In particular, the data indicate that the United States lags its peers on three issues: water conservation, sustainable energy and managing productive natural resources (fisheries, forests, farmland). "American farmers use tons of chemicals in agribusiness, and these pesticides and fertilizers do considerable damage," said Esty. "Likewise, our forestry and fishing practices have some distance to go to be fully sustainable." ■

The EPI has been part of Esty's thinking as far back as 1999, when the ESI was first released as a pilot program. Initially, a major concern with the ESI was that it lacked "time series" data. Policy makers from around the world told Esty and his colleagues at Columbia University's Center for International Earth Science Information Network (CIESIN), which amassed the data, that, as Esty has paraphrased, "You're judging us on a lot of stuff we can't do anything about. Why don't you judge us more narrowly on current performance?"

These concerns have been reflected in comparative rankings between countries' ESI and EPI "grades." That is, some nations with low ESI rankings have high EPIs. The United Kingdom, for example, has "300 years of industrialization to live down, but it is now managing well what it has to work with," said Esty. Thus, the United Kingdom is ranked fifth in the world on the EPI, compared to an ESI ranking of 66th.

"The U.K. and Belgium are equal in wealth, but the U.K. far outpaces Belgium on the EPI," said Esty. "This reflects much better governance – less corruption, more attention to the rule of law, a public-minded civil service, active nongovernmental organizations and open political debate. The significant correlation between good governance and environmental results has struck a number of people as notable. The EPI seems to resonate even better than the ESI on this level. It's easier to understand and provides a focus on what governments can be held accountable for."

Likewise, some "pristine" nations with abundant natural resources, small populations and little industrial development have high ESI rankings but low EPI rankings. Mali, for example, does not manage environmental resources well, which is reflected in its 130th ranking on the EPI (third from the bottom), while it is ranked 40th on the ESI, five notches higher than the United States, because it has not industrialized and therefore has not suffered much pollution harm.

"We labeled the EPI a 'pilot' study to signal a degree of modesty. The data remain woefully inadequate on a number of issues, and we are still in the process of thinking through the approach to measuring many issues." ■

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