

THE JOURNAL OF THE School of Forestry & Environmental Studies

# Environment Yale



Fall 2002



## LMS Software

Changing the Face of  
Forest Management

Inside: Reflections on the Johannesburg Summit, page 36

# LETTERS



**The inaugural issue of *Environment: Yale* elicited many responses. Because of space limitations, only a representative handful are printed below.**

I was very happy to read the first issue of *Environment: Yale*. It is an outstanding and timely magazine. The contents are excellent. We are grateful to you for this service to the security of the global environment. I look forward to reading future issues of this wonderful journal.

M. S. SWAMINATHAN  
UNESCO COUSTEAU CHAIR IN ECOTECHNOLOGY  
UNITED NATIONS EDUCATIONAL, SCIENTIFIC  
AND CULTURAL ORGANIZATION

It is a magnificent production, well balanced and with outstanding texts and pictures. I liked particularly Dean Speth's message: "Did 9/11 really change everything?" I have circulated the journal to our graduate students and to various staff members, ending in the library. I am eagerly awaiting the next issue. Thank you for your effort.

GERARDO BUDOWSKI, YC '56, PH.D. 1962  
SENIOR PROFESSOR  
DEPARTMENT NATURAL RESOURCES AND PEACE  
UNIVERSITY FOR PEACE  
SAN JOSE, COSTA RICA

The first edition of *Environment: Yale* was very impressive—congratulations.

MARK DAMIAN DUDA, M.E.S. '85  
EXECUTIVE DIRECTOR  
RESPONSIVE MANAGEMENT  
HARRISONBURG, VIRGINIA

Thank you very much for sending me your excellent journal's first issue, which I find very informative and useful. It will be great help to my teaching, research and extension activities.

DR. G. POYYA MOLI  
SCHOOL OF ECOLOGY & ENVIRONMENTAL SCIENCES  
PONDICHERRY UNIVERSITY,  
PONDICHERRY, INDIA

I write to express my disappointment with the tone of the new Yale F&ES journal. Cover headlines, such as "Hidden Dangers," and its accompanying article that point up risks without adequate discussion of the rationale, histories, tradeoffs and contexts for those risks signals that the school has decided to follow the "histrionic model" of raising environmental awareness (and, I am sure, funding). This contrasts with the traditional academic model, which seeks sobriety, balance and accuracy over hysteria. While I agree that there is a place for emotion and metaphor to help generate public concern about environmental issues, I do not want to see academic institutions—and particularly Yale—go down this slippery path. Leave the emotion and "necessary" distortions in context to the environmental NGOs. Nonetheless, I found the coverage of Dr. Wargo's work on diesel fume exposures of considerable interest. There was no need to sensationalize it, especially not for the well-educated Yale alums that read the journal.

STEVE STRAUSS, M.E.S. '80  
CORVALLIS, OREGON

**Correction:** In the April 2002 issue, the article "Certified! Yale-Myers Forest Passes Inspection by Accreditors" misstated the amount of board feet of timber that Yale-Myers produces annually. It is 500,000, not 500 million.

**Due to the volume of correspondence, *Environment: Yale* regrets that it is unable to respond to or publish all mail received. Letters accepted for publication are subject to editing. Unless correspondents request otherwise, e-mail addresses will be published for letters received electronically beginning with the April 2003 issue.**



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### Environment: Yale

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## DEAN'S MESSAGE: 2001-02 A BANNER YEAR FOR F&ES, BUT HUGE CHALLENGES LIE AHEAD



© Michael Marsland

Dean James Gustave Speth

**The 2001-02 year was a good one for our school—and for environmental studies at Yale. Our progress has been especially noteworthy in four general areas: faculty expansion and diversification, internationalization of the student body, environmental education at Yale College and securing resources for the school's future. Success in these areas bolsters our efforts of becoming a true global school of the environment while continuing to be second to none in preparing new generations of leaders.**

However, we are not in the position of being complacent. There are still huge challenges ahead for all of us. The predictions that many people made 20 years ago regarding threats to the global environment have often been ignored, and the deterioration continues today. While certainly attempts have been made to pursue international agreements, these have, to date, not been notably successful. We see F&ES as playing a critical role in preparing the next generation of foresters, scientists, resource managers, business and NGO leaders and policy makers who will work together to address these environmental threats.

Since 1999, more than a dozen faculty members have joined F&ES along with significant numbers of visiting faculty, all accomplished professionals from a wide variety of backgrounds and places. These additions have deepened and broadened the range of our school's expertise. New F&ES faculty are building our capacity in such areas as sustainable development, forestry, environmental economics, hydrology, ecosystems ecology and environmental law and policy. This year we have searches under way for faculty in energy and in environment health.

F&ES draws its student population from over 51 different countries. Thirty-three percent of the master's degree candidates from the Class of 2002-03 come from outside the United States; this represents nearly 30 percent of the school's total enrollment and more than double the number of students in 1998. In addition, 31 doctoral degree students, or more than 41 percent of the total number of doctoral candidates,

come from outside the United States. Our goal is to increase those figures, particularly with students from the developing world. We see the collaboration among our students in their research and organizations on a daily basis and look forward to assisting them as they become environmental professionals.

The 2001-02 academic year marked the first full year of the new undergraduate major in environmental studies at Yale. There has been growth in the number and range of environmental courses (many taught by F&ES faculty) offered to undergraduates, including non-majors. Since my arrival at F&ES in 1999, President Rick Levin and Provost Alison Richard have voiced unequivocal support for environmental studies as a top university priority and have backed this—repeatedly—with strong and effective action. Dean Richard Brodhead has been similarly supportive of strengthening environmental education for Yale undergraduates. We are powerfully committed to these new directions. Now thanks to a magnificent gift from Edgar M. Cullman, YC '40 and Edgar M. Cullman Jr., YC '68, a substantial part of our costs of providing undergraduate teaching for Yale College students has been secured “in perpetuity” (see page 10).

This past academic year was also our most successful year at raising funds for the school's current and future needs. Including pledges, cash gifts and foundation grants, the year's total was \$28 million—with \$24 million of that targeted for our campaign's highest priorities: endowment and our new facility. Included are three gifts establishing new endowed chairs and three other gifts totaling \$15 million for our new building. To put this in context, the school's previous best-ever fund-raising year was 2000-01, when \$10.4 million was raised—and before that, the 1999-2000 year, when \$5.6 million was secured.

As a result, the F&ES campaign today stands at more than \$46 million, including some \$37 million for endowment and facilities. The individuals responsible for this are too numerous to mention, but in speaking of campaign progress and momentum I must single out Frances Beinecke and Ed Bass. Their support, leadership and friendship have made all the difference.

We still have much to do. The World Summit on Sustainable Development in Johannesburg in early September pulled world leaders together to look at current conditions of the global environment and human development. The summit certainly reiterated the urgent need not only for increased public awareness of critical environmental issues, but also for leaders who will remain committed to finding and implementing solutions. We are firmly placed on the front lines of this effort.

*September 27, 2002*



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# LMS Software

## Changing the Face of Forest Management

By John Courtmanche

When the Washington state Department of Fish and Wildlife and the Grays Harbor county government brokered an agreement in 1991 to protect wildlife habitat at Satsop Forest, they had to read through several text-laden forest management plans and agree on one. Now the two sides are engaged in similar negotiations to reassess their Wildlife Mitigation Agreement, but this time they've been able to choose among as many as 20 forest management alternatives and, for each one, to see visualizations and graphs of how the forest may look every five years for the next 100 years.

The technology that is empowering these decision makers in their forest management planning is called the Landscape Management System (LMS), and was developed by Chad Oliver, Pinchot Professor of Forestry and Environmental Studies at the Yale School of Forestry & Environmental Studies, with funding from the U.S. Forest Service. Oliver developed the technology so forest owners could manage their forests in a way that incorporates a broad view of many of the different values people attribute to forests. To its credit, at Satsop Forest the LMS tool is building trust between parties on both sides of the negotiating table.

"Using longhand for the first mitigation, we were confined to several alternatives," says Jim Walls, representing the Satsop Forest public landowners. "This time we developed multiple alternatives. It's amazing how many you can develop." Walls adds that although the first

wildlife mitigation negotiations lasted seven years, the current process should take less than half that time.

"LMS is interesting in its ability to look at stand conditions through time," says Curt Leigh, representing the Washington Department of Fish and Wildlife in the negotiations. "Its strength is its ability to be visual."

In the late 1980s, the state of Washington asked Oliver, then at the University of Washington, to help figure out how to manage forests that would incorporate a variety of values people attach to them. The resulting forest management software has certainly been put to the test at Satsop Forest, a property that has been wrangled over by business and wildlife interests for decades. In the 1970s the forest was scheduled to be the site of a nuclear power plant; the project went bust, but unfortunately not until after the plant's towers had been built.

Photo (l-r): Alex Finkral, school forest manager, Chad Oliver, director of Yale's Global Institute for Sustainable Forestry, and Megan Mattox, program director for the Program on Landscape Management.

CONTINUED on page 4

# LMS Software Changing the Face of Forest Management

CONTINUED from page 3



Chad Oliver

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“[LMS] allows  
us to build a  
lot more trust.”  
Chad Oliver

In the early 1990s, the state of Washington acquired the 1,500-acre property from its private energy owners, and subsequently created the Public Development Authority (PDA) within Grays Harbor county government to oversee the land and its structures. The Washington state Department of Fish and Wildlife led the charge to ensure the protection of wildlife habitat on the 1,100 acres of forest on the public land, and the two sides negotiated for years before agreeing to a Wildlife Mitigation Agreement.

Less than 10 years after signing that agreement, the PDA contracted with the nonprofit Columbia-Pacific Resource Conservation & Economic Development District, and together they approached the Department of Fish and Wildlife with the request to re-examine the agreement. They wanted to see whether they could harvest more timber from the forest without affecting the agreement or the sustainability of the forest.

“The main challenge was, there was the original plan developed for the land, based on the best technology they had 10 years ago,” explains Oliver, who is also the director of Yale’s Global Institute of Sustainable Forestry. “They had no good growth models. But the plan had been agreed upon by environmental groups and the state Fish and Wildlife service. The challenge was to convince them that any plan we would come up with would not threaten the values they already felt they were protecting.”

Curt Leigh says that from the start Fish and Wildlife was at least willing to re-examine the agreement, and the department suggested they could all go back to using the agreed-upon Habitat Evaluation Procedures from a decade ago. But the old method looked only at wildlife outputs, not at other forest outputs, so Columbia-Pacific brought in Chad Oliver and his LMS.

The reassessment process began with a forest inventory in 1998 that recorded measurements of trees, snags and downed wood. The next steps involved defining management objectives, which were narrowed down to the following:

- Providing Sufficient Wildlife Habitat for Five Key Species—Black-tailed deer (*Odocoileus hemionus columbianus*), pileated woodpecker (*Dryocopus pileatus*), southern red-backed vole (*Clethrionomys gapperi*), spotted towhee (*Pipilo erythrophthalmus*) and Cooper’s hawk (*Accipiter cooperii*);
- Protecting the Forest’s Structural Diversity;
- Providing Wood Commodities;
- Protecting Forest Health;
- Sequestering Atmospheric Carbon; and
- Providing Social Benefits (specifically financial viability, profitability and social contribution).

For each of these objectives, the process managers identified measurable criteria that could be used to calculate the degree of success or failure of the objectives; these criteria were entered into the LMS program. The managers then identified and grouped the forest’s tree stands and selected silvicultural pathways, the trajectories that a tree stand will grow through based on the initial stand conditions and the silvicultural operations performed on it. This process was managed by a team of four: Oliver; Kevin Ceder, a specialist at the Rural Technology Initiative of the University of Washington College of Forest Resources; and Jim Walls and Jerry Smith, both of the Lower Columbia-Pacific Resource Conservation & Economic Development District, which was contracted by the Grays Harbor Public Development District.

Initially, the process managers produced 20 forest management alternatives using LMS and its companion Toggle program. LMS and Toggle comprise separate Microsoft Windows-compatible computer programs, all aimed at assisting in landscape-level analysis and planning of forest ecosystems. LMS turns spreadsheet data into graphical and tabular displays and visualizations, projecting the results over years, decades, even centuries. Toggle allows the user to generate many alternative treatments for different forest types within a given landscape. Then, the user can apply each treatment in different proportions to the landscape and immediately observe the effects on the various

“I’m not familiar with any other [tools] that combine forest management timber yields and wildlife habitat models.” Curt Leigh

management objectives simultaneously. The proportions are changed by using a “toggle” button moved with a mouse, hence the program’s name.

In the case of the Satsop Forest Management Plan and other plans that they have worked on, Oliver says, “We distribute the Toggle software to the stakeholders, show them how to use it and ask them to help generate effective management alternatives. On public lands, this is an effective way of giving the public an understanding of the opportunities, trade-offs and limitations of management—and of getting a lot of creative management alternatives.”

“By enabling all of these calculations to be done so rapidly and smoothly, following both the management and natural-science principles, LMS allows us to apply many more management options in a much more effective and transparent way than ever before. It allows us to build up a lot more trust,” he added. The 20 alternative plans were presented to both groups of Satsop Forest decision makers on May 14.

At their meeting in May, the decision makers at Grays Harbor PDA and Washington state Fish and Wildlife whittled the 20 alternatives down to four: One option represents the current Wildlife Mitigation Agreement with no changes; a second option represents the PDA’s goals to increase timber output and economic productivity with minimal change to wildlife habitat; and two other draft plans suggested by Fish and Wildlife aim to have no effect on wildlife habitat, while slightly increasing the forest’s economic productivity. Through the summer and fall of 2002, Kevin Ceder was leading the further analysis of the four Satsop Forest Management Plans, with plans to submit them to decision makers by the end of 2002. The two parties will then decide whether to keep the current agreement or adopt a new one.

Whatever the outcome, the process has been a victory for LMS. Parties on both sides speak positively about the use of LMS in the negotiations. “It may be an interesting tool to use on forest land in different parts of the country. I’m not familiar with any others that combine forest management timber yields and wildlife habitat models,” says Leigh.

Walls says, “The system was working right and we had buy-in from all parties; at least that was my perception. They were all using Toggle to design alternatives—apparently they believed in the system.” Walls himself liked LMS enough to introduce it in his new job in Lake County, Ore., where since early 2002 he’s been charged with restoring a timber forest to more natural conditions. “What I like about LMS is, while no model is ever perfect, LMS gives you a series of five-year projections over a span of 100 years. So in five years you can actually do an analysis and go in and change the model based on the new information. Each five years you do that, you narrow down what should be occurring. It’s not a confined model.”

A representative from the PDA, Diane Ellison, said she has believed in LMS all along, so much so that when she ran for the Washington state legislature in 1996, she proposed grants to encourage its development and use in the region. “I ran on a ticket that basically said, ‘We can have it all’—clean water, salmon runs and healthy wildlife numbers, and still derive revenue from our forests by changing our management methods,” Ellison says. “This is where the opportunities of LMS begin to come into the arena as a viable way to manage the forests for acceleration of late successional characteristics, log parcels of the land by thinning and create better habitat for wildlife.”

“We started off with skepticism,” Oliver says. “But what the system primarily does is build trust. This is what we’re going to do, you can look at it, we’ll show you. And you’ll trust us five years from now when we show we’ve done that.”

Leigh observed that another of the system’s strengths is its ability to create visualizations of the forest over time, using visualization software developed by Bob McGaughey of the U.S. Forest Service, stationed at the University of Washington.

Ceder explains, “The LMS Stand Visualization System will take inventory information for a forest stand and draw representations of all the trees, to scale. You can look from different angles at a visual representation of your forest.” He notes that this is an especially helpful tool when dealing with people who don’t have a forestry background and who can’t interpret a forest inventory table. “The Stand Visualization System helps communicate to a very broad audience,” he says.

# LMS Software Changing the Face of Forest Management

CONTINUED from page 5



Computer visualizations of the changing forest. From 2000 until 2025, the forest regrew. In 2025, one stand was clearcut and another thinned; both were replanted. The expected appearance in 2040 shows the dynamic change in forest conditions and gives the public confidence that the forests will be sustained. (Visualizations of the University of Washington College of Forest Resources Pack Demonstration Forest, Eastonville, Washington, U.S.A.)

Oliver sees many benefits to the software. “For two decades, foresters have been trying to warn about the impending fires in the Inland West that are now a reality. People first ignored the warning because the forest did not look crowded at that time, and they did not realize how the forest would change. If we had visualizations such as these, perhaps people would have realized how dynamic the forest is.

“Now when forest managers propose thinning the forest, clearcutting patches and leaving other areas to create a mosaic more conducive to fire control and wildlife habitats, people become concerned that there will be no trees left—and others will not grow. We can now show how the forest will look immediately after the operations and into the future.

“In fact, we can show the appearances and the effects on many objectives simultaneously for a variety of different management alternatives, so we can choose the best one. The management process behind LMS and Toggle follows decision-science methodologies and incorporates the environmental impact statement procedures. Consequently, large amounts of information are generated in understandable forms for sound, legally defensible decisions.

“The data entered into LMS are the standard ‘forest inventory’ data—individual tree data and stand data—that most forest owners either have or obtain as the first step in any management. If they want to make use of landscape visualization, they need a couple of GIS (Geographic Information Systems) pieces of data that are quite easy to obtain nowadays.”

About the system’s graphical interface, Oliver explains that LMS users can use the computer mouse to point-and-click to open a “landscape file,” load a local growth model, silviculturally “treat” any stand at any time, project any stand or the entire landscape in five- or 10-year intervals for decades or centuries into the future and observe the consequences as tables, graphs and visualizations. The visualizations can show any stand or the entire landscape at any time, viewed from any position. A click of the mouse will give the user the choice of over 20 tables (or the user can customize a table) that display the standing and/or harvested volume, inventory, wind hazard, habitat suitability for different species, costs and returns and other features. Oliver and his co-developers also designed the system so it could be used by foresters on their laptop computers in the forest.

Interestingly, Oliver didn’t begin the LMS project with the goal of developing software; he started off with a challenge to solve a complex problem. In the late 1980s, when timber and wildlife advocates were polarized over the issue of protecting versus harvesting forests in the Pacific Northwest (a.k.a. the “Spotted Owl controversy”), the state of Washington asked him to help figure out a way to manage forests for different, sometimes competing, values. Oliver and some of his graduate students set out to compile all of the theory and information behind forestry, ranging from the natural sciences to the management sciences. They soon realized that the calculations needed to process the information were immense. So they began automating data management and analysis.

“Originally we were working on developing a theory and a concept,” Oliver says. “Fairly early on we realized we would need the computer to keep from being overwhelmed by the numbers. The challenge is to provide a variety of forest conditions that will then provide a variety of objectives, from commodities to noncommodities. And to recognize that these forest conditions will change over time.”

In the early 1990s, U.S. Representative Norm Dicks of Washington state and other members of Congress and the Senate got behind the project and encouraged the U.S. Forest Service to support it. Oliver received federal contract money to fund the equipment and personnel to create the system. He worked over the years with University of Washington College of Forest Resources colleagues and graduate students, including Bruce Lippke, professor of forest economics and director of the Rural Technology Initiative, and LMS chief programmers James McCarter and Chris Nelson. Oliver says that many people need to be credited with the system’s development, as noted on the system’s website (<http://lms.cfr.washington.edu/lmspeople.shtml>).

An early version of the software was shared publicly in 1997. The software has always been free to



“[LMS is] one of the best tools out there to measure multiple objectives that landowners have.”

Jim Walls

anyone who wants it from the LMS website. LMS version 2.0.45 was released last June, and Kevin Ceder says version 3 will be released by the end of this year, with a significantly simpler interface to reduce the training required to learn it.

Ceder and Oliver insist the software isn't difficult to learn—the difficulty is more in finding the time to learn it. The University of Washington offers three-day training sessions for midcareer professionals. Oliver adds that computer-savvy foresters can learn it much more quickly. “We brought in some children from 8th through 10th grades from a Native American forestry field camp. They sat down right away, learned the whole interface, the point and click. Within two hours they had learned everything it had taken three days to teach the midcareer managers.”

Oliver says, “A lot of computer technologies have been developed in forestry, but few of them are user-friendly in the sense of being freely available, continuously upgraded and supported by tutorials, short courses and tech support.” Adds Jim Walls, “LMS has already achieved a high level of development. It's not a finished product—we need better models associated with it that look at understories. But it's one of the best tools out there to measure multiple objectives that landowners have.”

Currently, the U.S. Forest Service continues to fund the project. Since Oliver was hired by Yale last January, the funding is now split between Yale and the University of Washington. “Yale was interested in having me here, and one thing they were interested in were these tools,” he says, adding jokingly, “I like to think they would have invited me without the tools.” But Oliver says Dean Speth was very specific in stating that he would very much like to have LMS at F&ES, and to have Yale and the University of Washington share the lead in a consortium of universities supporting the system.

“There are certain things we can do at Yale very well,” Oliver explains. “Yale has a good pool of talented professional master's students. Our contacts and global perspective allow us to interface with many places in the world, both providing this information and getting feedback from it. Also we have a very good collection of professors here who can provide a lot of input to it.”

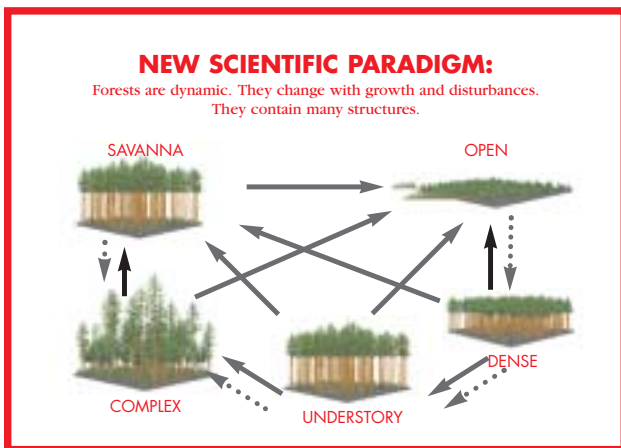
Oliver taught the landscape management course last spring semester, and he'll offer it again next spring. The class has three components: it teaches the biological sciences and the understanding of landscapes; it teaches an understanding of managing landscapes; and it teaches LMS software as a landscape management tool. “I try to teach LMS the same way it was developed,” he says. “I say, this is the landscape management process to go through, and these are the tools that allow you to automate its routine steps.”

Learning the software in the spring, students were able to “game” forest management plans for diverse forests in such places as Alaska, the Pacific Northwest and the Smoky Mountains. They stepped through the decision analysis procedures for each landscape, and compared the different ecosystem types. “They were amazed at how much more

species-diverse the Smoky Mountains were than southeast Alaska, for example; or how much faster trees grew on the Pacific Coast; or how large a role fire hazard played in the Inland West. They could compare issues between the forests, the pros and cons,” Oliver says.

At Yale, Oliver already has several students—including graduate students Megan Mattox and Trey Schillie—assisting him in continued LMS development. He says LMS is being taught at four other universities: the University of Maine, the University of Washington, Michigan Technical University and the University of New Brunswick. The University of Washington College of Forest Resources not only teaches LMS to its students, it also supports the Rural Technology Initiative ([www.ruraltech.org](http://www.ruraltech.org)), which teaches LMS to nonindustrial forest owners.

In the end, success stories like those at Satsop Forest will help LMS gain a foothold in forestry and forest management. But what will also help is the support of the system from many of the nation's largest forestry schools and Forest Service laboratories. As Oliver observes, “We're developing a generation of forestry graduates who are equally comfortable in the woods and working with computer programs.”



Forests are dynamic. They change with growth (dotted arrows) and disturbances (solid arrows). They contain many structures needed by different animals and plants.



# BUILDING FOR A NEW CENTURY OF LEADERSHIP

## The Campaign for the Yale School of Forestry & Environmental Studies

### PRIORITIES

**Endowment: Building Permanent Support For People and Programs .....\$35 million (Raised: \$ 22 million)**

\* FACULTY ENDOWMENT

The school seeks to make new appointments (both permanent and on a visiting basis) in critical disciplines such as energy and climate change, environmental design, environmentally sustainable development in developing countries, urban and suburban land use, population, biodiversity preservation and sustainable natural resource management.

\* STUDENT SCHOLARSHIPS, FELLOWSHIPS, INTERNSHIPS

The school’s goal is to significantly increase the funds available for scholarship support in order to dramatically improve the school’s ability to recruit top students and make graduate education in environmental studies far more attainable. The approximate cost of attending F&ES is \$36,000 per year, and the debt burden is higher for international students at a time when international leadership training is an environmental imperative.

\* OTHER PROGRAMMATIC ENDOWMENT

F&ES has an enormous opportunity through collaboration with Yale College to contribute to environmental literacy and to build a focused and coordinated approach to environmental education at Yale. The school provides core curriculum and faculty teaching for the environmental studies degree at the undergraduate level, and has introduced a five-year program for Yale College students, culminating in a master’s degree.

The school serves as a focal point at Yale to engage students and faculty across the university in the study of complex environmental issues such as climate change and sustainable development. Funding is required to permit initiatives to include joint conferences, events and seminars with other schools at Yale and with the larger community, whether local, national or international.

**New Facility: .....\$25 million (Raised: \$15 million)**

\* Providing F&ES with a critically needed new building that will help the school become the first truly global school of the environment. The structure will set a new standard for environmentally sensitive design and construction, while providing the additional space needed to pursue research in environmental science, policy and management. It is a major component of the university’s initiative to renovate Science Hill and will create an “environmental campus” that will serve as the gathering place for students and faculty.

### Programs: Building Excellence in the Nine Focal Areas

\* SUPPORT FOR FACULTY INITIATIVES (NONENDOWED) & OTHER KEY INITIATIVES:

F&ES continues to seek institutional grant and research funding to strengthen and expand teaching and research in nine focal areas. The nine areas are: Preserving Biodiversity and Ecosystems; Sustaining World Forests; Translating Sound Science into Sound Law and Policy; Putting Environment into Development; Using the Principles of Ecology to Transform Industry; Restoring Waterways and Wetlands; Protecting Public Health; Designing Habitable Communities of the Future; and Addressing Threats to Global Climate.

### Strengthening F&ES Annual Support

\* F&ES ANNUAL FUND, INCLUDING SAND COUNTY SOCIETY

Annual giving supports the school’s most vital operating needs and supplements income generated by the endowment. Our goal is to significantly increase alumni/ae participation in the Annual Fund.

The Sand County Society recognizes and honors those alumni/ae who support the Annual Fund at \$1,000 or more per year (\$500 for a graduate less than five years out).

\* NEW CENTURY FUND

Initiated in conjunction with the school’s centennial, the fund provides vital, nonendowed expendable funding for current-year programmatic costs.

### Summary

GOAL Minimum campaign goal, focused on endowment and facilities:.....\$60 million

Core Campaign Funding Raised (i.e. facilities and endowment) .....\$37 million

MINIMUM CORE FUNDS STILL NEEDED .....\$23 million

# Sustainable Development also a Top Capital Campaign Priority



Frederick Regan

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No one can  
better make the  
case than our  
own faculty  
for what we  
propose to do ...

## A Q&A with F&ES Development Director Frederick Regan

**Q:** *As of this fall the F&ES campaign is doing very well, with \$46 million raised, including \$37 million for endowment and facilities, the campaign's two highest priorities. That's especially notable given that the campaign's public launch was only a year ago. To what do you attribute this success?*

**A:** Fund-raising success always depends on the convergence of key elements at just the right time, and F&ES' success over the past couple of years, and especially last year, is no exception. Here at Yale these have included the strong institutional support for forestry and environmental studies consistently provided by the president and provost; the identification of F&ES as key to Yale's overall plans for environmental leadership; the arrival of Gus Speth as F&ES dean; Gus' remarkable success in outlining a very ambitious plan for the school's future which rapidly won the support of the faculty, students and alumni/ae; the formation of a new Leadership Council, which among its other contributions, has led the way in providing campaign support; and the leadership of Frances Beinecke and Ed Bass, including their outstanding work as co-chairs of the Leadership Council. All of this came together in a very short period of time, with dramatic results.

**Q:** *You mentioned the Leadership Council as having "led the way" in supporting the campaign. How so?*

**A:** To date almost all of our campaign gifts of a million dollars and more have come from members of the Leadership Council. Last year, we received \$15 million from three individuals to support the new F&ES building—all three were Leadership Council members. We also received three commitments to establish three new endowed chairs—all were from Leadership Council members. We received a seven-figure gift to establish an endowment for visiting faculty and another seven-figure gift for scholarship endowment—both donors were Leadership Council members. Other individuals not currently members have also done wonderful things for us—and many foundations have made important grants as well. But among our most generous campaign donors, Leadership Council members predominate.

**Q:** *What other kinds of support do Leadership Council members provide? How else do they advance the cause?*

**A:** Right now we have nearly 100 members. They include Yale alumni/ae and a significant number of F&ES alums, as well as non-Yale friends representing the business and professional sectors, NGOs, academia and government. Given that, members tend to help in many different ways. But, as a whole, the Leadership Council assists mainly by serving as an informed reality check on our strategic plans and objectives; offering suggestions and new ideas in terms of what we should be doing and not doing; helping to connect us to others in the business, foundation, government and media sectors who could be useful; serving as mentors for our students and graduates; and recommending other individuals who could be effective council members. Leadership Council members become familiar with our faculty, students and programs, and serve as roving ambassadors, extolling our virtues wherever they go.

**Q:** *What about F&ES faculty? What role do they play in the campaign?*

**A:** Faculty members principally work with us to help win grants from foundations, corporations and government funders—and together we have been quite successful at this. But we are also increasingly involving faculty in campaign-related discussions with alumni/ae and friends. The reason for this is simple—no one can better make the case than our own faculty for what we propose to do, why that matters and what it will take to succeed.

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# Cullman Family Gift

## Supports Undergraduate Environmental Studies



Edgar Cullman Sr.

“... everything we do on this earth has an impact on the environment.”



Edgar Cullman Jr.

By John Courtmanche

**T**heir love of the outdoors and their respect for the teaching at Yale College and the Yale School of Forestry & Environmental Studies (F&ES) have inspired Edgar Cullman Sr., YC '40, and Edgar Cullman Jr., YC '68, to contribute \$2 million to F&ES to support its involvement in Yale's new undergraduate environmental studies major.

“One of the things that distinguishes Yale in the best sense is that undergraduates get access to the best professors Yale can offer,” Edgar Jr. noted. “They're not reserved for graduate students.”

He added that another reason for the gift is that his daughter Georgina received her bachelor's degree in biology this year from Yale and would have liked to have majored instead in environmental studies. Georgina was already entering her senior year last fall when Yale announced its new undergraduate environmental studies major, staffed by faculty from both Yale College and F&ES. Fortunately for future Yale undergrads, they can now declare a major in which more than a third of the classes will be taught by faculty from F&ES.

The Cullmans' gift to support this initiative is the latest philanthropic gesture from this family of Yale alumni. Lewis B. Cullman, Edgar Sr.'s brother and a 1941 graduate of Yale College, established in 1997 the Cullman Joint Doctoral Program Fund, which links F&ES with the New York Botanical Garden. In addition, Joseph F. Cullman 3rd, Edgar Sr.'s other brother and a 1935 Yale College graduate, established at F&ES last year the Joseph F. Cullman 3rd '35 Professorship, which focuses on teaching and research in the areas of wildlife, ecology and biodiversity.

The Cullmans believe that if more environmental studies majors enter the business world, society and the world will fare better. “I'm proud Yale wants to offer this major because I think all of us need to understand how we live together, and be concerned with protecting the environment and protecting industry that needs products grown from the earth,” says Edgar Sr. “Whether we're talking the timber business or crops for feeding our country, we need to find out how that can be properly conducted while being environmentally friendly. It's important for undergraduates to understand that the industrial sector is interested in doing that.”

Edgar Sr. and Edgar Jr. are senior executives at General Cigar Co., a leading U.S. tobacco grower, manufacturer and marketer of premium cigars.

Edgar Jr. said he respects F&ES and Dean Speth's work toward collaboration between environmental groups and businesses and away from confrontation. He said, “Most responsible businessmen come to the conclusion that it's better business to be interested in the environment than not. One of the enduring features of American business, of Yankee ingenuity, is our developing processes that work well for business and well for the environment.” He and his father hope that the gift will help create educated men and women who understand that “everything we do on this earth has an impact on the environment.”

Edgar Sr. added, “If some Yale environmental studies undergraduates want to go into industry, it can be helpful that they've had a chance to understand the problems, that they can favor the environment while also protecting a manufacturing product.”

The Cullmans have urged Yale to take a balanced approach to environmental studies and to work to ensure that undergraduate courses focus on “the interdisciplinary relationship of the environment with business, technology, law, politics, governance and other related areas.” In offering thanks for the gift, Dean Speth assured the Cullmans that “interdisciplinary, integrative teaching, including bringing the economy and the environment together, is a defining characteristic of our school, and is—and will remain—at the core of our undergraduate teaching.”

# Sustainable Development also a Top Capital Campaign Priority

We still have a narrow base of support, and we really feel the urgency to expand and strengthen that.

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**Q: Aside from the prominence of Leadership Council donors, how would you characterize the campaign's support so far?**

A: This is an unusual campaign with very unusual giving patterns. Typically at institutions like F&ES you build a broad base of donors first and then, over time, derive the high-end gifts. With the F&ES campaign, the reverse is more true. We have been quite successful in raising lead gifts, at seven- and eight-figure levels, at the front of the process rather than the back. Our hope is that these will not only leverage other big gifts but also help us to build the broad donor base that is essential to the school's future. Right now, in spite of the overall \$28 million we raised last year, we still have a narrow base of support, and we really feel the urgency to expand and strengthen that. We simply have to if we want the school to continue gaining momentum.

**Q: Most of the campaign's top donors are Yale College donors, not F&ES alums. Can you comment on that?**

A: The fact that a number of Yale alumni/ae have come forward to make lead gifts to our campaign is good news. For the most part, these are individuals who have been generous to Yale in the past, have significant interests in environmental and forestry areas and clearly have found the school's plans and aspirations compelling. Their support and strong vote of confidence are wonderful, and we are optimistic that others, including our own alumni/ae, will look at what these Yalies have done and think: "That's great. Now maybe it's our turn to get involved, our turn to lead." We certainly hope that is what our alums decide because, the truth is, we can't do this without them.

**Q: But the usual argument is that F&ES alums have sacrificed high-paying jobs to do good in the world. If that's true, how can the school's alums be expected to match what other wealthier Yalies have done?**

A: No one says that is the expectation. Our aim is different—to encourage the most generous support possible from our alumni/ae and friends relative to the capacity of each individual. As for our F&ES alums, thanks to the efforts of the Alumni Association and other alumni/ae leaders, enthusiasm is high, involvement is increasing, and—assuming this renewal continues, which we do—alumni/ae financial support can be expected to grow with it. How much and how quickly remains to be seen, but we are very optimistic that the \$200,000 or so in Annual Fund that gifts we get annually from our 3,000-plus graduates can be significantly increased. We also believe we can improve on the 37 percent alumni/ae participation rate in our Annual Fund, and eventually make F&ES' participation rate the best of any professional school at Yale. We also are hopeful that those F&ES alums who have the means to make a very substantial gift to our campaign will do that. It would be wonderful for our campaign—and for the school—if we could add a few more F&ES faces to our campaign's Mount Rushmore.

**Q: What is being done specifically to increase F&ES alumni/ae support?**

A: The first thing we are trying to do is to provide more and better information on the great things that are happening here. The faculty and students are the heart of the school, and I believe that the importance of the work they are doing, and will do, sells itself if their stories are told. We need to do a much better job of communicating to our alumni/ae that "fund-raising" and "campaign" are just other words for something quite simple—getting the needed resources to allow our faculty and students to do the superb work they are capable of.

**Q: Is there an alumni/ae group analogous to the Leadership Council?**

A: First, the Leadership Council includes a number of F&ES alums. And second, the council's responsibilities include fund-raising but many other things as well. In terms of a sharp focus on development, the group that comes to mind is our own Sand County Society Leadership Committee, chaired by Jim Rogers, B.S. '72, M.S. '74. The Sand County Society includes F&ES Annual Fund donors of \$1,000 and more. The committee's job is to retain and elevate current

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# Alumna Gives \$1 Million to Endow McCluskey Visiting Fellowship

By David DeFusco  
EDITOR

**D**orothy McCluskey is a pioneer of sorts, although the amiable, modest mother of three grown children probably would dismiss that characterization. She was one of the first female forestry students at the Yale School of Forestry & Environmental Studies in the early 1970s and the first Democrat elected to state office in North Branford in the 20th century. In 1996 she established the Dorothy S. McCluskey Visiting Fellowship for Conservation, which she endowed in perpetuity this past summer with a \$1 million charitable gift annuity.

“Dorothy has done a wonderful thing for the future of education at our school,” said Dean Speth. “The students have benefited enormously from the McCluskey Fellows of the past, and now we are certain that these benefits will continue in the future. Hers is a wonderful, thoughtful gift.”

The McCluskey Visiting Fellowship supports senior managers and scientists from the nonprofit environmental community in pursuing academic study or independent research for up to one year. Robert Stanton, the immediate past director of the National Park Service, is the current McCluskey Visiting Fellow for Conservation, and is joined by environmental luminaries who are past occupants of the position: Wangari Maathai, founder of the Green Belt Movement in Kenya; Rachendra Pachauri of the Tata Energy Research Institute in New Delhi, India; Martin Rosen, co-founder and former president of the Trust for Public Lands; Randal O’Toole of the Thoreau Institute in Oregon; and Dennis McGrath of The Nature Conservancy.

“It’s important for students studying forestry to have the opportunity to learn and understand the environmental work being done by nongovernmental organizations and the private sector,” Mrs. McCluskey said. “It’s of great mutual benefit and results in the broader professional education of students. It is a rewarding experience for me in every way.”

Mrs. McCluskey obtained an M.F.S. degree concentrating on environmental planning and water resource management in 1973 after three years as a part-time student and full-time mother raising three children. “We ate a lot of pizza then,” she said. She described her experience at F&ES as “warm and welcoming,” but also felt she was speaking at times on behalf of all women when she participated in class because she was sometimes the only woman. Yale College had only just become co-educational in 1969.

Although soft-spoken, she did not have any problem speaking up. In the late 1960s she helped to create the town of North Branford’s conservation commission, and in the 1970s, as a member of the town’s planning and zoning board, produced a conservation plan for North Branford in reaction to the development of wetlands that had resulted in the flooding of homeowners’ basements.

She served from 1973 to 1974 as project manager of the Connecticut Inland Wetlands Project, which was a Ford Foundation pilot project, during which time she co-authored the report, “Evaluation of Inland Wetland and Watercourse Functions.” In addition, she was director of government relations for The Nature Conservancy Connecticut Chapter from 1985 to 1990 and a member of the New Shoreham (R.I.) Planning Board from 1986 to 2001.

After obtaining her F&ES degree and with a solid amount of public service already under her belt, she ran for a seat in the state legislature and won. She was a state representative from 1975 to 1982, representing the towns of Branford and Wallingford, Conn., and chaired the Environment Subcommittee on Sale of Water Company Land. She had campaigned on a platform that called for a



Dorothy McCluskey M.F.S. '73

© Courtesy of Block Island Times

# Alumna's Gift to Endow McCluskey Visiting Fellowship

moratorium on the proposed sale of watershed land owned by the New Haven Water Company so that a study could be undertaken to determine the impact of the sale on drinking water quality. Subsequently, instead of the land being sold, the private water utility was converted into a public regional water authority.

She attributes her victory at the polls to her high profile as a result of her community activism and the political climate of the post Watergate era, when it was an advantage not to be an incumbent. As the first Democrat elected in North Branford since 1884, she served four consecutive terms. In the process, she developed a respect for politicians and the political process. "I came to recognize that the legislative process is a very effective—though inefficient—way to make laws in a democracy, and that it requires all different kinds of people to resolve conflicting viewpoints."

Her experiences in public life culminated in a book that she co-authored with Claire Bennitt, an aide to then-Representative McCluskey, titled *Who Wants to Buy a Water Company? From Private to Public Control in New Haven*. The book, according to the authors, was originally conceived as a legislative history of the Regional Water Authority, but evolved into a model for how a regional water utility can balance open space conservation and fiscal responsibility for consumers in an environmentally sound manner.

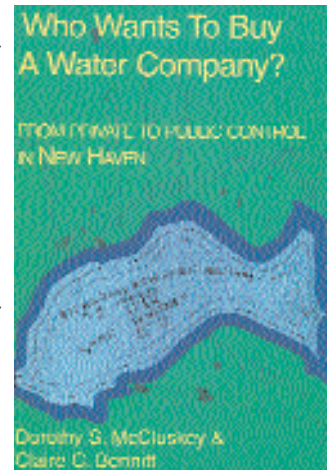
Mrs. McCluskey grew up in Middletown, Conn., and was exposed to nature while summering in rural Harpersville, N.Y., near Binghamton. She also enjoyed horseback riding and hiking in Arizona, Montana and Wyoming. After high school she attended Wheaton College, where she obtained a bachelor's degree in philosophy and physics, and then went on

to study in Norway as a Fulbright scholar. She researched the life of Fridtjof Nansen, a legendary Norwegian scientist, humanitarian and arctic explorer who in 1922 was awarded the Nobel Peace Prize for his international work in repatriation of prisoners of war.

Mrs. McCluskey lives year-round on Block Island, where she is a member of the Block Island Planning Board, with her husband, Don, who obtained a bachelor's degree in mechanical engineering in 1942 and a master's degree in electrical engineering in 1959, both from Yale. Until his retirement, he was treasurer/director

of the Wallingford-based Unhotz-Dickie Corporation, which designs and manufactures vibration test equipment. The McCluskeys have three children: Peter, a member of the Yale College Class of 1978; Martha, a member of the Yale Law School Class of 1988; and Christine Jensen, who holds an M.S. degree from the University of Colorado.

The McCluskeys have been long-time, generous supporters of Yale, particularly F&ES for the role it plays in global environmental education. "We all share a very small planet," Mrs. McCluskey said, "so we all also share the responsibility for using it wisely before passing it on to future generations."



Dorothy McCluskey co-authored this book in 1996.

## Sustainable Development also a Top Capital Campaign Priority

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members, while persuading new members to join. The program is very important to our plans for growing the school's Annual Fund, and Jim and his group continue to do a wonderful job.

**Q: The campaign has also made a point of involving "friends." Why would people not affiliated with Yale give the school money?**

A: For many of the same reasons that people give money to organizations like the World Wildlife Fund or the Wildlife Conservation Society—because they are convinced that the work of those organizations is vital and that their personal support will make a difference—in some cases, a decisive difference. Our challenge is to make that case for F&ES and to differentiate ourselves from other excellent institutions that are leaders in the environmental area. It seems to me that we have a great deal to say to individuals who support, say, WWF or the Nature Conservancy. Institutions like these will be successful in carrying out their missions only if they have well-trained, broadly educated individuals in positions of leadership—in other

words, exactly the kinds of people that we at Yale are the best in the world at producing. In this sense, a major gift to F&ES is also an investment in the future capacity of other valuable environmental institutions throughout the world. That's a powerful argument for prospective donors who otherwise have no direct affiliation with Yale.

**Q: What's the final thought you'd like to leave with our readers?**

A: Only that we are continuing to make great progress, but with too few riders on the train. The most important thing we can do this year (the 2002-2003 academic year) is to get more F&ES alums, more Yale alums and more friends to climb on board. Right now, 25 or so individuals and a handful of private foundations are providing a disproportionate impact. Going forward, we need a much larger group of substantial givers and a much broader support base to secure F&ES' position of leadership—and to make our development successes sustainable.

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Top (l-r): Erin Mansur, assistant professor of environmental economics, Sheila Olmstead, assistant professor of environmental economics, and Peter Raymond, assistant professor of ecosystem ecology. Above: Marian Chertow, assistant professor of industrial environmental management.

“They are committed to outstanding scholarship, but also have the commitment to practical environmental management.”

## Faculty Strengthened With Major Additions

As part of its ongoing faculty development plan, F&ES has added four faculty members to the ladder ranks. Four new assistant professors have added depth to environmental economics, industrial environmental management and ecosystem ecology. They bring to 14 the number of faculty recruited to the school in the past two years.

The new regular faculty are Marian Chertow, assistant professor of industrial environmental management; Erin Mansur, assistant professor of environmental economics and jointly appointed by the Yale School of Management; Sheila Olmstead, assistant professor of environmental economics; and Peter Raymond, assistant professor of ecosystem ecology.

“We are very pleased that these extremely promising scholars have joined our expanding program,” said Dean Speth. “They are committed to outstanding scholarship, but also have the commitment to practical environmental management that we seek.”

Chertow, who recently completed her Ph.D. at F&ES, has been director of F&ES’ Industrial Environmental Management Program since 1991. Her teaching and research focus on industrial ecology, environmental technology innovation and business-environment issues. Current research interests are the application of innovation theory to the development of environmental and energy technology and the study of industrial symbiosis, involving geographically based exchanges of wastes, materials, energy and water within networks of businesses.

She co-edited the 1997 book, *Thinking Ecologically: The Next Generation of Environmental Policy*, with Daniel Esty, professor of environmental law and policy at Yale with joint appointments at F&ES and the Law School. The book, published by Yale University Press, is in its second printing.

Chertow joined Yale after 10 years in state and local government and environmental business. During the 1980s she served as president of the Connecticut Resources Recovery Authority, a statewide bonding agency, where she oversaw the development and construction of environmental infrastructure projects.

Mansur holds a doctoral degree in Economics from the University of California at Berkeley. He conducted research in various applied fields while working at the University of California Energy Institute, Goldman School of Public Policy and Resources for the Future. His job market paper, “Environmental Regulation in Oligopoly Markets: A Study of Electricity Restructuring,” examines the environmental-welfare implications of firms exercising market power in the recently deregulated Pennsylvania, New Jersey and Maryland electricity markets. His other research has focused on the magnitude of wealth transfers resulting from the exercise of market power, and the response of San Diego customers to retail electricity price shocks.

Olmstead holds a doctoral degree in public policy from Harvard’s Kennedy School of Government, a master’s degree in public affairs from the University of Texas at Austin and a bachelor’s degree with high distinction in political and social thought from the University of Virginia. Her dissertation research focused on the effectiveness of various policy instruments in managing urban water scarcity.

She has worked in research capacities at the Texas Water Development Board, Texas Natural Resource Conservation Commission, Center for Environmental Resource Management in Latin America at the University of Texas and the National Policy Association in Washington, D.C.

Raymond holds a Ph.D. in physical oceanography from the College of William & Mary and a bachelor’s degree in environmental chemistry from Marist College. He was a postdoctoral scientist at the Woods Hole Oceanographic Institution’s Department of Applied Ocean Physics and Engineering.

His research interests include inorganic carbon cycling and air-sea exchange; isotope geochemistry of riverine, estuarine and oceanic organic matter; and organic carbon cycling in marshes, rivers, estuaries and oceans.



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## Top Practitioners to Join Faculty

Environmental leaders from the United States, Pakistan, Brazil and Singapore have joined the visiting faculty as part of a special effort to bring in leaders from abroad to complement the academic faculty. "Having visiting faculty is a long-standing tradition at the school," Dean Speth said.

Among these top practitioners is Robert Stanton, who joined the faculty this fall. Stanton was the 15th director of the National Park Service and the first African-American to hold that position since the establishment of the agency by Congress in 1916. He was responsible for managing the \$2.3 billion annual budget of the 83-million-acre National Park System, which attracts 288 million visitors each year.

In addition, he was responsible for 20 trails in the National Trail System and oversaw major national education and preservation programs, including the Youth Conservation and Public Land Corps, the National Register of Historic Places, the Underground Railroad Network to Freedom and the National Park Service's international affairs.

Nominated by President Clinton and confirmed by the U.S. Senate in 1997, he served as director for three and a half years. Currently he is a private consultant in conservation policy, planning and management, and serves as congress ambassador to the International Planning Committee of the World Conservation Union's (IUCN) World Commission on Protected Areas in support of the Fifth World Congress on National Parks next year in Durban, South Africa.

Aban Marker Kabraji, the IUCN's regional director for Asia since 1999, will join the faculty next spring. A Pakistani, she serves on the governing board of the International Institute for Sustainable Development. From 1989 to 1999, she was Pakistan's representative to the IUCN and worked with the Pakistani government to establish a nature conservation strategy within the Environment Ministry. Prior to that, she was regional director of the World Wildlife Fund and conducted extensive research on the conservation of marine turtles. In addition, she is one of the founders and a trustee of Shirkat Gah, the first women's nongovernmental organization (NGO) in Pakistan, and is a member of the Pakistan Women's Action Forum.

John Michael Forgach, a Brazilian who launched the first for-profit biodiversity investment fund in Latin America, will arrive next fall. A former international banker with Chase Manhattan Bank and others, he holds a number of environmental awards for his innovative approach to environmental banking, including the 2001 Rainforest Alliance Green Globe Award and the 2000 BRAVO Business Award naming him the Latin American environmentalist of the year. He is the founder of the Brazilian Institute for Education in Sustainable Business, an NGO dedicated to management capacity building in Latin America. He also helped establish Swiss and Brazilian NGOs for the preservation of endangered South American wildlife.

Lye Lin Heng, an associate professor of law at the National University of Singapore (NUS) since 1975, will arrive in spring 2004. She is leading the

development of a master's-level environmental management program and is the deputy director of the Asia-Pacific Center for Environmental Law at NUS. She has served as vice dean and director of graduate programs, a member of the International Union for the Conservation of Nature and the Natural Resources Commission on Environmental Law, was chair and editor of the *Malaya Law Review* (now the *Singapore Journal of Legal Studies*) and has published several papers and publications on environmental law in Singapore.

Dean Speth and Dean Cheong Hin Fatt of the NUS' School of Design and Environment signed a memorandum of understanding last year to establish an international partnership that will encourage closer cooperation between the two institutions in teaching and research in the field of environmental management.

## Six Receive Switzer Fellowships

Six current and former students of F&ES have received \$13,000 fellowships from the Switzer Environmental Fellowship Program for their dedication to environmental problem solving and leadership. The Switzer Environmental Fellowship Program was created by the Robert and Patricia Switzer Foundation and assists talented scholars in California and New England. The recipients are master's candidates Rebecca Ashley and Sarah Vogel, doctoral students Nicole Ardoin and Pamela McElwee, and two alumnae Jeanne Anderson and Joanna Grand.

Ashley's work is taking place in parishes around Bwindi Impenetrable National Park in Uganda, and has three main objectives: determining how farmers use the trees on their farms to sustain their livelihood, identifying priority indigenous species for reintroduction onto the landscape and identifying factors that influence farmers' integration of trees onto their farms within the landscape.

Vogel's research examines how different pathways of economic development affect human health, and is focusing on the health effects from exposure to commonly used synthetic chemicals, particularly agricultural pesticides.

Ardoin's research explores whether the eco-region approach to conservation is an appropriate paradigm for environmental education, or whether the scale is too large to be meaningful and empowering for individuals living within an eco-regional area.

McElwee is examining how property rights, forest use and access, migration and resettlement, and international biodiversity conservation intersect in upland forests in Vietnam.

Anderson's research considers the capability of an airborne remote sensor, generally known as lidar—or laser altimetry—to accurately depict and reveal differences in forest structure across the landscape, and will relate those differences to land-use legacies, ecological function and biological diversity.

Grand, a doctoral student at UMass Amherst, is identifying and priori-

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tizing the remaining pitch pine-scrub oak habitat patches in central and southern Plymouth County, Mass., for biodiversity conservation.

For more information about the Switzer Fellowships, contact Peter Otis, director of the Career Development Office, 203-432-8920.

## NEW YORK MAYOR PRESENTS URBAN PARK SERVICE AWARD TO URI

New York Mayor Michael Bloomberg presented the Urban Park Service Award to William Burch and Colleen Murphy-Dunning on behalf of the Urban Resources Initiative (URI) at a ceremony last May at the Hunts Point Recreation Center in the Bronx.

The award was given to recognize the Yale School of Forestry & Environmental Studies' partnership with New York City in examining environmental education that the Urban Park Service provides to city residents. Through the course taught by Burch and Murphy-Dunning, "Rehabilitation Ecology and Community Revitalization: Monitoring and Evaluation Techniques, Theory and Methods," master's students devised new methods of quantitatively measuring the success of the Urban Park Rangers programs to assess whether these curricula are beneficial to participating students and the surrounding communities.

"Their analysis will assist the Urban Park Rangers in restructuring their programs to provide superior education," said Murphy-Dunning, center director of the Hixon Center for Urban Ecology. "It also provided the students an opportunity to examine the complex relationships between cities and their parks, and the manner in which government, private and nonprofit institutions can work together to build public interest in parks."

In partnership with the Community Foundation for Greater New Haven and the City of New Haven, the URI works with New Haven residents, including gardening groups, block watches, churches and other community-based organizations that take part in projects to reclaim abandoned lots and restore green spaces. The URI, which is one of three research centers that make up the Hixon Center, was founded in 1988 by Burch, the Frederick C. Hixon Professor of Natural Resource Management, as a clinical teaching program for urban social forestry. The Urban Park Rangers are part of the Urban Park Service, which enforces rules and regulations in New York City's parks, and educates the public about preserving and protecting the city's parks and ecology.

## Hixon Center Names Murphy-Dunning Director

Colleen Murphy-Dunning, program director of the Urban Resources Initiative (URI) for the past seven years, has been named center director of the Hixon Center for Urban Ecology at the Yale School of Forestry & Environmental Studies. The Hixon Center comprises the URI, the Program on Urban Watersheds and the Yale-UNDP Collaborative Program on the Urban Environment. Murphy-Dunning will continue as program director of the URI.

The Hixon Center provides an interdisciplinary forum for scholars and practitioners to work collaboratively on integrated research, teaching and outreach to improve understanding and management of urban environmental resources within the United States and around the globe. The center sponsors an annual lecture series, "The Restoration Agenda," to bring researchers together to discuss critical issues in the field of urban ecology. In addition, the Hixon Fellowship Program sponsors student research on topics of interest to the center.

The URI is dedicated to community participation in urban ecosystem management. As program director, Murphy-Dunning led the development of the Community Greenspace Program, a citywide initiative to revitalize New Haven's neighborhoods by restoring vacant lots, planting street trees, beautifying front yards and building community. "Over the last eight years, the Community Greenspace Program has worked with thousands of New Haven neighbors to replant neglected areas and restore the physical and social fabric of our city," she said.



Colleen Murphy-Dunning

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## Five F&ES Students Named Heinz Scholars

Five students from F&ES have received grants to study the world's most pressing environmental challenges as Teresa Heinz Scholars for Environmental Research.

The F&ES scholars, two Ph.D. candidates who received \$10,000 grants and three master's candidates who received \$5,000 awards, are pursuing critical environmental research. Seventeen students in all were named Heinz Scholars from some of America's most prestigious universities, including Carnegie Mellon, Cornell, Florida A&M, Harvard, Stanford and Texas A&M at Corpus Christi, after selection by a review committee of distinguished scientists and environmentalists.

The F&ES students and their areas of research are Ph.D. candidates Pamela McElwee, "Lost Worlds and Local People: The Effects of Migration, Land Tenure, and Ethnicity on Natural Resources Use Around Protected Areas," Steve Rhee, "Intent and Consequence: Examining Forestry Institutions and Community Management in Indonesia," and master's candidates Elizabeth Gordon, "The Bushmeat Crisis and the Great Apes: Working Toward a More Integrated Decision-Making Process," Christopher Menone, "Urban Environmental

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Sustainability Metrics: Developing Goals for Green Cities,” and Elizabeth Shapiro, “Interdisciplinary Agroecological Research as a Tool for Conservation Planning.”

Prizewinners are those whose project proposals represented a wide range of environmental concerns, including low-level radioactive waste, exploring the connection between land use and human health, measuring the effects of long-term habitat conversion on native-plant diversity and identifying factors for the success of marine protected areas.

## Dean Speth Receives Blue Planet Prize

Dean Speth has received the international environmental Blue Planet Prize from the Tokyo-based Asahi Glass Foundation. During a ceremony in Japan on November 15 at the United Nations University in Tokyo, he received an award of 50 million yen (\$400,000). Speth was awarded the prize for “a lifetime of creative and visionary leadership in the search for science-based solutions to global environmental problems and for pioneering efforts to bring these issues, including global climate change, to broad international attention.”

The prize citation observes that Speth “has devoted his career to creating and invigorating environmental institutions of extraordinary importance.” It also notes that he played a leadership role in creating the Natural Resources Defense Council in 1970 and that he was among the first to call for international action on global climate change.

“In 1980,” it continues, “he helped to predict the current challenge to the global environment in the *Global 2000 Report*, as chair of the Council on Environmental Quality in the Carter Administration. He then founded the World Resources Institute and led it in the search for science-based solutions to large-scale environmental threats. He went on to serve as administrator of the United Nations Development Programme and focused the agency on sustainable, people-centered development. As dean, he now seeks to help the Yale School of Forestry & Environmental Studies become the first global school of the environment.”

Yale President Richard Levin said, “Gus Speth’s unwavering commitment to issues affecting the global environment makes him truly deserving of this prestigious honor. We are proud of his achievement and we are also proud to have him at the helm of the Yale School of Forestry & Environmental Studies.”

Stanford Professor Harold Mooney also received the Blue Planet Prize this summer. Previous winners of the prize include Norman Myers, an honorary visiting fellow at Oxford University; Lord Robert May, president of the Royal Society of London; Paul Ehrlich, director of the Center of Conservation Biology at Stanford; the late David Brower, who was chair of the Earth Island Institute; Wallace Broecker, Newberry Professor of Geology at the Lamont-Doherty Earth Observatory of Columbia University; Maurice Strong, chair of the Earth Council; Bert Bolin, chair of

the Intergovernmental Panel on Climate Change; and Lester Brown, founder and president of the Worldwatch Institute.

## Yale Professor Receives American Bar Association Award

Daniel Esty, professor of environmental law and policy at Yale with appointments in both the School of Forestry & Environmental Studies and the Law School, received the American Bar Association (ABA) 2002 Award for Distinguished Achievement in Environmental Law and Policy at the ABA’s annual meeting in August. The prestigious award is given annually to an individual and an organization for accomplishments in the field that lead to significant progress in environmental law and policy.

Esty received the award for his contributions to environmental law and policy during his career in academia and his prior work at the U.S. Environmental Protection Agency. The ABA Selection Committee made



Daniel Esty

special note of Esty’s efforts to develop the Environmental Sustainability Index (ESI) and “its implications for the development of an analytical basis for environmental and resource decision-making.” The ESI project, conducted jointly by Yale, Columbia University and the World Economic Forum, measures a country’s capacity for sustained environmental success and provides a comprehensive snapshot of a country’s likely environmental quality of life in the future. The 2002 ESI report and data are available for download ([www.yale.edu/envirocenter](http://www.yale.edu/envirocenter)).

The other recipient of this year’s award is Vermont Law School’s Environmental Law Center.

Esty’s research interests cover a wide range of environmental law and policy issues. His recent work focuses on new approaches to environmental regulation, including the use of economic incentives and other market mechanisms; environmental performance measurement and the benefit of data-driven environmental decision making; environmental protection in the Information Age; environmental effects on competitiveness; trade and environment linkages; global environmental governance; corporate environmental management; and environment and security.

In addition to his teaching role, Esty is the director of the Yale Center for Environmental Law and Policy and the recently launched World Fellows Program. In 2000, *The Earth Times* named Esty one of the world’s “100 Most Influential Non-Governmental Officials,” and in 1998 he was identified as one of the world’s “100 Most Influential Environmental Leaders” by the same publication. In 1999, he was named one of 100 worldwide “Global Leaders of Tomorrow” by the World Economic Forum.

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# BookShelf



## Global Environmental Governance: Options & Opportunities

Managing the world's shared natural resources and addressing global scale environmental threats, such as climate change, requires fresh thinking and redesigned mechanisms to promote international cooperation argues a new book on global environmental governance which was released at the World Summit on Sustainable Development in Johannesburg, South Africa, last August.

*Global Environmental Governance: Options & Opportunities* focuses on the challenges of environmental protection in an increasingly ecologically interdependent world. Drawing on a range of experts from across the world, the volume examines various critical concerns and processes. It reflects an interdisciplinary perspective, which takes up issues of international law, economics, ecological sciences and environmental policy.

*Global Environmental Governance* is edited by Daniel Esty, director of the Yale Center for Environmental Law and Policy, and Maria Ivanova, director of the Global Environmental Governance Project at the Yale School of Forestry & Environmental Studies.

Elizabeth Dowdeswell, former executive director of the United Nations Environment Programme, said that the "book presents a thoughtful analysis that could inform political decisions to design a system agile enough to address evolving needs and relevant enough to be viewed as legitimate." Wangari Maathai of Kenya's Green Belt Movement said, "This volume traces the key issues of global environmental governance in a way that promotes understanding and encourages engagement."

*Global Environmental Governance* is published by the Yale School of Forestry & Environmental Studies. For more information or to order a copy of the book, go to [www.yale.edu/environment/publications](http://www.yale.edu/environment/publications).



## Greening the Americas: NAFTA's Lessons for Hemispheric Trade

Economic integration in the Western Hemisphere as envisioned in a proposed Free Trade Area of the Americas (FTAA) agreement must proceed in an environmentally sustainable manner to fully realize the benefits of freer trade and open markets argues *Greening the Americas: NAFTA's Lessons for Hemispheric Trade*.

Just released by MIT Press, *Greening the Americas* reviews the North American Free Trade Agreement's treatment of environmental issues and explores the treaty's environmental and economic impacts. The authors draw lessons from the U.S.-Canada-Mexico NAFTA experience that can be applied to the ongoing FTAA negotiations among 34 countries across North and South America. In analyzing the NAFTA model, the book highlights environmental elements that should be included in future agreements and those that should be dropped.

NAFTA, which was ratified in 1994, addressed environmental concerns through provisions in the trade agreement and in an unprecedented side agreement on the environment. It also set up the North American Commission for Environmental Cooperation (NACEC), a tri-national body headquartered in Montreal that addresses trade and environment issues on an ongoing basis.

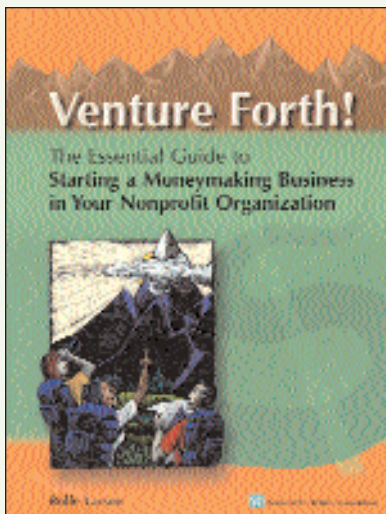
Daniel Esty, director of the Yale Center for Environmental Law and Policy, co-edited the book with Carolyn Deere of the Rockefeller Foundation.

The book analyzes the NAFTA experience from a range of perspectives and concludes that:

- Any FTAA trade and environment agenda should be developed by the Latin American countries, not dictated by the United States.
- Broad public participation in trade policy making generates a more robust decision-making process and ultimately produces a better agreement.
- Environmental impact reviews of trade agreements represent an important tool for identifying trade-environment links that can be addressed in the course of negotiations.

To order a copy of the book, go to <http://www.mitpress.mit.edu/main/home/>.

# BookShelf

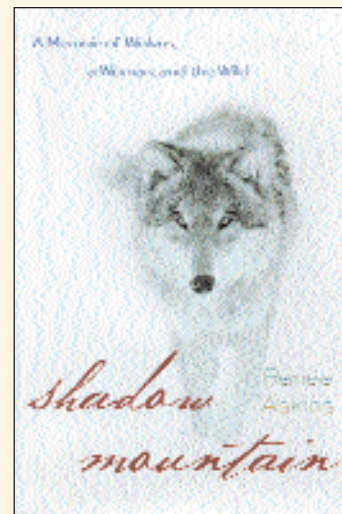


## Venture Forth! The Essential Guide to Starting a Moneymaking Business in Your Nonprofit Organization

Rolfe Larson, M.E.S./M.B.A. '85 has written a practical, step-by-step guide specifically for nonprofits called *Venture Forth! The Essential Guide to Starting a Moneymaking Business in Your Nonprofit Organization*. He presents what nonprofits need to decide how (and if) venture development fits into their organization, where to look for good venture ideas, how to determine if they're feasible and how to write a realistic business plan for the venture. The workbook presents a seven-step approach to business development. Each chapter includes worksheets, examples, tips, timelines and specific details to guide nonprofits through the seven steps.

The book, published this year by the Amherst H. Wilder Foundation, will enable nonprofits to assess the strengths and weaknesses of venture ideas to find the most promising ones; determine which ideas fit their mission, resources and skills; make solid decisions based on data rather than impressions; prepare a complete—and reassuring—financial analysis showing the break-even point and future profitability; and write a compelling, detailed business plan and get it approved. Even if an organization doesn't intend to earn a dime in venture income, they can use the book's process to improve the financial health of their current programs.

Larson has 20 years of experience as a venture manager and consultant for nonprofit organizations. Previously a senior manager at Minnesota Public Radio, he is the president of Rolfe Larson Associates, a marketing and Internet-commerce consulting firm. He is also an adjunct marketing professor at the University of St. Thomas in Minneapolis and a senior associate at the National Center for Social Entrepreneurs. He holds a joint master's degree in business administration from Yale's School of Management and environmental studies from F&ES, and a bachelor of arts degree from Swarthmore College. He has served on numerous nonprofit boards, including chairing the Nature Conservancy of Minnesota board of directors. Copies of this book are available from the Wilder Publishing Center, 1-800-274-6024.



## Shadow Mountain: A Memoir of Wolves, a Woman, and the Wild

As recently as 1986, Yellowstone National Park remained home to every plant and animal species that was originally present when Europeans first hit the shores of North America—with one telling exception. Within a span of less than 50 years, every wolf in the West, including those within the park's boundaries, had been systematically killed off. But today, the wolves are once again thriving in Yellowstone, to the point where the gray wolf is no longer considered an endangered species. That remarkable change is due in large part to the tireless efforts of Renée Askins, M.E.S. '88, who has a singular connection to these sleek, intelligent and inherently wild creatures.

Askins established the Wolf Fund in 1986 with the sole purpose of reintroducing wolves into Yellowstone Park. In 1995, the fund was disbanded by design after wolves were released into the park. Today more than 300 wolves thrive and roam the reaches of the greater Yellowstone ecosystem in the western United States.

In *Shadow Mountain*, published by Doubleday, Askins tells of her work to bring wolves back to Yellowstone and of her long-term observations of wolves and their complex behavior. In her work with the wolves—and in the fierce opposition she met from wolf-hating ranchers and politicians—Askins came to a profound understanding about herself, about nature and about human nature.

Askins has a B.S. in biology from Kalamazoo College in Michigan and an M.F.S. with a concentration in wildlife ecology from F&ES. She has traveled and lectured extensively on the topic of wildness in our culture. She lives in Wilson, Wyo., with her husband, her daughter, four dogs and three parakeets.

# A New Green Regime

## Attacking the Root Causes of Global Environmental Deterioration

By James Gustave Speth

DEAN

A great tragedy is fast unfolding. More than 20 years ago the alarm was sounded regarding threats to the global environment, but the environmental deterioration that stirred the international community then continues essentially unabated today. The steps that governments have taken over these past two decades include the negotiation of numerous international agreements and represent the first attempt at global environmental governance. It is an experiment that has failed.

It would be comforting to think that all of the international negotiations, summit meetings, conference agreements, conventions and protocols at least have taken the international community to the point where it is prepared to act decisively—comforting but wrong. Environmental problems have gone from bad to worse, governments are not yet prepared to deal with them and, at present, many governments, including some of the most important, lack the leadership to get prepared.

### The State of the Environment

While information on global environmental trends is far more complete and sophisticated today than it was 20 years ago, it is not more reassuring. Tropical forests still are being cleared at the rate of

one acre per second. Half of these forests are now gone, and countries that are not members of the Organization for Economic Cooperation and Development (OECD) are projected to lose another 15 percent of their forests by 2020. However, these data actually paint an unduly rosy picture. Cryptic deforestation—the cumulative impacts of fire, El Niño-driven drought and fragmentation in major forest areas such as those in Brazil and Borneo—exacerbates the effects of forest clearing. Moreover, much of the forest that remains is under contract for logging. Eighty percent of Borneo's forest cover is said to be allocated for commercial logging and plantations.

One-quarter of bird species are now extinct and another 12 percent are listed as threatened. Also threatened are 24 percent of mammals, 25 percent of reptiles and amphibians and 30 percent of fish species. The rate of extinction of birds and mammals today is estimated to be 100 to 1,000 times the rate that species naturally disappear. About two-thirds of plant and animal species are thought to be in the tropics, and one recent estimate is that 15 percent of these species already have been doomed by tropical deforestation.

Through changes in land use and other means, human societies are now appropriating, wasting or destroying about 40 percent of nature's net photosynthetic product annually. Half of the available fresh water is

being consumed. Most people soon will live in water-stressed areas. Industrial processes are fixing nitrogen at rates that exceed nature's, and among the many consequences of the resulting overfertilization are 50 oxygen-starved ocean dead zones, including one in the Gulf of Mexico that is the size of New Jersey.

In 1960, 5 percent of marine fisheries were either fished to capacity or overfished. Today, 70 percent of marine fisheries are in this condition. Half of the world's mangroves and possibly half of its wetlands have been destroyed. Most degraded of all are freshwater ecosystems around the globe. In addition, for more than two decades an estimated 6 million hectares of agricultural land—an area the size of Maine—have been lost annually to desertification and severe soil degradation. About two-thirds of all agricultural land has experienced deterioration due to overuse and misuse.

On top of these processes of biotic impoverishment is the biggest threat of all—global climate change. While the public in the United States and abroad is increasingly awake to this issue, few Americans appreciate the proximity of widespread changes in their country's landscape.

The best current estimate is that, absent major corrective action to halt the buildup of carbon



If global warming trends continue, the vivid maple forests of New England may soon disappear.

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Humanity has entered the endgame in its traditional, historical relationship with the natural world.

dioxide and other greenhouse gases in the atmosphere, global warming over the lifetime of a child born today likely will make it impossible for about half of U.S. lands to sustain the types of plants and animals that now inhabit them. A huge portion of U.S. protected areas—from wooded lands held by community conservancies to national parks, forests and wilderness areas—is now threatened. In one projection, the much-loved maple, beech and birch forests of New England will disappear in this century. Another projection shows that much of the Southeast will become a huge grassland savanna that is too hot and dry to support forests.

As is the case with other global-scale challenges noted here, the seriousness of climate change was clear more than 20 years ago. Political leaders and others were on notice then that a major response was in order.

### Drivers of Change

It is clear what is driving these global trends. The frequently used “IPAT equation” sees environmental impact (I) as a product of the size of human populations (P), affluence (A) and consumption patterns, and the technology (T) deployed to meet perceived needs. What the IPAT formulation can obscure, in addition to the impacts of poverty, is the vast and rapidly growing scale of the human enterprise. It took all of human history for the world economy to grow to \$6 trillion in 1950. Today, it grows by more than that amount every five to 10 years. Since 1960, gross world product has doubled and then doubled again.

Consider the growth of the following in just the past 20 years:

- Advertising (100 percent)
- Auto fleet (75 percent)
- Energy use (40 percent)
- Global population (50 percent)
- Meat consumption (65 percent)
- Paper use (75 percent)
- World output (85 percent)

The world economy is poised to repeat this trend in the lifetimes of today’s students. It is doubtful that this expansion can be stopped, and most people in both rich and poor countries would not stop it if they could. Half of the world’s population lives on less than \$2 per day. They need and deserve something better. Economic expansion can at least offer the potential for better lives, though increases in income in recent decades have been skewed toward the rich.

There are good reasons to believe that the next doubling of world economic activity will differ in some respects from the growth of the past. But there are equally good reasons to believe that the next doubling of the world economy will, from an environmental perspective, look a lot like the last one. The U.S. Energy Information Administration predicts a 62-percent increase in global carbon dioxide emissions between 2000 and 2020. OECD estimates that its members’ carbon dioxide emissions could increase by 33 percent by 2020. Motor-vehicle miles traveled in OECD countries could rise by 40 percent in the same time frame.

### Assessing Progress

The implications of all of these cascading changes are profound. First, humanity has entered the endgame in its traditional, historical relationship with the natural world. The Nature Conservancy’s current ecosystem protection campaign has an appropriate theme: It is seeking to protect “The Last Great Places.” In terms of protecting landscapes, there is a rush to the finish.

Second, the work of Columbia University Professor Stuart Pimm and Missouri Botanical Garden Director Peter Raven suggests that the loss of half of Earth’s tropical forests will extinguish 15 percent of the species that inhabit them. Further forest destruction will be disproportionately costly; generally, attacks on the environment will be increasingly consequential.

Finally, humans dominate the planet today as never before and have huge effects on Earth’s cycles of carbon, nitrogen, sulfur and water. Humans face a new ethical position because whether or not we acknowledge it, we are at the planetary controls.

Looking back, it cannot be said that *nothing* has been done in response to the alerts of two decades ago. Progress has been made on some fronts. There are outstanding success stories, but they are rarely commensurate with global-scale challenges. For the most part, the previous generation, which took up these issues after the first Earth Day in 1970, has analyzed, debated, discussed and negotiated them endlessly. The previous generation has been a generation of talkers, overly fond of conferences. Action, however, has fallen far short. With the exception of the depletion of the stratospheric ozone layer, the threatening global trends highlighted 20 years ago continue.

# A New Green Regime

## Attacking the Root Causes of Global Environmental Deterioration

The weakness of those international treaties should not be a surprise, given that they were forged in negotiating processes that give maximum leverage to any country with an interest in protecting the status quo.

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Even if action has been lacking, has the work of the past 20 years laid a good foundation for rapid and effective action today? The result of 20 years of international environmental negotiations is disappointing. It is not that what has been agreed upon, for example, in the framework conventions on climate, desertification and biodiversity is wrong or useless. Those conventions have raised awareness and stimulated some useful national planning exercises. But the treaties are mostly frameworks for action—they do not drive the changes that are needed. The same can be said for the extensive international discussions on world forests, which never have reached the point of a convention.

In general, international environmental law is plagued by vague agreements, minimal requirements, lax enforcement and underfunded support. The Kyoto Protocol, for example, is an important but modest first step in protecting climate, but it has taken a decade to move to the point where it could be adopted.

The weakness of those international treaties should not be a surprise, given that they were forged in negotiating processes that give maximum leverage to any country with an interest in protecting the status quo. The United States successfully weakened the Kyoto Protocol, Brazil worked to keep a forest convention at bay and Japan and other major fishing countries watered down the international marine fisheries agreement. Similarly, the international institutions created in the United Nations to address these issues—the United Nations Environment Programme (UNEP) and the United Nations Economic and Social Council's Commission on Sustainable Development—are among the weakest multilateral organizations. UNEP's budget, for example, is quite small and its work is hampered by the proliferation of independent treaty secretariats outside the organization.

A deeper question is whether the international community is on the right track with the current emphasis on negotiating global agreements. Governments have over-invested in international environmental law to the neglect of other approaches, including measures that more directly address the underlying causes of environmental problems. Moreover, they have tended to look at international agreements in isolation, neglecting the overall context in which they must operate (Because it invests in building environmental management capacities in developing countries, the Global Environment Facility is an exception to this conclusion, but it addresses only a modest portion of the need.).

### A Transition Toward the Future

If the first attempt to protect the global environment was marked more by failure than by success, it is clearly time to launch a second phase that corrects past mistakes.

The principal path to a sustainable world is to attack the root causes, or underlying drivers, of large-scale environmental problems. To do this, major resources of time and money must be applied to the promotion of seven broad but linked transitions that seek to redefine and redirect growth. They require genuine partnerships between countries of the North and South as well as actions far outside the traditional areas of environmental policy. These transitions are essential if human societies are to approach sustainability. If vigorously pursued, they can greatly improve the prospects for effective international agreements. Political leadership should be measured by whether it promotes these transitions—the necessary “megatrends” of global environmental protection and sustainability. In each of these seven areas, there are encouraging and hopeful developments on which to build.

The first transition to sustainability is the most widely appreciated: There has been definite progress in making an early demographic transition to a stable world population. Recently, the mid-range worldwide population projection for 2050 was estimated to be 10 billion. Now it is 9 billion. It is projected that the population of developing countries will be 10.2 billion in 2100. Analyses suggest that an escalation of proven, noncoercive approaches to family planning could reduce this number to 7.3 billion, with global population leveling off at 8.5 billion.

To move in the direction of stabilizing populations, adequate funding must be secured for the U.N. Cairo Plan of Action, which is being underfunded by half. The Cairo Plan of Action focuses on maternal and child health care, modern family planning services, childhood education (particularly for girls) and empowerment of women.

Second, human development must transition to a world that is free of mass poverty, where the prospects for widely shared prosperity are good. Throughout the world, poverty destroys the environment—the poor have no choice but to lean too heavily on a declining resource base. A



transition in human development also is needed because the only world that works is one in which the aspirations of poor people and poor nations for fairness and justice are realized. The views of developing countries in international negotiations on the environment are powerfully shaped by their fear of the costs of environmental measures, their preoccupation with their own compelling economic and social challenges and their distrust of the intentions and policies of industrialized countries. Sustained and sustainable human development provides the only context in which there is enough confidence, trust and hope to ground the difficult measures needed to realize environmental objectives.

There is good news regarding human development issues. Since 1960, life expectancy in developing regions has increased from 46 to 62 years. Child death rates have fallen by more than half. Adult literacy rose from 48 percent in 1970 to 72 percent in 1997. The share of people enjoying at least “medium human development,” according to the U.N. Development Program’s Human Development Index, rose from 55 percent in 1975 to 66 percent in 1997.

On the policy front, an impressive consensus has emerged around development objectives. The international development assistance community has come together with a concerted commitment to halve the incidence of absolute poverty by 2015. This goal and others dealing with health and education were endorsed by all governments in the Millennium Assembly of the United Nations in 2000.

The elimination of large-scale poverty could be accomplished in the lifetimes of today’s young people. But, as with population, limited development assistance is a serious threat to achieving this goal, and in this case it is compounded by protectionist trade regimes and heavy debt burdens. Sustainable development requires that aid, debt management, trade, private investment and capital flows and access to technology all work together, not in conflict with each other, as they often do today.

Third, a transition must be made toward a new generation of environmentally benign technologies—technologies that sharply reduce the consumption of natural resources and the generation of residual products per unit of prosperity. A worldwide environmental revolution in technology is needed. The only way to reduce pollution and resource consumption while achieving expected economic growth is to bring about a wholesale transformation in the technologies that dominate manufacturing, energy, transportation and agriculture.

The good news is that, across a wide front, technologies that could bring about a vast improvement are either available now or soon will be. From 1990 to 1998, when oil and natural gas use grew at a rate of 2 percent annually and coal consumption did not grow at all, the annual rates of growth of the use of wind energy and solar photovoltaic power were 22 and 16 percent, respectively. Transformation of the energy sector, the source of most greenhouse gases, must rank as the highest priority.

The fourth transition is a market transition to a world in which prices reflect their full environmental costs. Today, neither the price of a sport utility vehicle nor that of the gasoline it consumes includes the damage these products cause the environment. The needed revolution in technology and desirable changes in consumption patterns will not take place unless there is a parallel revolution in pricing. Full-cost pricing is thwarted everywhere today by the failure of governments to eliminate environmentally perverse subsidies and to ensure that external environmental costs are captured in market prices.

One of the most hopeful developments is the tax-shift idea adopted in Germany and some other European countries. Begun in 1999, the German approach entails shifting the tax burden from something one wants to encourage—such as work and the wages that result—to

something one wants to discourage—such as energy consumption and the pollution that results.

Fifth, there must be a transition in consumption from unsustainable patterns to sustainable ones. Here, one very hopeful sign is the emergence of product certification and green labeling and public support for it. This trend started with the certification of wood products as having been produced in sustainably managed forests and now includes the certification of sustainably managed fisheries. Increasingly, consumers are “voting green” in the marketplace, and that is driving change. Another hopeful sign is new legislation in Europe and Japan requiring that consumer durables be recycled.

The sixth transition must take place within institutions and governance. The World Business Council for Sustainable Development (WBCSD), a leading international group of major corporations, has sketched several broad scenarios exploring different paths in environmental governance. One of these paths, called “First Raise Our Growth,” or FROG, resolves to solve economic challenges before environmental challenges. FROG is a business-as-usual scenario leading to huge environmental costs. It is a path to failure, even in the eyes of WBCSD.

In WBCSD’s other two scenarios, sustainability is successfully pursued but the approaches are very different. Under “GEOPolity,” people turn to government to focus the market on environmental and social ends, and they rely heavily on intergovernmental institutions and treaties. Under the “JAZZ” scenario, the world is full of unscripted initiatives that are decentralized and improvisational. JAZZ provides abundant information about business behavior, and good conduct is enforced by public opinion and consumer behavior. Governments facilitate more than they regulate, nongovernmental organizations are very active and businesses see strategic advantages in doing the right thing.

The initial international response to the global-change agenda has been to try to move the world from FROG to GEOPolity. It isn’t working. Getting serious about governance requires new action on two mutually supportive fronts: pursuing a radically revised approach to GEOPolity and broadening JAZZ and taking it to scale.

Today’s GEOPolity approach is designed to fail. It can be redesigned for success by insisting on new procedures for setting international requirements and on new institutions, including a World Environment Organization (WEO). The case for an effective WEO is as strong as it was for an effective World Trade Organization. The international community knows how to create plausible multilateral arrangements and has done so in other, mostly economic, areas.

There are many innovative ways that the decision-making process in GEOPolity could be improved:

- As has happened with the Montreal Protocol, the Conference of the Parties (COP) to a convention could be empowered to make certain types of regulatory decisions that would not need to be ratified as separate treaties.
- Procedures could be introduced whereby a supermajority, a double majority or even a mere majority of COP members could make decisions binding for all.
- The COP could delegate certain rule-making or standard-setting powers to an expert body. The COP would limit itself to providing the broad policy framework and providing a check against abuse of discretion, much as Congress and the federal courts supervise decision making in U.S. regulatory agencies.

Under all of these arrangements, enforcement procedures could be introduced whereby the COP, the treaty secretariat or an aggrieved party could take a government before the court or some adjudicatory body to

# Fire: A Hot Topic and a Course



© Ann Camp

A student uses a drip torch to start the fires.

By John Courtmanche

**W**hen the students of Ann Camp's Fire Policy and Ecology class ignited a prescribed burn at Yale-Myers Forest last April, they couldn't have foreseen how hot a topic fire would become after the school year ended. Fires on nearly six million acres of the western U.S. forest over the past summer added up to one of the worst fire seasons in modern history.

Kelly Droege, M.F. '02, a student in Camp's class, took the lessons learned from the class into his job in one of those fire-damaged Western forests. After graduation, Droege became assistant project manager of the Applegate River Watershed Council, a nonprofit in Jacksonville, Ore., that works on behalf of the community for forest management, including fire policy. On July 13, lightning ignited a fire in the Squires Peak forest and burned 2,800 acres, coming within two miles of Droege's office before being contained. Applegate subsequently presented its Applegate Fire Plan to President Bush in August when he traveled to Squires Peak. The President chose southwestern Oregon as a base from which to announce his controversial Healthy Forests Initiative, spurred by the 2002 wildfires.

Droege observed, "If you are planning to work on forestry and conservation issues pertaining to the American West, to work in the field out here, you will no doubt encounter issues related to fire ecology, fire suppression and the urban interface. People building homes in fire-sensitive areas, on the cusp of fire-dependent ecosystems—that's a huge issue." He added, "[Fire policy] is definitely going to become part of my job."

Last spring, Droege and his classmates were immersed in Camp's class, which featured lectures on fire as it relates to soils, climates and forest types and was complemented by presentations by fire ecology experts from The Nature Conservancy and other organizations. Students were also required to create their own presentations and to lecture the class on fire-related issues; not surprisingly, many of the students focused on their homelands, resulting in an international look at fire policy and ecology in such countries as Greece, Mexico and Guatemala. But students say they were most excited at the opportunity to participate in an actual prescribed burn; even students not taking the class wanted in. "The biggest problem was all of the students who didn't take my course requesting to participate," said Camp, a lecturer in stand dynamics and forest health. "I didn't want it to become a circus, and I didn't want lots of people coming for the gee-whiz factor." Only students taking the course or working in management positions in Yale's school forests were allowed to participate in or observe the burn.

David Ellum, M.F. '01, Yale's coordinator of research and demonstration for school forests and the only Ph.D. student in the class, researched and wrote the Prescribed Burn Plan required by the Connecticut Department of Forestry and managed the burn as "burn boss." The plan divided the two dozen student participants into two fire crews, and named crew chiefs, safety officers and vehicle operators. Ellum also led all participants in a safety and operations meeting prior to the burn.

The prescribed burn was executed on April 26. The students traveled to Yale-Myers Forest in the morning and set up at the burn site—a forest meadow less than two acres around. The goal of the burn, outside of education and research, was to maintain early seral wildlife habitat and increase structural diversity within the forest. The site had undergone prescribed burns in 1986 and 1996 with similar goals, according to Mark Ashton, Yale's director of school forests and professor of silviculture and forest ecology. Ashton explained that Yale F&ES is one of the few organizations in southern New England that have developed a burning program for their forest lands. The first

Yale-Myers burns were done in the early 1980s, initiated by David Kittredge, forest manager from 1981 to 1986, and were continued by Keith Moser, forest manager from 1990 to 1994; Mark Ducey, forest manager from 1994 to 1996; and Bruce Larson, former director of school forests. Ashton said the burns are typically conducted about every other year in the early spring by students under the auspices of the school forest management staff.

For this year's burn, the students began by ringing the burn site with a fire line, raking down to soil a four-foot buffer around the circle and creating another fire line through the middle as a precautionary measure. Though the original plan called for backfiring, Ellum said the wind was so light on burn day and the leaf layer so damp that they decided to light headfires ahead of the wind. At around noon, when humidity was at its lowest, they lit two lines of flames with drip-torches. Described Droege, "We had trouble getting some of the trees to burn—we didn't have a torching out of the trees we were hoping would go." Otherwise satisfied, the students concluded the burn by dousing the fire with water, while a few even stayed overnight to ensure that there were no flare-ups.

Ellum said the burn resulted in a "quick superficial burn, not hot enough to kill all the hardwood stems," but that the objectives of the plan were met. "We knocked it back down to early seral habitat—most of the woody trees are gone." But as might be expected with nature, the burned land has not recovered in the way they had hoped. "A lot of hay-scented fern came in. We were hoping for grasses, sedges, taller herbs like goldenrod and some small saplings for birds to perch on." Ellum said they won't know the true progress of nature's recovery until next spring.

As for the burn's educational goals, they were met and exceeded. Says Ellum, "Prior to this class, I had no practical experience in putting fire on the ground. Everyone got a chance to do everything as much as possible. It was a good practical learning experience on how to put together and safely manage a controlled, prescribed burn situation." Kelly Droege served as one of two crew chiefs on the burn, building on his previous experience prepping for some prescribed burns for the National Park Service in Oregon. Droege says the Yale-Myers burn was beneficial because "it was the first time I was in a position to offer input on how the fire should be laid down, on planning a fire."

Master's student Megan Roessing served as safety officer on the burn, and commented, "It was great. I had never seen one before; it was my first experience. It was good to take the role of a laborer. Ann let us do most of the work ourselves."

"My goal was for them to have a real-life situation," Camp said. "We've been discussing fire, the use of fire for restoration. I really wanted them to get a feel for what it was like to work with fire on the ground. We could see the results of our work immediately, and what I'd discussed in lectures about the effects of fire on vegetation and soils became something they could literally get their hands around. When the flames begin to ignite and the dry vegetation flares up, students also get a first-hand understanding of the destructive power of fire, and how this force can be harnessed to achieve management goals."



© Ann Camp

Students make sure the fire does not leave the target area.

Since bringing Camp on board from the U.S. Forest Service's Pacific Northwest Research Station in July 2001, F&ES has been devising a more intensive, long-term burn plan. David Ellum is now charged with creating a five-year burn plan for filing with the state Department of Forestry. Camp will teach her class and oversee a prescribed burn again next spring, but she'd also like to request permission from the state to conduct occasional autumn burns, which typically are discouraged. She even recommends that students not enrolled in her class include fire research in their independent studies.

Camp believes that the more graduates who incorporate fire policy and ecology into their studies, the better for the forestry profession. Fire policy and ecology education promise to enlighten the national debate over how best to thin the overstocked Western forests and reduce potential fuel in those forests. "Understanding how fires behave and the kinds of fuels that are likely to be consumed can help forest managers and policy makers determine where and how much to thin," she said.

Her students say they're more informed. Megan Roessing spent the summer of 2002 interning at the Wilderness Society in Washington, D.C., and noted, "Whenever we talked about fire, it was useful to have seen how one sets up a prescribed burn and goes through with it."

Added Droege, "I can't stress enough how important an issue this is out West. In Oregon, the Biscuit fire burned an area of the forest the size of Rhode Island. It's a huge issue of resource management in the West, no doubt about it. Ann's class is an integral part of a forestry program in this day and age."

David Ellum plans to build on his "burn boss" experience by becoming fire certified at the federal and state levels. "Fire's an important management tool if used correctly. I would like to include it in my tool box of ecological management tools." After Ellum earns his Ph.D. from Yale, he hopes to teach field studies at a New England liberal arts college and to incorporate teaching fire ecology and prescribed burn management. "If I were running a fire course myself, I would want the backup of certification and license."

Studying fire policy and ecology has also prepared Camp's students to understand the fiery national debate over how best to manage forests and

# Mahogany Trees May Hold Clues to Protecting Central Africa's Biodiversity

By Alison Gillespie



© John McKenna

A natural gap in the forest canopy created by a tree fall in an unlogged forest was part of the natural cycle of death and renewal in the forest. The light in the gap is good for mahogany regeneration. Hall and a field assistant, center, can barely be seen standing next to the fallen log.

Walking through undisturbed forest in Central Africa is like stepping back in time. The towering canopy trees make you feel insignificant and are humbling, says doctoral student Jefferson Hall. Particularly impressive are the massive African mahogany trees. The six-foot-wide muscular trunks of these giants burst skyward, flowering 165 feet above the forest floor of the Congo Basin where their 100-foot crowns form a dark green canopy. These are the trees, he says, that make people build roads through Africa. The lumber they produce has a clear grain and an unusual pinkish tone, and is coveted by specialty furniture makers around the world.

But as valuable and magnificent as they are, these trees have been the focus of relatively little scientific study. Hall says that a lack of understanding about the needs of these trees could cause obstacles for those who seek to protect the biodiversity of Central Africa.

“We can say, ‘Let’s do what we can to protect these forests through management,’” Hall says. “But guess what, maybe nobody knows how.” A lack of good data has led, he says, to the development of some flawed conservation methods in the region. Through research, he hopes to change that problem.

Hall is no stranger to biodiversity conservation in Central Africa, where he has spent most of the last 20 years working. After having completed three years in the Peace Corps, he directed a project to create a Connecticut-sized wildlife reserve in the Ituri Forest in the Democratic Republic of Congo (DR of Congo). In the mid-1990s, he led a team that surveyed eastern DR of Congo’s forests to determine the distribution and abundance of Grauer’s gorilla as well as chimpanzees, elephants and a suite of other large mammals. The Grauer’s gorilla survey led to significant publications that highlighted the conservation status of eastern DR of Congo’s forests. Recognizing the importance of forest management to conservation in the Congo Basin, Hall has now shifted his focus to tropical forestry.

Since 1998, Hall, Mark Ashton, professor of silviculture and forest ecology, and David Harris of the Royal Botanic Garden, Edinburgh, have been conducting forestry research in the Congo Basin with the goal of improving forest management strategies. Their studies have focused on characterizing the negative impacts of logging on forest dynamics and regeneration, as well as using remote sensing to identify vegetation types and estimate above-ground biomass, which is plant material contained in living trees. Carbon is the major constituent of all living material, including wood, and so by estimating biomass one can calculate the amount of carbon stored in the forest.

These studies have been possible through a collaboration with Prasad Thenkabail from Yale’s Center for Earth Observation, according to Hall. However, F&ES interest in the region dates back to the mid-1980s when Richard Carroll, M.F.S. ’86, D.F. ’97, began research on western lowland gorillas that eventually led to the establishment of the Dzanga-Sangha Dense Forest Reserve, where the bulk of Hall, Ashton and Harris’ research has been conducted. “It was Carroll’s help in securing funding from the World Wildlife Fund U.S. that facilitated the establishment of the current research project and led to additional funding from NASA and the Zoological Society of Milwaukee County,” Hall says.

This past summer, Hall, Harris and fellow F&ES students Alex Finkral and Vincent Medjibe traveled to the region to continue their research. Their work is part of an ongoing effort to create an inventory of remote forests to examine the biodiversity of the tree flora, obtain estimates of above-ground biomass and better understand the relationship between topography and soil to important timber species. “By carefully designing fieldwork to address complementary research questions, we are able to get more bang for our buck,” Ashton says. “For example, our efforts to improve carbon storage estimates through remote sensing require high-quality, field-based estimates of above-ground biomass. By noting the habitat

characteristics and locations of these plots, we gain a better understanding as to the physical parameters that are important to determining the distribution of tree species at regional scales.” This latter emphasis could be of particular importance to forest management in the region.

The African mahogany trees (*Entandrophragma* spp.), which Hall has been investigating as a part of his dissertation, present an illustrative example of the need for more forestry data. Logging companies have been using a process that surgically extracts individual trees with the goal of keeping as much of the nearby forest intact as possible. The assumption underlying this approach is that remaining seedlings from the mahogany will grow to replace the trees that have been removed. Since economic pressures and political instability make it unlikely that there will ever be a complete end to logging in the Congo Basin, many have thought that careful, selective tree removal presents the best-case scenario for conservation.

But Hall and Ashton say these methods may be doing more harm than good. Once the older trees are removed, their progeny rarely survive. They have been working with others to figure out why. According to their research, it appears that mahogany trees require more light to grow than often assumed. Although the seeds from *Entandrophragma* will sprout and initially thrive in low-light conditions, they eventually will die if they don’t get enough light. “Precision logging does not disturb the canopy enough to regenerate African mahogany,” Hall says.

Ashton points out that this is an example of the many diverse forces at work within this complex ecosystem. In addition to being specialists for fertile “hot spots” within the forest, these trees are disturbance dependent, meaning that their survival depends upon the occurrence of certain large events. Large animals such as elephants can create such disturbances when they move in the forest, sometimes toppling trees as they go. Massive storms can also create disturbances, causing older trees to fall and take others with them. In addition, for thousands of years horticulturalists have created gaps in the forest to grow food. Traditional agricultural methods involving the use of fire to clear land for crops have historically opened parts of the canopy. Gaps created by all of these forces have often proven beneficial to the continued reproduction of the mahogany trees.

Both Ashton and Hall caution that this does not suggest that these forests would benefit from massive or intense logging. Clearing large areas of forest,

Hall is quick to say, will remove the shade needed to encourage early seedling growth and also cause a whole cascade of complicated environmental problems. Water quality can suffer when the trees are removed, soils will quickly degrade with the disappearance of the nutrients held both in the tree biomass and topsoil, the seed sources necessary to produce the next forest will be eliminated and the spectacular wildlife whose survival depends on the forest ecosystem will become locally extinct.



© John McKenna

Jeff Hall measures the diameter (6 feet) of an African mahogany tree that rises above the canopy.

Instead, they suggest that forest management involve the development of logging procedures which would more closely mimic the natural disturbance processes. According to their research, such procedures could include developing methods for letting more light into the forest understory by frequently creating carefully planned, medium-sized gaps in the canopy. But whatever occurs here will be felt worldwide, Hall says. The area is biologically diverse and rare, and also forms the second largest contiguous block of tropical forest left in the world, making it an important reservoir for global carbon.

“If people don’t care about high-quality timber, fine,” he says. “But they should care about losing forest cover in Central Africa. If these forests aren’t managed appropriately, we’re going to contribute to worldwide environmental degradation by allowing carbon to be released, which could contribute to climate change in a significant way.”

## Fire: A Hot Topic and a Course

CONTINUED from page 25

to reduce the damage from wildfires. The groundfire debate flared up when President Bush announced his Healthy Forests Initiative on August 22. Senate Democrats quickly began working on alternative legislation.

“In the West, we’re witnessing the result of not understanding the ecological role of fire,” Camp said. “Policy decisions made without understanding the value of some kinds of fires in some kinds of ecosystems led to the exclusion of fires. After years of suppressing them, we’ve reached a point where the amount of fuel in many Western forests is so large that

forests burn catastrophically. I’m hoping that my class will help those going into the policy arena as well as those pursuing careers in science.”

Added Droege from his office in the Siskiyou Mountains of southwestern Oregon, “It’s an incredibly pertinent issue. If you’re involved in conservation, forestry, environmental issues—even if you’re not—it’s hard to ignore the fact that these fires, especially what we’re seeing out West, are becoming increasingly intense.”

# Commencement Highlights

## Wangari Maathai Exhorts Graduates to Remember the Poor, the Weak, the Marginalized, the Unvalued

**Editor's Note:** *The following excerpts are derived from the commencement speech delivered on May 27 at Marsh Hall by Wangari Maathai, the McCluskey Visiting Fellow for Conservation last spring.*

The driving forces for the challenges you will meet may be local, transboundary or global. Some will look doable and some, especially in poorer countries, may even overwhelm you. This is because in some regions communities are not only disempowered, but they also lack the type of training offered here at Yale.

But in your moments of doubt, remember that this school has given you the big picture which will be the trendsetter for biodiversity conservation. Therefore, you can afford to be confident and courageously assume the role of an agent of transformation that awaits communities, which will be lucky enough to host you. Make them not only survive but also thrive. You have that capacity. Use it.

As you know, for the last 25 years I have been mobilizing rural communities in Africa. I have been encouraging them to empower themselves, provide leadership in their localities and transform themselves into foresters without diplomas. On a daily basis, they rehabilitate and reclaim degraded lands and habitats and they bring hope to thousands of rural households. In that respect you could consider them your partners in pursuit of sustainable development.

To achieve meaningful results, they need the support and the partnership of foresters with diplomas—foresters like you. Indeed,



Dean Speth congratulates graduate Dimos Anastasiou.



Wangari Maathai

you and they need to work together and supplement each other as you both face future challenges in conservation. Many of the challenges will be in areas like creating policies which serve communities as well as conservation—policies which eliminate bottlenecks such as corruption, legacies of colonialism and other forms of oppression and injustices; policies which address overconsumptive lifestyles, especially among the affluent nations and elite sections of poor nations; and policies on access and use of the electronic technologies to benefit communities currently excluded. There is also concern with unsustainable extraction of resources and land degradation.

Many of these challenges and bottlenecks are man-made and, therefore, much more difficult to arrest with nonpolitical and noneconomic tools.

But that should only energize you and make you more determined to make a difference. . . . Be agents whose change improves the quality of life of the people you serve. As you make your decisions, remember the poor, the weak, the marginalized, the unvalued. But also remember the powerful: they, especially, determine the future of our planet and the life on it.

I and the women of the Green Belt Movement will certainly remember you as we continue to plant trees in Africa and take care of our side of the planet. If you ever visit that part of the world, we shall be the ones covered with dust, without much resources or political support, but toiling, nevertheless, to save the land from desertification. I shall be telling them of the unforgettable semester at Yale and the fellowship we shared. Thank you for teaching me so much and for being such wonderful friends and fellow travelers toward better forests and the environment.

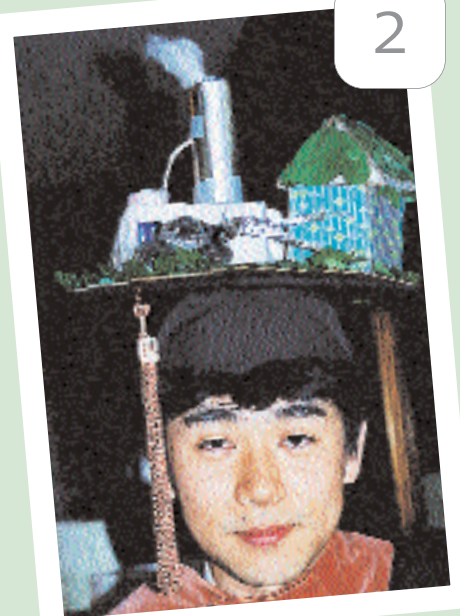
As for you now, the world awaits. Embrace it with your energies and enthusiasm. Celebrate it and respect life, wherever you find it. Remember the institution that shaped you. And in everything, be good to your parents, your profession, Yale and yourself. Enjoy the experience of service, trust yourself, be patient with results, be courageous despite your fears, be happy and fulfilled and never lose hope.



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1) Dean Speth with, left to right, Cherise Miller, Yemi Megenasa, Shalini Gupta, Catherine Bottrill and Mahua Acharya  
 2) Kensuke Fuse  
 3) Roberto Frau giving his graduation speech

4) The Loggerrhythms' Elizabeth Rowls, left, and Becky Tavani  
 5) Left to Right: The Loggerrhythms' Peter Land, Justin Pollard and Andres Luque  
 6) Sage Boy as Luke Skywalker  
 7) Karen Manasfi, left, and Hatsy Moore

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# Reflections on the Johannesburg Summit

**Editor's Note:** *In August, a generous grant from friends of the Yale School of Forestry & Environmental Studies made it possible for the Dean, several faculty and 15 F&ES students, as well as eight Yale College students, to attend the World Summit on Sustainable Development in Johannesburg, South Africa. What follows are comments and reactions of several attendees of the summit.*

## Dean Speth

Whether one judges the World Summit on Sustainable Development (WSSD) a failure or a very modest success depends on the measuring stick one applies. If one asks whether the summit responded seriously to global-scale environmental threats or brought globalization and sustainable development together, the only honest answer is that it did not. In failing to rise to the moment, WSSD missed a huge opportunity.

A more positive assessment of WSSD outcomes is possible if one starts with low expectations and the premise that WSSD was sailing against stiff winds from the outset. In the year before the summit, the world economy had fared poorly. The Bush administration was preoccupied with the war on terrorism and was generally hostile to both environmental causes and multilateral agreements. The developing world was both wary of and frustrated with the developed countries. The failure to implement the Rio agreements had cast a long shadow, raising questions about credibility and accountability in processes such as WSSD. Those who sought important outcomes at Johannesburg were aware of these and other negative factors, but hoped that the fundamental importance of the issues involved would drive the agenda.

From this perspective many were relieved that what they see as a generally sensible, forward-looking document was agreed upon in the end. They were thankful for modest accomplishments. The targets and timetables that were agreed

to offer some hope. A number of parallel multilateral processes, including a large number of environmental treaties and trade agreements, got a modest boost in the Plan of Implementation, as did the Millennium Development Goals with their objective of halving the incidence of world poverty by 2015. Poverty and environment linkages received much-needed visibility. And the business community was deeply and generally positively involved, much more so than at Rio.

Most importantly, there was tremendous vitality, commitment and determination within the NGO community and, indeed, with many governments and agencies participating. However, as a lowest-common-denominator document, the WSSD Plan of Implementation was hardly reflective of the best of our world.

WSSD pioneered the promotion of “type 2 outcomes,” public-private and other partnership initiatives for sustainable development. Hundreds of these individual initiatives were showcased at Johannesburg. The United States highlighted numerous U.S.-based partnership initiatives, said to be worth \$2.4 billion over several years. (Because it offered so little else in the “type 1” negotiations, critics accused the United States of seeking to derail the main purpose of the meeting with them.) The U.N. Environment Program presented awards for the 10 best partnerships, including Alcan Inc., for school-based recycling in Asia and the Americas, and Shell for a gas exploration project in the Philippines. The United States committed \$36 million over three years to help protect Congo Basin forests.



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Dean Speth introduces Dan Esty (sitting at left), director of the Yale Center for Environmental Law and Policy, and Maria Ivanova, director of the Global Environmental Governance Project, coeditors of the book, *Global Environmental Governance: Options & Opportunities*. The book was released August 27 at the summit (see page 18).



Papier-mâché effigies, representing the voiceless, sit outside a convention hall.

“The summit  
was overly  
retrospective in  
its focus, harping  
on past mistakes  
and failed  
programs.”  
Daniel Esty



F&ES students l-r, Andres Luque, Carrie Magee, Nathaniel Carroll, John Homan (standing), Roberto Frau and Alexander Gritsinin

Brazil, the Global Environment Facility (GEF), the World Bank and the World Wildlife Fund announced one especially promising partnership. Their Amazon Regional Protected Area project ensures that 500,000 square miles of the Amazon will be put under federal protection. This is the largest-ever tropical forest protection plan, for an area twice the size of the United Kingdom; it will triple the amount of forest land that is already protected.

In another partnership of a very different sort, Greenpeace and the World Business Council for Sustainable Development joined forces for the first time to call upon governments “to tackle climate change on the basis of the Framework Convention on Climate Change and its Kyoto Protocol. Independently, Russia took the occasion of the summit to announce that it would ratify the Kyoto Protocol.”

Several other important initiatives announced at Johannesburg planted seeds for the future. The European Union announced that, having failed to win green energy targets at WSSD, it would seek to organize a “coalition of the willing,” like-minded countries to push ahead with global goals for renewable energy development. Germany’s Chancellor Schroeder announced that Germany was willing to host an international conference on renewables, saying that “climate change is no longer a skeptical prognosis but a bitter reality.” Another group of “like-minded countries,” the 15 biologically richest or “mega-diverse” countries that are home to 70 percent of the planet’s biological diversity, came together to achieve reductions in the rate of biodiversity loss, protect against biopiracy and seek fairness and equity in sharing the economic benefits derived from biodiversity.

In sum, one can hope that the sometimes-perverse logic of these affairs might once again come into play. Rio was a great summit with extraordinary momentum during the preparatory process, but the wind went out of its sails shortly after the event. The Johannesburg preparations never developed any forward momentum, but perhaps the frustration and disappointment evident there will spur serious efforts after the event. The post-Summit European initiative on renewable energy is an example of what is possible. The WEHAB (water, energy, health, agriculture and biodiversity) documents generated late in the process in response to Secretary-General Annan’s request provided another important entry point for post-summit action.

### Daniel Esty, professor of environmental law and policy

At Johannesburg, there was much talk about “partnerships,” and indeed, several promising projects were unveiled. But the sum of these commitments does not represent a solid structure for action in the coming years. This shortcoming leads us to Lesson one: Vague “partnerships” are no substitute for binding government-to-government agreements.

Nitan Desai, the secretary-general of the 2002 event, proved not to be up to the task. He failed to develop a common vision for the conference and aggravated, rather than bridged, the divides that separate the developed and developing worlds. And unlike Brazil, which contributed enormous levels of top-tier talent to its own event in 1992, the host South Africans failed to fill the 2002 leadership void. Lesson two: Leadership matters, both on the individual and national levels.

In recent years, environmental protectionists and advocates of economic development have married their causes and produced the banner concept of sustainable development. But perhaps substantive environmental action suffers under such an all-encompassing idea. Lesson three: When everything is on the agenda, nothing gets done.

Perhaps spurred by the setting in Africa, poverty alleviation became the central and dominant focus, at the expense of environmental issues. While no one can deny that strengthening development strategies is important and that new resources need to be devoted to helping the poorest countries, a lopsided agenda resulted in less attention to critical environmental issues. Lesson four: Success requires a careful balancing of goals and interests.

The summit was overly retrospective in its focus, harping on past mistakes and failed programs. Almost no discussion centered on emerging opportunities to marry information technologies to the challenges of sustainable development. Lesson five: Progress depends on fresh thinking and a

# Reflections on the Johannesburg Summit

“A vibrant tapestry  
of experiments,  
failures and  
successes is  
being assembled  
by decentralized  
actors.”  
Bradford Gentry

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forward-looking outlook.

The incompatibility of the U.S. gospel of free markets with the recent spate of its protectionist actions—including steel tariffs and a Farm Bill fat with new agricultural subsidies—has further eroded any U.S. claim to international leadership. At Johannesburg, the Bush administration’s only clear principle seemed to be a commitment to a narrow set of domestic political considerations. Lesson six: An isolationist, unilateralist and economically unprincipled United States cannot lead the world.

One final lesson may be that such an important task as how we manage interdependence at the global scale cannot be left to once-a-decade gatherings. Finding ways to manage our economic and ecological interconnections deserves attention every day, and we need a new architecture for global governance to support this effort.

## **Bradford Gentry, lecturer in sustainable investments**

While I was in Johannesburg, I attended a different summit. The local government session was held a few blocks from the World Summit venue. Sponsored by the International Council for Local Environmental Initiatives (ICLEI), it brought together representatives from municipal governments around the world to compare notes and learn from each other’s experiences.

And what a rich blend of experiences it was—much more real and encouraging than most of the exchange among national governments and international organizations during the WSSD itself. The presentation I was asked to give was typical: our experience working with the United Nations Development Programme and universities around the globe to collect, analyze and disseminate the lessons learned—good and bad—on using public-private partnerships to improve the delivery of drinking water and other environmental services to the poorest neighborhoods of the rapidly growing cities in the developing world ([www.undp.org/pppue](http://www.undp.org/pppue)).

My overwhelming impression is that while progress toward sustainable development has stagnated at the national and international government levels, a vibrant tapestry of experiments, failures and successes is being assembled by decentralized actors—municipal governments, as well as community organizations and businesses. According to ICLEI, over 6,000 municipalities have prepared and are implementing “Local Agenda 21” sustainability visions for their communities. While cities often have no say in global or even national rules affecting trade, investment and the environment (in fact, they are usually treated as NGOs at meetings such as the WSSD), they are at the front lines of efforts to cope with the effects of poverty, globalization and polluted environments. They are closer to their citizens and under greater pressure to try something—anything—to make their lives better. So they try, and some are even succeeding in putting their communities onto a more sustainable path.

The question is whether their drive and experience will be enough—through informal global information networks or formal intergovernmental processes—to pull the rest of the world in a sustainable direction. Given the relative lack of action at the national and international levels, it seems to me that we should place more of our bets on collecting and applying the lessons from these decentralized experiments in social learning.

## **John Homan, M.E.M. ’03**

The recent summit in South Africa provided ample opportunities to assess who are the real agents of change in today’s world. Like all the conferences that preceded it, the summit provided a unique platform for ordinary citizens to try to influence policy makers. Gandhi said, “Be the change you wish to see.” One of the most notable elements of the summit was the voice of global citizens who took Gandhi’s injunction seriously and brought their concerns to the table.





Charles Brunton took this picture of a white rhinoceros at the Pilanesberg National Park in South Africa while sightseeing.

## JOHANNESBURG JARGON

### Carrie Magee, M.F. '02

political will  
partnerships pleasure panels  
political will

wa wa wa water  
[renewable] energy  
Ubuntu Village

globalization  
indigenous or local  
community earth

NASREC instruments  
implementation—How? When?  
civil society asks

Targets and Timelines  
delegations fail to meet  
strong private sector

climate change problem  
biodiversity loss  
Rio minus 10

### Theodore Lanzano, M.E.M. '03

Clearly, most people are disappointed with the outcome of the summit. Not only was the overall agenda too broad and vague to accomplish specific results, but countries were also terribly divided and the overall organization of the summit was poor, just to name a few of the negatives. As a participant with the Yale delegation, however, I did see some promising results that seem to have been eclipsed by the overwhelming negative press attention. The WSSD Plan of Implementation is clearly weaker than it can and should be, but it does offer a start and a conceptual framework for promoting economic growth while reducing health, poverty and environmental problems. The plan calls for halving the number of people without sanitation by the year 2015. Also in the plan is the reduction of agricultural subsidies in developed countries, commitments to the sound management of chemicals and significant reductions in the number of plants and animals with endangered status. There is a clear lack of specific timetables and targets, but it does provide a framework for progress and a chance for more motivated countries to go far beyond its guidelines.

### Emily Noah, M.E.M. '02

The primary part of my summit experience was connected to one of the parallel events, the implementation conference, which took place in Johannesburg. I worked with a London-based group, Stakeholder Forum, in the months preceding the summit to help organize the implementation conference, which addressed four key sustainable development issues: energy, water, food security and health. By the end of the conference, over 300 participants had initiated more than 25 partnership initiatives with specific work programs. In helping to organize the conference, I witnessed first-hand the ability of the Internet and other enhanced means of communication to help form these partnerships among representatives from more than 50 countries. At the same time, my own personal observation was that, perhaps due to the fact that communication now allows groups to get together virtually, much of the energy that was present at the Rio Summit around the building of civil society networks was absent in Johannesburg. In fact, the entire summit operation seemed very low energy.

### Charles Brunton, M.E.M. '03

The term sustainable development means different things to different countries and people. Has a true consensus been reached on this definition so that regulations and actions that come out of the summit will tangibly benefit disempowered peoples with little or no voice in global issues? Also, I was taken aback and distressed that the agenda of global population was not mentioned in the text of the summit agenda nor during any of the plenary sessions or debates. This issue was discussed at only one side event convened by the U.N. Population Fund, the South African Government and the U.K. All-Party Parliamentary Group on Population, Development and Reproductive Health. And finally, why have a summit where many people expend much energy logistically and mentally hashing out agreements if none of the resolutions are legally binding in any way? There is no point in convening such a meeting unless the collective world leadership commits to progress toward sustainable development in the spirit of the world summit, or the world will believe that the meetings in Johannesburg were irrelevant.

### Nathaniel Carroll, M.E.M. '03

There were so many events, discussions, talks, workshops, negotiations, launches, etc., at the same time and at different venues that it was difficult to follow what concrete accomplishments were being achieved. In retrospect, I think the entire conference was too fragmented, spatially and topically. WSSD bit off more than it could chew. A series of conferences/negotiations on focused problems and their resolutions may have been more effective. On the surface, all “world citizens” were included in the conference—youth, farmers, indigenous peoples, NGOs, trade unions, etc.—but when it came down to doing business, it seemed that all significant negotiations were behind closed doors and determined by trade and business. As a natural scientist, with little experience in the policy arena, it was fascinating, if not a little discouraging, to see the extreme opposite end of the spectrum than what

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# Reflections on the Johannesburg Summit

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I am used to. But, like it or not, development is going to happen and it is crucial that we make it sustainable, and policy is where natural science is synthesized into actions.

## Andres Luque, M.E.M. '03

For many observers, the presence of corporations at the summit was overwhelming. Fancy displays from companies such as BMW and Hewlett-Packard were all over the place. A major highlight was the joint statement between Greenpeace and the World Business Council in Sustainable Development. Enemies for the past 10 years, they issued an urgent call to governments for the ratification of the Kyoto Protocol. I would argue that the presence of some corporations at the WSSD is not representative of the corporate world. Moreover, when I think about the developing world (of course, within the context of business and the WSSD), I miss somehow the participation of small and medium enterprises, perhaps the most powerful force of development in nonindustrialized countries.

## Roberto Frau, M.E.M. '03

Imagine boosting the population of a city by close to 70,000 during a two-week period. Now imagine doing it in a city with poor to nonexistent mass public transportation. It is clear that a few logistical issues regarding getting people from point A to point B are bound to arise. Because my academic and professional interests are linked to urban transportation infrastructure, I was predisposed to pay close attention to the way in which summit organizers managed to provide (or attempt to provide) transport for all the delegates. The WSSD was a perfect example of why cities around the world have become (or are becoming) unsustainably dependent on cars. Public transportation systems have the potential to be far more efficient, speedy, convenient, comfortable, safe, economical, socially inclusive and environmentally sound than private transportation systems, yet often they are just not designed or managed to reach their full potential. The better-off, more in-demand delegates took the cellphone numbers of taxi drivers they liked and called them every time they needed to get anywhere—a personal chauffeur, if you will. Many others used a combination of shuttles and taxis, depending on their urgency or level of exhaustion.

## Jon Braman Y.C. '02

For me the summit was a carnival of heart-wrenching diversity. I arrived in time for the civil society pre-summit and participated in a number of discussions in which I was the only American (often the only representative of the global North). The urgency and scope of problems like poverty, global warming, trade imbalances, biopiracy, AIDS and fixing the global governance structures were coming at me straight from the faces of people working on the ground on these issues in the developing world. I befriended students from South Africa and Kenya who wanted to start an international movement to reform the United Nations, which they felt was not representative enough. A young woman looked at me and said, “Africa is going to be extinct” because of AIDS and other diseases and the desire of young, successful people to leave. Yet her lack of hope hadn’t stopped her from taking buses all the way from Nairobi to be there, to do what she could. I felt the need for the summit in a way that statistics and history books couldn’t have taught me.

Perhaps the most inspiring moment of the whole trip for me was moving with my friends into the center of a packed and rocking crowd of over 2,000 mostly young, black South Africans dancing to the music of Hugh Masekela at night at Zoo Lake Park in Randburg. I’ve never before been in a crowd so united in good feeling, melody and rhythm—truly ecstatic energy. I was probably one of the few in the entire crowd with access to the Santon Convention Centre, where the official U.N. summit was held. But I was welcomed, watched over by friends and swallowed up in the collective hope and ecstasy of the moment. The refrain was simply: “Everything must change.”



Roberto Frau, M.E.M. '03, met up with Yolanda Kakabadse, former professor in the practice of biodiversity conservation.

# Ecologist Challenges Reliability of a Research Methodology

By Frank Szivos

**In a paper just published in the journal *Ecology*, Associate Professor David Skelly has posed a fundamental, but probing, question: How well do environmental scientists use their experiments to develop a realistic picture of nature?**

**T**his straightforward question has serious implications. Experiments are used throughout the environmental sciences, to help develop federal drinking water standards, determine the effects of global climate change and predict the fate of endangered species.

The problem is that experiments force scientists to make difficult decisions. They can experiment in the laboratory where the environment may be closely controlled but the conditions may be unnatural, or they can work in natural environments where the working conditions make many kinds of experiments difficult or hard to interpret.

About 20 years ago ecologists proposed a kind of “Goldilocks solution.” If the laboratory is too unrealistic and the natural world is too messy, they reasoned, perhaps a compromise approach would work. So the mesocosm was born. Mesocosm, which means middle-sized world, is distinguished from laboratory environments (microcosms) and the Earth (macrocosm).

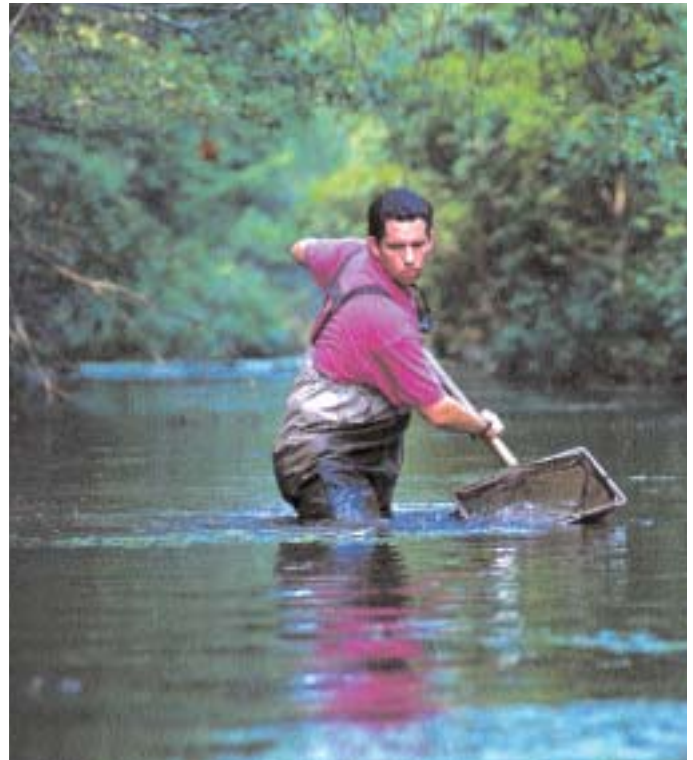
Since the concept was introduced, it has taken off, and mesocosms are now “hot science.” Thousands of experiments have been done in mesocosms. They are published in top journals and their results are seen as critical for understanding the most important environmental issues.

The problem is that no one has checked to see whether the promise has been fulfilled. “Mesocosms might not be all they are cracked up to be,” Skelly says.

Skelly turned to the lowly tadpole to make the call. The approach was simple and direct. He completed exactly the same experiment both in mesocosms—plastic, 250-gallon “cattle-watering” tanks—and within enclosures placed in natural ponds at Yale-Myers Forest. His findings show that two different amphibian species that compete intensely in mesocosms show no signs of competition in natural pond enclosures.

Further testing shows that mesocosms may provide misleading answers. “I used results from both the mesocosms and the pond enclosures to make predictions about wild amphibian populations (wood frogs),” Skelly said. “The mesocosms were simply not able to provide accurate predictions. Results from the enclosures, on the other hand, can be used to make excellent predictions about wild populations.”

While Skelly readily acknowledges that his experiment will not be the last word on the subject, he believes an important door has been opened. “I hope that this work will encourage scientists to cast a critical eye over their



David Skelly

© Michael J. Doolittle

experimental designs and ask themselves whether their results will be as realistic as they wish them to be,” Skelly said.

If Skelly’s results are validated by others, where will that leave ecologists? His intent was not to muddy the waters: “I believe that a focus on this issue is going to lead to better experiments in laboratories, in mesocosms and in natural environments.” This is important because mesocosms are critical to the future of experimental science. As Skelly points out, “The public will not be anxious to have scientists dumping cadmium into wetlands to evaluate its effects on the environment. We need other settings for this work, and mesocosms in some form are our best hope right now.”

Nonetheless, Skelly believes his work is likely to cause controversy. “Many environmental scientists have invested heavily in the mesocosm concept. Understandably, they will want to be sure that there is a problem before they modify their approach,” he said. Skelly is adamant that a focus on the problem will lead to better experiments. “We have a lot of hard work to do to figure out what it will take to achieve results that reflect what’s going on in the natural world.”

*Skelly’s paper is entitled “Experimental Venue and Estimation of Interaction Strength,” and it appeared as a Report in the August issue of Ecology.*

# A New Green Regime *Attacking the Root Causes* of Global Environmental Deterioration

There are many hopeful signs of change, but humanity has just begun its journey to sustainability.

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compel action. The European Community/European Union has seen a progression in which environmental policy has moved from being the separate province of each European country to being more common throughout Europe. The extent of the change is reflected in a recent article in *The New York Times*: The European Commission plans to take eight countries to the European Court for not implementing water standards. Britain, Belgium, Spain and Luxembourg failed to meet the December 2000 deadline for drinking water; France, Greece, Germany and Ireland failed to meet standards for waste water or bathing water.

A second path to better governance is to implement measures that can take JAZZ to scale. JAZZ is the most exciting arena for action today, with an outpouring of bottom-up, unscripted initiatives from businesses, governments, nongovernmental organizations and others, including the following:

- Seven large companies—DuPont, Shell, BP Amoco and Alcan, among them—have agreed to reduce their greenhouse gas emissions to 15 percent below their 1990 levels by 2010. Alcoa is reported to be on track to reducing its emissions to 25 percent below 1990 levels in this time frame, and DuPont is on schedule to reduce emissions by 65 percent by 2010.
- Eleven major companies, including DuPont, General Motors and IBM, have formed the Green Power Market Development Group and committed to developing markets for 1,000 megawatts of renewable energy over the next decade.
- The Home Depot, Lowe's, Andersen and others have agreed to sell wood (to the degree that it is available) only from sustainably managed forests certified by an independent group against rigorous criteria. Unilever, the largest processor of fish in the world, has agreed to the same regarding fish products.

Nongovernmental organizations have played important roles in forging these corporate initiatives. They are the real maestros of JAZZ. State and local governments, private foundations, universities and other entities also have contributed. Through the International Council for Local Environmental Initiatives, more than 500 local governments are now part of a campaign to reduce greenhouse gas emissions. The Pew Center on Global Climate Change has identified 21 separate state initiatives to reduce greenhouse gas emissions.

Finally, there is the most fundamental transition of all—a transition in culture and consciousness. Stanford University Professor Paul Ehrlich recently wrote, "Our global civilization had better move rapidly to modify its cultural evolution and deal with its deteriorating environmental circumstances before it runs out of time." He notes that the potential for conscious evolution is evident in great social movements that already have taken place, such as the abolition of slavery and the civil rights movement. It is possible that something new—a change of consciousness—is reflected in the anti-globalization protests, the far-reaching and unprecedented initiatives being taken by some private corporations, the growth of nongovernmental organizations and their innovations, scientists speaking up and speaking out, and the outpouring of environmental initiatives by the religious community. One must certainly hope that something new and vital is afoot.

There are many hopeful signs of change, but humanity has just begun its journey to sustainability. Meanwhile, the forward momentum of the drivers of environmental deterioration is great, pushing toward a swift and appalling deterioration of the natural world. Only a response that in historical terms would be seen as revolutionary is likely to avert these changes.

A phenomenal expansion of economic activity is projected for the decades immediately ahead. Down one path, this growth can protect, regenerate and restore the environment. It can provide sustainable livelihoods for the world's poor and lead to large improvements in quality of life for all. There is still world enough and time for this century to see the coming of a future more wondrous, intimate and bountiful than our scenarios can imagine. But this world will not be won without a profound commitment to urgent action. President John F. Kennedy often told the story of the aged Marshal Lyautey of France debating with his gardener about planting a certain tree.

"It will not bloom for decades," the gardener argued. "Then," said the marshal, "plant it this afternoon."

*This story is reprinted courtesy of Environment magazine and Heldref Publications.*

# ClassNotes

1939

**Tudor Richards** is retired in Hopkinton, N.H. The May issue of *Smithsonian Magazine* published a family letter that he had contributed describing how he and his parents had witnessed the landing of Charles Lindbergh in Paris in 1927.

1940

**CLASS SECRETARY:**  
**Paul E. Bruns**

1942

**CLASS SECRETARY:**  
**Hamlin L. Williston**  
[williston@watervalley.net](mailto:williston@watervalley.net)

By the time the Class of 1942 had entered the Forestry School, Dean Henry Solon Graves had been retired several years. He visited frequently and in February 1942 he invited **Ham Williston** as president of the Forestry Club to have lunch with him at his Club. As they sat down at the table he said, "Williston, tell me what kind of jobs are you young men looking forward to?" The answer was "Dean, I am going to disappoint you. All of us are faced with going into military service. That's all we're thinking of." Indeed, very shortly almost all of us had entered one of the many officer training programs, courses which were easy to qualify for if you were 21-26 years old, in good physical condition, and had a college degree.

**Sid McKnight** and his wife, Bonnie, celebrated their 60th wedding anniversary on September 1, 2002.

**Mel Chalfen** writes that in March he fell and smashed his right hip so badly that it had to be replaced with a plastic substitute. In early July he woke with a bad backache caused by a compression fracture in his lumbar region with two displaced discs. As he slowly recuperated he found solace in painting with watercolors.

1946

**CLASS SECRETARY:**  
**Paul Y. Burns** [pyburns@lycos.com](mailto:pyburns@lycos.com)

**Paul Burns** flew from Baton Rouge, La., to Charleston, S.C., in June for the wedding of the

first of his six grandchildren. His grandson Karl Feierabend, who is beginning the second year of a Ph.D. program in chemistry, was married to Kristin Asleson. At the large wedding reception, Paul danced for a few minutes with the young folks. On July 4 Paul phoned **John Gray '42** in Little Rock, Ark., to wish him a happy birthday. Paul and John were both born on July 4, 1920, so it is easy for Paul to remember his friend's birthday.

**Dave Smith** spends some time at the School, dealing with alumni matters such as writing obituaries of too many old friends. He says, "If you die, please send an obituary—but don't rush the need for one! Also, so we'll know you are alive, keep us informed of children, grandchildren, what you are doing, etc."

1947

**CLASS SECRETARY:**  
**Evert W. Johnson**  
[swede-doc@mindspring.com](mailto:swede-doc@mindspring.com)

1948

**CLASS SECRETARY:**  
**Francis H. Clifton**

The Massachusetts Division of Fisheries and Wildlife has just completed a terrestrial bio-mapping project that places the state at the forefront of the application of science and technology to address fish and wildlife conservation management and protection needs on a landscape scale. The project used as a foundation some work conceived by forestry professor **William MacConnell**.

**Ed Sowinski** writes in a reminiscent mode about his classmates: "**Michael Pennefather** was from South Africa where the professors were very formal, even teaching class in caps and gowns. . . . He arrived in New Haven a few days early and was sitting in the Forestry School library, which had an enormous table in the center. Jean Tingly . . . whose office was in the dean's outer office . . . shared with Marie Cobey, came running into the library screaming, pursued by Dean Garratt and John Lutz . . . [Rest of detail inappropriate to repeat.] Michael was shocked. . . . South Africa was never like

that. Another story: At camp, we were split into teams to do surveying. My team was following **John Simeone's**, when he turned his head and said 'sn-sn-sn-SNAKE.' A rattlesnake had struck and missed and was lying across his boot. Everyone but John thought it was very amusing. Is the camp used in any way today? [Yes, students annually attend a summer training module at Great Mountain.] **Howard Ezell** came from South Carolina and was always ready to play bridge after dinner, instead of studying. Someone with the last name of **Parker** went to Harvard and had . . . an ancient Rolls Royce which he bought for \$300, the value for scrap of the solid silver radiator. He kept it in good running condition, and today the car would be worth about \$50,000."

1949

**CLASS SECRETARY:**  
**Frank H. Armstrong**  
[farmst1037@aol.com](mailto:farmst1037@aol.com)

**Hurlon Ray** and his late wife, TyJuana, were honored on June 20, 2002, by Saline County, Ark., and the Arkansas State Highway Department for their many years of community service to the people of Saline County. Ray also met with F&ES students in Hot Springs, Ark., this past spring.

1950

**CLASS SECRETARY:**  
**Kenneth L. Carvell**  
[kencarvell@aol.com](mailto:kencarvell@aol.com)

1951

**CLASS SECRETARY:**  
**Peter Arnold** [Arnoldp@jps.net](mailto:Arnoldp@jps.net)

1952

**CLASS SECRETARY:**  
**Milton E. Hartley Jr.**  
[redhedded@olympus.net](mailto:redhedded@olympus.net)

1953

**CLASS SECRETARY:**  
**Stanley L. Goodrich**  
[smygood@qwest.net](mailto:smygood@qwest.net)

# ClassNotes

1954

CLASS SECRETARY:

Richard A. Chase [RACHase@aol.com](mailto:RACHase@aol.com)

**Art Westing** spoke in the spring at a Yale symposium about the ecological effects of Agent Orange during the Vietnam War. He now resides in Putney, Vt., and heads Westing Associates in Environmental Security and Education. He has worked in USFS research, for the Stockholm International Peace Research Institute, the United Nations and the World Bank. His efforts have earned him an appointment to the U.N. Global 500 Roll of Honor.

1955

CLASS SECRETARY:

Howard A. Spalt

1956

CLASS SECRETARY:

Jack A. Rose [jackrose@iopener.net](mailto:jackrose@iopener.net)

**Doogie Darling** remains active as chairman of the Arkansas Forestry Commission and a director of Deltic Timber Corp.

1957

CLASS SECRETARY:

open

**George Tsoumis**, professor emeritus at Aristotelian University in Thessaloniki, Greece, writes: "Considering the years, I feel well. Although retired a long time ago, I still keep busy, and have an office at the university. My family is also well—we have two boys (surgeon, orthodontist) and two grandchildren. Life is pleasant here, we don't complain. We were very sad for the events of last September in New York and Washington. Entirely unexpected and tragic for the human loss, their families and the country. Greetings to classmates." His interests in the last few years have included researching the forest situation in ancient Greece and the surrounding region.

**Brooks Mills**, Maine tree farmer and forester, was featured on the cover of *Independent Sawmill & Woodlot Management* (Oct./Nov. 2000) and in the related article "Crop Tree Management,"

where he reported in part: "My family's 'green chip' investments are the pruned hardwood and softwood crop trees. . . . We prefer them to more conventional investments in less-tangible financial assets. Our experience has been that these forest management techniques show above-average returns, and should even get better. . . ." Mills has implemented the management system on his own land for 30 years and in May 2001 showed the results to a visiting group of Canadian foresters and landowners. He writes in a letter in 2000: "The spring of 1978 issue of *Yale Forest News* featured the original version of our crop tree management article; much has changed over the ensuing 22 years, but the basics remain the same."

1958

CLASS SECRETARY:

Ernest A. Kurmes  
[Ernest.Kurmes@nau.edu](mailto:Ernest.Kurmes@nau.edu)

1959

CLASS SECRETARY:

Hans Bergy [hberg16@aol.com](mailto:hberg16@aol.com)

1960

CLASS SECRETARY:

John G. Hamner [jgham@bulloch.com](mailto:jgham@bulloch.com)

1961

CLASS SECRETARY:

Roger W. Graham

1962

CLASS SECRETARIES:

James H. Lowe Jr.  
Larry O. Safford  
[lsaffordnh@earthlink.net](mailto:lsaffordnh@earthlink.net)

**Jeff Burley, Ph.D.** '65, visited New Haven in May '02 for the alumni/ae weekend to speak on the panel at the inaugural event of Yale's Global Institute for Sustainable Forestry. He is director of Oxford Forestry Institute in England with consultancies and research programs for employers including the World Bank, FAO, UNESCO, UNCTAD, UK/ODA, Lutheran World Relief/Intermediate Technology Development

Group, ICRAF, CIFOR and the United Nations University. He is also past-president of the International Union of Forest Research Organizations. His personal interests lie in the genetics of tropical trees, from pines to hardwoods, and improving their genetics for agroforestry. Concerned that forestry as both profession and academic subject is declining worldwide, he defends the subject in academia, government, and fund-raising circles and advocates for an international consortium of forestry universities. His most exciting project at Oxford was to digitize 60 years of forestry research onto the *Tree CD* computer program, indexing over one million searchable forestry abstracts, with daily database updates and yearly updates to the CD-ROM. F&ESers and forestry students globally benefit from this research by Burley and his colleagues. He teaches a two-week module, Agroforestry-Wood Properties and Quality, and courses in forest genetics and general forest policy. He also "moonlights" as vice-warden for Green College at Oxford. Following his retirement (coming soon) he will continue to fund-raise for both Green College and the Institute, as well as edit an academic press encyclopedia of forest science, in three volumes.

**Ed Frayer**, father of three and grandfather of nine, recently retired as Dean of the School of Forestry and Wood Products at Michigan Technological University, a position he held from 1984 to 2000. Prior to Michigan, Ed worked at Colorado State University (CSU) for 18 years, the last eight of those as head of the Department of Forest Science (succeeding Fred Wangaard, former Yale professor). While at CSU, Ed served as advisor of the first CSU Society of American Foresters student chapter. He also helped to pioneer continuing education in forestry at CSU, with over 30 workshops and 1,000 participants. At Michigan, Ed helped raise \$2.5 million for expanded forestry facilities. In addition to administrative work, Ed consulted on wetland inventories for 20-plus years and authored publications on the national status of wetlands. He also was a charter member and first-elected chair of the SAF Inventory Working Group.

# ClassNotes

1963

CLASS SECRETARY:

James R. Boyle [jim.boyle@orst.edu](mailto:jim.boyle@orst.edu)

1964

CLASS SECRETARY:

G. Wade Staniar

1965

CLASS SECRETARY:

James E. Howard [jhoward@sfasu.edu](mailto:jhoward@sfasu.edu)

1966

CLASS SECRETARY:

Howard C. Dickinson Jr.

1967

CLASS SECRETARY:

Robert W. Hintze [bclues@aol.com](mailto:bclues@aol.com)

1968

CLASS SECRETARY:

Gerald D. Gagne  
[gerald.gagne@sympatico.ca](mailto:gerald.gagne@sympatico.ca)

**Keshab Pradhan** retired as chief secretary of the government of Sikkim but is still a member of the State Planning Board with rank of Minister. He heads two NGOs—the Sikkim Development Foundation and World Wildlife Fund-Sikkim. He also hybridizes orchids and in May gave talks at the World Orchid Conference in Malaysia. His wife, Shanti, heads the Sikkim Womens Council, and their son, Kailash, is an architect.

1969

CLASS SECRETARY:

Davis Cherington

1970

CLASS SECRETARY:

Whitney A. Beals

**Chad Oliver, Ph.D. '75**, received an honorary degree from the University of the South on Founders' Day, October 8. **Charles O. Baird '51**, writes in this regard: "I was delighted to learn that you [Chad] had been appointed to a prestigious professorship at Yale. For me it is encouraging to

know that Yale intends to provide vigorous support to the School of Forestry & Environmental Studies. I am glad the School retains the word 'Forestry' in its name, as Duke elected not to in its richly endowed environmental program. Perhaps you already know that the former Department of Forestry at Sewanne was renamed Department of Forestry and Geology after the addition of a geologist in the late seventies. **Dave Smith '46, Ph.D. '50**, came down from Yale to advise the university administration on the new program. Currently there are three foresters and three geologists on the faculty."

1971

CLASS SECRETARY:

Harold T. Nygren [Tnygren@juno.com](mailto:Tnygren@juno.com)

1972

CLASS SECRETARY:

Ruth Hamilton Allen  
[ruth.allen@aehinstitute.com](mailto:ruth.allen@aehinstitute.com)

**Ruth H. Allen, Ph.D. '77**, an international expert in environmental epidemiology, was quoted in the May 2002 issue of *Rosie* in an article on the complex problem of assessing the role of environmental risks and cancer clusters in East Hampton, N.Y. (lymphoma in young adults) and Fallon, Nev. (leukemia in children). Dr. Allen also was an invited guest at the recent research priority-setting meeting in Santa Cruz, Calif., featuring leading scientists and advocates, which then forwarded numerous research recommendations to the Centers for Disease Control and Prevention. She served for four years as EPA program director for the LIBCSP, and currently she is EPA team leader for the National Health and Nutrition Examination Survey Pesticide Epidemiology Study. Dr. Allen also serves as Agricultural Health Study principal collaborator to the National Cancer Institute for the EPA Office of Prevention, Pesticides and Toxic Substances and as co-team leader for the EPA Pesticides in Schools work group, which recently produced a feasibility plan for a full-scale national statistical survey of pesticides in schools. Taken together, these projects represent new approaches to address growing public interest in better environmental

health tracking and the precautionary principle.

**Joy Belsky** tribute, page 60.

1973

CLASS SECRETARY:

Lauren Brown

1974

CLASS SECRETARY:

Leonard A. Lankford Jr.  
[lenlankford@piopc.net](mailto:lenlankford@piopc.net)

1975

CLASS SECRETARY:

Ann G. Corcoran

**Terry Chester** was honored as vice president and general manager of Adbiz, a Gainesville-based advertising company, when it was named the 14th fastest-growing company in the state and the number-one fastest-growing female-owned company in the Florida 100.

1976

CLASS SECRETARY:

Howard F. Corcoran

**Philip Conkling** was awarded the New England Aquarium's David B. Stone Medal for distinguished service to the environment and community.

**Colin Peterson** was remarried in August 2001; to Sandy Peterson. He reports that his spouse, Margo, died of cancer in February 1993. He is responsible for all fiber supply to IP's Pensacola Mill and McDavid Softwood Converting Facility. He and Sandy are still on their honeymoon but "you all come see us!" He is also a member of the Yale Club of Pensacola.

**Robert Michael Pyle, Ph.D. '76**, recently sent F&ES a copy of his book, *The Thunder Tree: Lessons From an Urban Wildland* (Houghton Mifflin Company, 1993).

1977

CLASS SECRETARY:

James M. Guldin

# ClassNotes

1978

**CLASS SECRETARY:**

**L. Marie Magleby** [LoMaMag@aol.com](mailto:LoMaMag@aol.com)

**Ed Hogan** is a partner at the law firm Norris, McLaughlin & Marcus in Somerville, N.J. He devotes his practice to environmental law and litigation, counseling manufacturers, commercial and industrial landlords and highly regulated service businesses. Ed has also written and co-authored many articles and alerts on the subject of environmental law, and has given seminars and presentations on the subject since 1983. He has been listed in the Environmental Law Section of *The Best Lawyers in America* since 1993.

1979

**CLASS SECRETARY:**

**John A. Carey**  
[john\\_carey@businessweek.com](mailto:john_carey@businessweek.com)

**Gary Machlis, Ph.D. '79**, visited F&ES in April 2002 to address students and members of the New Haven community on "Land Matters: Wilderness in Modern America" as part of the course, *The Restoration Agenda: Environmental Justice*.

**Stuart Miller** returned to Australia after graduation and, after a few years with government and private organizations, set up his own business in 1983. His company does environmental geo-chemical work for the mining industry throughout the world, but primarily in the Asia-Pacific region. The main focus of the work relates to acid rock drainage, waste management and reclamation, which is a direct extension of his Ph.D. research at Yale. He would like to know if there has been any further interest in this field at the school since the mid-1970s. ([egi@egisyd.biz](mailto:egi@egisyd.biz)).

**Vijay Verma** became vice president and chief information officer at the University of Maryland University College on July 1, 2001. His responsibilities include global IT operations for the university, as they have a European division based in Heidelberg, Germany, and an Asian division in Tokyo in addition to the College Park campus in Maryland. Prior to his current position, Vijay served as the chief information

officer for the American Council on Education in Washington, D.C.

1980

**CLASS SECRETARY:**

**Sara B. Schreiner-Kendall**  
[sara.kendall@weyerhaeuser.com](mailto:sara.kendall@weyerhaeuser.com)

**Susan Braatz** is working at the United Nations and has had a recent change of address, which is available through the online directory.

**Tricia Johnson** has left her job at Fusco Corporation and will begin a teaching certification program in the fall. She hopes to teach 7th and 8th grade science.

**Dave Kittredge** is vice president of the New England Forestry Foundation, where **Star Childs** and **Bud Blumenstock '57** are directors.

1981

**CLASS SECRETARY:**

**Carol E. Youell** [envstew@snet.net](mailto:envstew@snet.net)

**Marcia Sailor** and children Carl and Anna suffered the loss of husband and father **John Karl Sailor '80** in March 2001. The Sailors are thankful for the support of friends and family. They have been able to recover somewhat, and last fall Anna played soccer and Carl, a tall percussionist, played in his first middle school band concert.

**Carol Youell** is natural resources manager for the 21,000-acre holdings of the Metropolitan District Commission, which provides water for Hartford, Conn., and its suburbs. This is the forest management job once held by the late **Irving Hart '48**.

## Class of 1980 Fund Supports Student Project

**Editor's Note:** The Class of 1980 Fund was established as a result of a gift to the School of Forestry & Environmental Studies to encourage among current students the "enthusiasm, creativity and sharing" that were the hallmarks of the Class of 1980. Cassie Hays '02 received financial support from the Class of 1980 Fund to aid in the completion of her project, "Manyara Community Booklet." She is working on a book of photographs, poetry and prose compiled during her visit to Tanzania in the summer of 2001. The following paragraphs are an excerpt from her project.

Thousands of people come to East Africa every year, bringing with them the idealism of youth and the closed mind of adulthood. We outsiders often assume that East African culture is simple and pristine. We force loans down the throats of unstable governments and we force development aid into the uneducated hands of poverty. We are the wealthy tourists; we are the academic researchers; we are the development workers, aid officials, government peacekeepers—all coming from the developed world. We are altruistic, yet we create a picture of Africa that only meets our own needs.

During my recent research in Tanzania, I came to realize that the problem of ethnicity was at the base of the dissonance between outside intervention and internal efforts. I began to see the East African idea of tribe as a drum head stretched tight over the barrel of past colonial control. The people I encountered had been emptied of much of their identity, lumped into neat categories, and denied the freedom to own land, practice their religion and speak their own languages. They had been donned in colonial clothing and filled to overflowing with new concepts of religion, education and self.

East African culture had also been altered by the efforts of post-colonial development projects and international aid. Billions of dollars flowed to Tanzanian and Kenyan officials via projects designed and built by non-Africans.

Stereotypes of ethnicity cloud the African landscape, make hazy the connection between Africans and non-Africans. Through folk tales, image and descriptive essay, I hope to provide a glimpse of East Africa by which we can examine concepts of family, education, conservation and agriculture, exposing their roots in outside ideas of ethnicity, just as they retain their own inherent truths. The words and pictures found in the pages of my book are both a record of my own experiences, as well as those of schoolchildren in northern Tanzania and Kenya. It is a brief compilation, merely a glimpse of my life in East Africa during a few months at the turn of the millennium. I have come to realize that my contribution, though undeniably small, must be made.



Cassie Hays



# ClassNotes

**Ann Hooker** married Duncan Clarke, senior professor and head of the international security program at American University's School of International Studies. They will be hiking the Appalachian Trail together—Duncan's third trip and Ann's inaugural! Her son, George O'Dell, is a freshman at Colorado College interested in majoring in environmental studies. In her job news from NASA, Ann is working on the environmental review of the upcoming Mars 2003 mission, as well as a proposed mission to Pluto.

1982

**CLASS SECRETARIES:**

**Barbara Jean Hansen**

**Kenneth D. Osborn**  
forstman@fidalgo.net

**Bob Krumenaker** is now the National Park Service superintendent at Apostle Islands National Lakeshore in northern Wisconsin. He writes, "Having clawed my way up the ladder one step at a time, I'm thrilled to be a park superintendent and can't imagine a better park or a nicer community. It's an exciting time to be here, as we're in the midst of the first NPS wilderness suitability study in the country in 20 years." Bob and his wife, **Susan Edwards '83**, can be reached by e-mail at krumenaker@aya.yale.edu.

1983

**CLASS SECRETARY:**

**Stephen P. Broker** lkbroker@snet.net

**Ann Pesiri Swanson** was named the 2001 Conservationist of the Year by the Chesapeake Bay Foundation, the nation's largest regional environmental organization.

1984

**CLASS SECRETARIES:**

**Dr. Therese Feng**  
therese\_feng@yahoo.com

**Roberta Tabell Jordan**  
rjordan@clinic.net

**Jeanne Anderson**, a doctoral student at the University of New Hampshire, was awarded a 2002 Switzer Fellowship (see *At the School*, p. 15). Her interests are ecology and remote sensing. Prior to UNH, she worked for the Massachusetts

Audubon Society and then as director of Science & Stewardship at the Nature Conservancy-New Hampshire.

**Art Mitchell, Ph.D. '94**, has now worked over 17 years outside the U.S., mainly in natural resources management, coastal zone and wetlands management, protected areas/parks management, rural/village development, ICDPs, etc. He has been based in Kuala Lumpur with his family (his wife is a Malaysian citizen) for the past three and a half years, with frequent traveling to work in Malaysia, Indonesia (mostly), India, China, Thailand, Vietnam, Sri Lanka and Cambodia. Most recently he was involved in a project in the Sundarbans and Calcutta, West Bengal, India. This update came via **Shigeo Sakai '97**.

**Chris Recchia** was appointed commissioner of the Agency of Natural Resources in Vermont.

1985

**CLASS SECRETARIES:**

**Alexander R. Brash**

**Margaret Rasmussen King**  
theskings@attbi.com

**Mark Damian Duda** was awarded the 2002 Ducks Unlimited National Conservation Achievement Award for his research on the human dimensions of the conservation of natural resources and the environment.

**Robert Clausi** spent eight months in Eritrea with his wife and four-year-old daughter last year. He is working for the Town of Greenwich, involved in wetlands compliance work.

**Alex Brash** is chief of the Urban Park Service, a division of the New York City Parks Department. He has been involved in an effort to get some eaglets from Wisconsin acclimated to the cliffs above the Hudson in Inwood Park at the northern tip of Manhattan Island.

**Jock Conyngham** recently left Trout Unlimited, moved to Missoula, Mont., and has taken a job as a research ecologist with the U.S. Army Corps of Engineers, Environmental Laboratory.

**Rolfe Larson** recently sent F&ES (see *BookShelf* p. 19) a copy of his book, *Venture Forth! The*

*Essential Guide to Starting a Moneymaking Business in Your Nonprofit Organization* (Amherst H. Wilder Foundation, 2002).

1986

**CLASS SECRETARY:**

**Caroline Norden** cnorden@gwi.net

**Jim Chamberlain** writes: "I completed my Ph.D. from the College of Natural Resources at Virginia Tech in 2000. The focus of my dissertation was managing Eastern national forests for nontimber products. I'm now a research scientist with the U.S. Forest Service, Southern Research Station, and located in Blacksburg, Va. I'm developing a program focused on integrating nontimber forest products into community development in the southern United States. In addition, I'm involved in a North American initiative to get nontimber forest products better integrated into forest management institutions. I'm also the coordinator for the IUFRO Research Group (5.11) on Non-Wood Forest Products. I have two children (Luke, 10, and Alexandra, 7) and have no plans for anymore. My spouse teaches American Sign Language in the public schools. E-mail: jachambe@vt.edu." As coordinator of the International Union of Forest Research Organizations (IUFRO) Research Group 5.11, Jim has launched an online newsletter that can be found at <http://iufro.boku.ac.at/iufro/iufro.net/d5/hp51100.htm>.

1987

**CLASS SECRETARIES:**

**Christie Coon** cacoon7@aol.com

**Melissa Paly** mpaly@aol.com

**Laura Falk McCarthy** is working part time at the Forest Trust in Santa Fe, N.M., on the science and social aspects of fire. Molly (4) and Bailey (15 months) stabilize Patrick's and her life.

**Pamela Manice** spent a blissful July at Great Mountain Forest, where she taught forest ecology and field biology to New York City public school children. She was thrilled to be back again with so many members of that magical Norfolk community.

**Jim Pissot** is executive director of the

# ClassNotes

Yellowstone to Yukon Conservation Initiative, headquartered in Canmore, Alberta, Canada. Y2Y strives to ensure the biological diversity and sustainable community vitality of that region into the next century. He mentions several F&ES alums associated with the Y2Y effort, including **Gary Tabor '92**, **Louisa Willcox '84**, **Chris DeForest '88**, **Caroline Woodwell '86** and **David Gaillard '97**. F&ES visitors included professor Tim Clark, Murray Rutherford (F&ES doctoral student), classmate **Melissa Paly** and her daughter and Gwen and **Bruce Leighty '86**. Also, Jim and Valerie recently visited Garth and Jane Voigt in Bozeman.

**Josh Royte** and Leigh live in Yarmouth, Maine, where he works as a Conservation Planner for the Maine Chapter of the Nature Conservancy. So far he has worked on several projects larger than 40,000 acres, so he feels he's getting the knack for projects that combine ecological reserve design with a landscape of sustainable forestry. F&ES alums have stopped by to see him, such as **David Vaughn '86**, **Margo Burnham '91**, **Kent Wommack '82**, **Tom Rumpf '78** and Bill Ginn.

**Andy Brower** is up for tenure this year at Oregon State University. Between work and their four horses, he and his wife are busy.

**Scott Van de Mark** is still with the Pennsylvania Environmental Council and is involved with land use, water quality trading, renewable energy and development work.

**Whendee Silver, Ph.D. '92**, is associate professor of ecosystem ecology at UC Berkeley, where she is engaged in both basic and applied research, primarily on tropical forests. Her research group has recently documented a pathway for nitrogen cycling in upland systems that helps conserve nitrogen in ecosystems where it is easily lost; this has implications for nitrogen greenhouse gas production and ecosystem productivity in relation to nitrogen availability. Their work on carbon and phosphorus cycling is particularly relevant to policy. They are working on changes in carbon storage and loss as agricultural lands are abandoned in the tropics and revert to forests, showing how the distribution of carbon changes over time and

describing mechanisms of carbon storage and loss from molecular to ecosystem scales. One of her students, **Megan McGroddy '95**, recently finished her Ph.D. on phosphorus cycling in the Amazon with results that should inform regional and global models. Silver recently received two grants from the Mellon Foundation for collaborative research on nitrogen, phosphorus and iron cycling, as well as two NSF grants for nitrogen and carbon work. Her group received a citation from the Soil Science Society of America for their nitrogen work. She cites many classmates as important in her intellectual development: "I learned a lot from our discussions around Sage and Greeley. We were always trying to push the envelope. . . . **Dave Publicover, D.F. '93**, **Janine Bloomfield, Ph.D. '93**, **Manuel Guariguata, D.FES. '93**, and **Javier Perez '89**, my lab cohort, are a great group of people to have gone through graduate school with. Other friends like **Anne Reilly**, **Nina Marshall** and **Betsy Carlson '89**, while participating in the science side of school, also helped me see the sites of New Haven! I occasionally see F&ES people at professional meetings, and would love to hear from them."

## 1988

### CLASS SECRETARIES:

**Diane Pierce (Stark)**

**Phillip H. Voorhees III**

[Pvoorhees@aol.com](mailto:Pvoorhees@aol.com)

**Randy Downer** and **Judy Stone** have been married for over 10 years, and have finally paid off their student loans! Judy is an assistant professor of evolution at Colby College, and Randy is a systems analyst for emerging technologies at Bowdoin College.

**Renée Askins** has published a book, *Shadow Mountain, A Memoir of Wolves, a Woman, and the Wild*. It's about the success of her efforts and those of her Wolf Fund to re-establish a wolf population at Yellowstone (see Book Shelf p. 19).

**Chris DeForest** has been "saving the best of the Inland Northwest" by running the Inland Northwest Land Trust in Spokane, Wash. Also, he has been busy renovating a couple of old houses and enjoying weekends at the DeForest log cabin on Lake Pend Oreille.

## 1989

### CLASS SECRETARIES:

**Susan M. Campbell**

**Jane Hoyt Freeman**

**Jane Freeman** married John Lynch on July 20, 2002, at their home in South Lake Tahoe, Calif. F&ES alumni in attendance included **Jim Weigand '89** and **Lise Aangeenbrug '90**.

Jane is the Lake Tahoe Basin coordinator for the U.S. EPA. John owns and manages several Internet companies. For wedding photos go to [www.john-jane.com](http://www.john-jane.com).

**Jim Weigand** is the BLM state ecologist for California. He is in charge of monitoring and restoring BLM lands, thus far mostly in the Mojave and Sonoran deserts and chaparral woodland.

**Laurie Lynn Kelly** has been doing forestry in many places. She taught at the University of Guyana and then was an English language editor for Dutch international forestry publications. She worked for some environmental entities in the U.K. While she was there in 1996 she married Tomasz Sroka. More recently she has been assistant regional forestry officer of the Ministry of Agriculture of Botswana.

## 1990

### CLASS SECRETARY:

**Carolyn Anne Pilling**

**Morgan Grove** was awarded the Presidential Early Career Award for Scientists and Engineers, or PECASE, for 2001.

## 1991

### CLASS SECRETARY:

**Kristin Ramstad**

[kramstad@odf.state.or.us](mailto:kramstad@odf.state.or.us)

## 1992

### CLASS SECRETARY:

**Katherine Kearse (Farhadian)**

[farhadian@aya.yale.edu](mailto:farhadian@aya.yale.edu)

**Mary Verner** worked with the Spokane Tribe in Washington State, serving as director of the tribe's Department of Natural Resources until 2000, when she moved to southern Georgia. There she has continued to work for the Spokane and other tribes, and has started a small

# ClassNotes

consulting firm. While in Washington, Mary earned a degree with an emphasis in natural resources law from the Gonzaga University Law School. She is expecting her first grandchild.

## 1993

### CLASS SECRETARIES:

**Dean Gibson**

**Molly G. Goodyear**

[goodyear.fs@mindspring.com](mailto:goodyear.fs@mindspring.com)

**Heather L. Merbs** [hmerbs@aol.com](mailto:hmerbs@aol.com)

From **Molly Goodyear**: “It’s been a while since your class secretary has had her act together enough to gather some class notes—new babies and other life changes have gotten in the way! Since I last wrote, my husband, Mike, and I have had a second child, Ella Conger Lyles Wolter, born on April 7, 2001. Life with two kids is quite a challenge, but really fun, too! After Ella was born I decided to take a break from paid environmental work so I could have a more flexible schedule and spend more time with the kids. I still volunteer and I’m helping Peter and Ella get a head start on their environmental education.”

**Margaret Williams** writes from Anchorage, “Where I am spending a lot of time this summer. I continue to direct WWF’s Bering Sea ecoregion program, which involves coordination with lots of scientists, fishermen, Native community members, NGOs, government agencies, etc., in both Alaska and Russia. The problems in this region are quite daunting, but it has been exciting to work with some of the coastal communities, particularly in Alaska, and to see some of the most wild and pristine places in the North. I am also still operating my little Russian NGO and publication, *Russian Conservation News*, which I do as a volunteer. Other than that, I’m trying to squeeze in some time in the woods and mountains, seeking solace in nature or visiting with friends. **Ann Tartre** and I had a nice little ski/snowshoe adventure this winter, and I hope there will be a gathering for next year’s Canadian Ski Marathon. Am especially counting on **Bill Mott**, Stephanie and Baby Sophia to make a showing! I have no charges of my own—can hardly keep my plants alive—but am enjoying being close to my nieces and nephews in Washington.”

**Sarah Risser** is returning to Singapore for another two years with her family. She writes, “We really grew to love Asia and are looking forward to our return. Like Molly I have been spending the lion’s share (am I the only one who consistently uses Paul Barton expressions?) of my time tending to Nina, who will be 5 in January, and Henry, who will be 2 in November. They are great kids and I’m happy to have had so much time with them. We had an interesting year living in Marine on St. Croix, Minn. It is a beautiful little town with lots of open space. We will miss the landscape but not the commute! I am seriously contemplating a car-free life—at least for a few months or years.”

I think **Anne Tartre** wins the prize for most exciting (and fun!) hobby, as you’ll read from her notes: “I have been promoted to director of Donor and Program Services at the Maine Community Foundation and work out of an office in Portland. I love my work, as it’s very positive and local. I try to insert my environmental interests whenever possible, but often am looking at a broad range of community development issues. I’m surfing like a fiend (twice a day in summer, but year-round usually on weekends) and went to Costa Rica in March for my first warm-water surfing experience. It’s kind of my obsession right now. Other than that, lots of good outdoor stuff, travel, family, etc.”

**Gary Tabor**’s hot tub sounds pretty inviting: “Enjoying the Northern Rockies. . . . All friends are welcome. Hot tub available with stunning views of the mountains and wildlife in my backyard. Excellent access for hiking, biking, skiing and rafting. Off to Antarctica this January to retrace steps of the Shackleton expedition—Antarctic Peninsula, South Georgia Island, Falkland Islands.”

**Eileen Cates** has made a lot of changes in her life recently. “My big news is I married Kevin Stone on June 23, 2001, in Lake Placid, N.Y. I wore my riding boots at my reception. Very appropriate for an outdoor wedding. **Bill Mott**, **T. Swayze ’92**, **Lois Morrison**, **Kathy Fallon ’92**, **Beth Reichheld ’92**, **Derek Denniston ’96** and **Megan Ryan ’98** and each of their loved ones were able to join us in the celebration. We bought our first home in

October 2001 and are living in Charlton, N.Y. Charlton lies between Saratoga Springs and Schenectady. It is a small rural town and we love it. I continue to work in the electric power industry for the AES Corporation as a project director. I am fortunate to be able to work from my home and travel when needed but not too often. We also have a very loving and fun collie named Tully. She is such a joy. I am also following my passion for horses and volunteering my time one day a week cleaning stalls (‘mucking the puk’) and riding horses. [Eileen and Kevin’s new address is available in the online directory.] My new work e-mail address is [eileen.cates@aes.com](mailto:eileen.cates@aes.com). If anyone is in the area, please give a call and stop in.” And by the way, Eileen’s new name is now Eileen Cates Stone.

**Anne Black ’92** is certainly an honorary member of our class, so I’m including her update. “We’re living in Missoula now! YEAAAYYYYYY! I took a postdoc at the Aldo Leopold Wilderness Research Unit, which is an interagency organization attached to the FS’s Rocky Mountain Research Station, with offices on UM’s campus. I look out my window at my alma mater! My task is to develop a planning tool to help wildland fire managers integrate ecological effects information into the fire management planning process. You can imagine how much ecological information is involved now . . . not much at the incident level! We also now have running water (cold *and* hot) in the house in Luther, Mont., so y’all should come visit!” Anne’s e-mail is [aebblack@fs.fed.us](mailto:aebblack@fs.fed.us).

**Susanne Schmidt ’92** is becoming a river rat! She writes: “I’ve been working with PROFOR still but am finishing up my Guyana project now and looking for a job. In between work I’ve been trying to get in as much kayaking as I can, a passion I developed in my old age. In July I did the Middle Fork of the Salmon in Idaho. What an amazing river! It was an awesome trip, six days in the wilderness you just wished wouldn’t end so soon. Other than these river respites, New York City life is the usual, often hectic, and right now incredibly sticky. Apropos of plants, I’ve been doing fairly well keeping my container garden on my deck alive and I really love that little bit of puttering it affords me, deadheading the snapdragons and such.”

# ClassNotes

**Daniel Newberry** writes that he has made a transition into the nonprofit sector, directing the Applegate River Watershed Council in southwest Oregon. He is working on projects involving irrigation and in-stream water rights exchange programs. Before moving to Oregon, Daniel was the senior hydrologist for the Hoopa Valley Tribe in Humboldt County, Calif. He represented the tribe for Klamath and Trinity River monitoring and restoration projects, and in litigation involving NEPA, ESA and other stream-flow litigation issues.

**Eugene Simonov** and **Margaret Williams**, as well as **Laura Williams '99**, collaborated in an effort that yielded an article on Russian nature conservation in *Sierra* magazine called "Defending Russian Nature" by Fred Streibigh.

Kids are definitely the main preoccupation (other than work) for many of our colleagues:

**Matt Auer** and his wife, Anne, and kids John and Emma are in the D.C. area for fall 2002 and spring 2003. Matt's an associate professor at the School of Public and Environmental Affairs, Indiana University, and he's doing a management stint with the International Programs Office of the U.S. Forest Service. Anne does most of the real work, though, i.e., keeping the twins from burning down the house, torturing the neighbors' pets, etc. Matt's email is [mauer@indiana.edu](mailto:mauer@indiana.edu).

**Guido Rahr** is as busy (and mischievous) as usual! "All is well on the Western front. Lee and I welcomed a healthy 9.2-lb. baby boy on June 29, named Sumner after another F&ES grad, **Sumner Pingree '81**. We have been spending a lot of weekends at our cabin on the Deschutes river with our growing family: little Guido and Sumner, and our Brittany and Nina. The Wild Salmon Center doubled in size last year and this year will grow by a third. We and our partners have completed over 20 rapid assessments in the Pacific Northwest and Russian Far East and are now targeting a series of spectacular salmon watersheds—totaling six million acres—for protection. Our main office is now in the Ecotrust building in Portland, Ore., where we have a 500-gallon cold-water aquarium built

into the wall and loaded with baby salmon, steelhead, dace, sticklebacks, nymphs and crayfish. For fun we feed goldfish to the salmon (revenge of the natives)."

A few more baby updates: **Patrick Baker** and his wife currently reside in Hawaii and are expecting a baby. Stephanie and **Bill Mott** welcomed baby Sophia a few weeks early in late December 2001. Alisa and **Chip Darmstadt** had their third boy earlier this year! **Jeff Griffin** and Amy Drought got married in the summer of 2001 and had baby Samuel this spring.

**Heidi Asbjornsen** is an assistant professor at the Iowa State Forestry Department. She teaches dendrology and fire management and does research in ecological restoration and fire ecology. Previously she had been on the faculty of forest sciences at the Agricultural University of Norway near Oslo. She recently became chair-elect of the Ecology Working Group of the SAF.

**Tom O'Shea** received the 2002 Molly Beattie Young Forester Award the New England SAF grants each year to an outstanding forester under 40 years old. Tom does forest management for the Massachusetts Division of Fisheries and Wildlife.

**Jeremy Wilson** is assistant professor of forest ecosystem management at the University of Maine. After Yale he got a Ph.D. in silviculture at the University of Washington.

**Penny Low** is curator of a living exhibit, "Grasses for the Masses," depicting the worldwide importance of the grass family at the public greenhouse at the headquarters of the International Paper Company in Stamford, Conn.

**Eleanor Sterling** is director of the Center for Biodiversity and Conservation at the American Museum of Natural History. After she finished her Yale dissertation studies of the aye-aye, an endangered lemur of Madagascar, she returned there to write a book about the flora and fauna of that country. She has been using her background in linguistics to write a natural history of Vietnam. Not all of her work has been beyond the seas. She participated in a study of the invertebrates of leaf litter in Central Park that recently revealed a new species of centipede.

Please send me your news any time and I will be sure to include it in upcoming magazines. E-mail me (Molly) at [goodyear.fs@mindspring.com](mailto:goodyear.fs@mindspring.com).

## 1994

### CLASS SECRETARIES:

**Jane L. Calvin** [Calvin3621@aol.com](mailto:Calvin3621@aol.com)

**Jane M. Whitehill**  
[janewhitehill@hotmail.com](mailto:janewhitehill@hotmail.com)

**Cynthia S. Wood**

This spring, **Javier Dominguez** and his wife, Sharon, welcomed the arrival of their beautiful baby daughter, Mirei. Congratulations to Javier, Sharon and their son Mateo! See photos at: [www.dominguestein.com/english/english.htm](http://www.dominguestein.com/english/english.htm).

**Jane Calvin** and husband Jonathan Bollen welcomed Silas Willard Bollen into the world on July 26, 2002, 8:02 a.m. at 7 lbs., 13 oz. and 20.5 inches.

**Joaquin Leguia** is executive director for Ania-Peru in Lima, an organization he founded. Ania-Peru's mission is to "promote the growth and identity of children in harmony with the conservation of nature."

**Ken Snyder** has left the U.S. Department of Energy after seven years of working on sustainable-energy issues. He has started his own nonprofit, Association for Better Community Design and Decision Making (ABCD2), based in Denver.

**Graham Trelstad**, his wife, Julie, and twin daughters, Eleanor and Elizabeth, recently took a step into the Space Age by leasing a Ford Think electric vehicle. Julie's commute to Hoboken made her eligible for a demonstration program sponsored by the New York Power Authority and the Metropolitan Transportation Authority. The Ford Think is a two-seater made in Norway and marketed in the United States by Ford. It has a maximum speed of 55 mph and a maximum range of 50 miles.

**Ted Wong** is living happily in Philadelphia with his girlfriend, Michelle, and their cat Walrus. He is an assistant professor of biology at Bryn Mawr College.

# ClassNotes

1995

**Class SECRETARIES:**

**Marie J. Gunning**  
mjgunning@aol.com

**Ciara M. O'Connell**  
ciaramoconnell@aol.com

**Nellie Aikenhead** is a project manager with the Trust for Public Land. She manages land protection projects on behalf of communities in the greater Boston area. Recently she worked with **Ken Pruitt '94**, who is the conservation agent in Boxford, Mass. Nellie and her husband, Jim Guion, and their kids, Zachary, 5, and Olivia, 3½, are still living and playing in Arlington, Mass.

According to the grapevine, **Karalyn (Replogle) Colopy** and her husband, Joe, recently had their first child, beautiful Ximena Grace. We hear Mom, Dad and baby are all doing well and living in North Carolina. Congratulations Karalyn and Joe!

**Joanna Grand**, a doctoral student in conservation biology at UMass /Amherst, was named a 2002 Switzer Fellow (see At the School p. 15). She had most recently worked as assistant director of programs for CERC, a multi-institution consortium.

**Donna Stauffer, M.E.S. '94** (who started with the Class of '95) was recently on home leave from USAID's Nepal office and made her way up the Maine coast to visit with **Marie Gunning** and her husband, Mike Murphy. Marie is living happily in the woods in Freeport, Maine, and is busy working on a wide range of sustainability consulting projects with her company, SOLANA Inc. Donna still loves her work in Nepal and is managing many interesting projects in biodiversity conservation, community forestry, sustainable agriculture, democracy and women's empowerment. "I like the fact that I frequently encounter F&ES graduates, both Nepali and American, working here. At the moment **Macol Stewart '96** is here working on an assignment with us in how to best use information and communication technology to accelerate development in remote locations. We expect initially to use this technology to bring health, HIV/AIDS and other information to women in

places so remote that they don't have even basic electricity and telephone lines. Macol is working as an International Women in Development Fellow with USAID, focusing on environment and information technology applications."

**Andy Cooper** married Melissa Weisshaus in October of 2001. The couple lives in Boston while Andy works as a research assistant professor at the University of New Hampshire in Durham. His primary research involves modeling the interactions between wild and escaped cultured Atlantic salmon, though he is also working on other projects investigating the quantitative aspects of fish and wildlife management, population dynamics and behavioral ecology.

**Ragnhildur Sigurdardottir** has founded her own environmental research and consulting company through which she is working on starting a new NGO with professor Kristiina Vogt. She resides in Iceland and recently bought a horse breeding ranch there.

**Austin Troy** and **Saleem Ali '96** are new additions to the teaching faculty at the University of Vermont.

As a focal point for sustainable development in the Swiss State Secretariat for Economic Affairs, **Thomas Knecht** was heavily involved in the preparations for the World Summit on Sustainable Development in which he participated as a member of the Swiss delegation.

Thomas also recently had the opportunity to see **Heinrich Jessen** during his trip to Berne. Heinrich is a senior manager with Jebsen & Jessen in South East Asia. He is currently indirectly involved with the organization's environmental, health and safety programs, and has been supportive of the organization's efforts to get all 33 of their member companies ISO 14001 and OHSAS 18001 certified. Heinrich writes, "For the past three years, we have hired Yale F&ES first-year students for summer internships and are happy to maintain the link with the school. There are currently three F&ESers living in Singapore and we welcome any opportunity to reunite with visiting alums."

1996

**Class SECRETARIES:**

**Kathryn A. Pipkin**  
**Julie A. Rothrock**  
julie.rothrock@amec.com

**John Gunn** has left Hancock Land Company to take on a newly created position as the Northern forest technical coordinator for the SmartWood Certified Forestry Program. He is working on a landscape initiative designed to complement other conservation strategies by filling the protection gaps with well-managed forests. He is pleased to report that the new job did not require a move—he is working out of his home in western Maine.

**Lara Nachiem** is currently planning a conference for Fall 2002 intended to bridge the gap between ecology and theology. The conference is sponsored by the Christian Ecology Group, which Lara founded at her church in 2000.

**Jigme Palden** worked as the park manager of Royal Manas National Park in southern Bhutan until recently, when she was transferred to the NRTI (National Resource Training Institute) to be a lecturer on wildlife.

**Michael Dorsey** visited F&ES in February 2002 to address students and members of the New Haven community on "Hejiras, Rio to Joburg: Sustainability and Justice and Other Malcontents" as part of the course, The Restoration Agenda: Environmental Justice. He is working on his Ph.D. at the University of Michigan School of Natural Resources.

**Rhonda Williams** and family returned from a year in China in June 2002. They are living in Topeka, Kan.

1997

**Class SECRETARY:**

**Paul A. Calzada** pcalz@metro2000.net

**Martin Medina**, director of Ecoparque, was recently selected as a finalist for the Global Development Network Research Medal Award, an award sponsored by the World Bank, UNDP and the United Nations University. Last year he was also a finalist for the international environmental Bremen Partnership Award.

# ClassNotes

**Shigeo Sakai** works for JICA, Japan International Cooperation Agency, in Kota Kinabalu, Sabah, on the management of the Crocker Range Park.

**Hüma Ülgen Söylemez** has moved to Washington, D.C., where her husband Timur will begin his new appointment as a Turkish diplomat.

**Peter Yolles**, who works for the Nature Conservancy's California Water Program, recently organized a fund-raiser and talk for the League of Conservation Voters. Deb Callahan and Michael McCurry were the keynote speakers. **Carolyn Poff '96** and **Erik Wohlgemuth '97** helped organize the event.

## 1998

### CLASS SECRETARIES:

**Claire Corcoran**

[corcoran\\_claire@hotmail.com](mailto:corcoran_claire@hotmail.com)

**Nadine Block** [neblock@pinchot.org](mailto:neblock@pinchot.org)

**Marc Newman** and his wife, Rebecca, welcomed the arrival of their son, Oscar Edwards Newman, on August 21, 2002. The family is living in Miami, where Marc is in architecture school at the University of Miami.

**Claire Corcoran** writes: "My husband, Will Murphy, and I welcomed our first child, Sylvia Ray Murphy, on March 2, 2002. I am still an ecologist for the Massachusetts Natural Heritage and Endangered Species Program, where I work for **Henry Woolsey '81**. We live in Boston and would love to hear from other members of the Class of '98."

**Timo Fritzing** is also in Boston, working as a financial analyst for Hancock Timber. He married Cai Cai Needham on September 7, 2002.

**Joe Taggart '98** was the best man. The couple lives in Cambridge.

## 1999

### CLASS SECRETARIES:

**Jocelyn Forbush** [jforbush@ttor.org](mailto:jforbush@ttor.org)

**Jennifer Garrison**

[jennifermgarrison@yahoo.com](mailto:jennifermgarrison@yahoo.com)

**Christiana Soares**

[christiana@aya.yale.edu](mailto:christiana@aya.yale.edu)

**Bhavna Shamasunder** runs the Environmental Health and Justice Program at

Urban Habitat, a regional environmental justice organization in Oakland, Calif. She recently co-authored the widely publicized analysis of the financial ties between tobacco companies and pharmaceutical companies, an alliance that has compromised the marketing and educational efforts of anti-nicotine addiction drugs. Bhavna was the lead author in the study, which was published in the August 14th issue of the *Journal of the American Medical Association*.

**Christiana (Ferraro) Soares** writes: "I am working for the Connecticut Department of Environmental Protection in the Office of Education and Communication. I hope when people stop by New Haven to visit their alma mater they will give me a call. Also, I have officially changed my name to Christiana Soares. All the alumni publications look great."

**Andy Hiegel** writes: "I just moved to Longview, Wash., and took a job as a silvicultural forester with the Campbell Group ([www.campbellgroup.com](http://www.campbellgroup.com)). It is a TIMO. Both Brenda and I are excited to be back in the PNW."

**Hilary Stevens** is working for the Peace Corps in the Philippines. Her project is about coastal resources management, which involves everything from working in schools to fisheries management and reef and mangrove conservation. She reports that she is having fun and making wonderful friends.

Following two years working with The Natural Step (TNS) in San Francisco as director of educational development, **Peter Price-Thomas** returned home to the U.K. in summer 2001. Continuing his work for TNS (though in far less hospitable climes), he is about to get married to a wonderful woman named Sophy, which he is very happy about indeed! He still knows very little about trees.

**Nancy Fresco** writes: "I am still living in Fairbanks, Alaska, and working for the Northern Alaska Environmental Center, although as of September 1 I will be dropping to half-time employment in order to enter a Ph.D. program at the University of Alaska Fairbanks. I will be part of a new NSF-funded interdisciplinary project, researching land management issues from a biological, economic and sociological

perspective. On June 1 I married Jay Cable, a lifelong Alaska resident who currently programs computers for the Synthetic Aperture Radar facility at the University's Geophysical Institute. We are now working on building our own home on 60 acres of land that we purchased with seven of our friends."

**Kirsten Prettyman Adams** writes: "**Jeff Adams '98** and I are living in Alexandria, Va., where we bought a home. We are enjoying working on the house and raising our puppy, Cooper, an English Springer Spaniel. I am still the science department chair at the National Cathedral School in Washington, D.C.

**Jen Renshaw** is still in Boston working for Industrial Economics. **Elizabeth Bennett** lives in Wellesley, Mass., with her husband, Jon. They purchased a house and she is due in October. She works for Brown Fields Recovery. **Suganthi Simon** is in D.C. She works for the EPA in the policy office."

**Jocelyn Forbush** writes: "Going into my third year working with The Trustees of Reservations in Northampton, Mass., and have recently become the director of their Highland Communities Initiative, which focuses on land conservation in rural western Mass."

**Chris Espy** writes: "I'm continuing to manage the 'Espy Forest' in Alabama—1,500 acres with 17 stands. It's a full-time job and I enjoy it immensely. I am managing per the Yale stands and silviculture courses and find that classroom vs. reality meshes very well in my case. Since graduation I have planted about 200 acres in loblolly, selectively thinned another 200 acres and voluntarily expanded my SMZs (100 acres)."

**Laurel Stegina** writes: "... living in Naugatuck, Conn., and working in Waterbury for the Council of Governments of the Central Naugatuck Valley as a senior planner. The position involves largely transportation planning, but also some land use planning and economic development. Please let my fellow 'clearcutters' know that I've hung up my cleats and am now spending my time on the field as an assistant coach of a girls' (under-8) soccer team."

# ClassNotes

**Lena Brook** has been the Environmental Health Program director at Clean Water Action in San Francisco since March 2000. The focus of her work revolves around implementing the precautionary principle and advancing children's environmental health policy, as well as ensuring clean, safe and affordable drinking water for all Californians. Her professional interests include pollution prevention, environmental justice and community sustainability.

**Emile Jurgens** is currently in his second year at Yale SOM, living on Bishop Street.

## 2000

### CLASS SECRETARIES:

**Zikun Yu** [yuzikun2001@yahoo.com](mailto:yuzikun2001@yahoo.com)

**Erika Schaub** [eschaub@geog.umd.edu](mailto:eschaub@geog.umd.edu)

**Janet Sturgeon** writes: "I am just beginning a two-year postdoc at the Watson Institute for International Studies at Brown University. My position is funded by the Freeman Foundation for teaching on East Asia. I have a joint appointment with the Watson programs in Global Environment and Politics, Identity and Culture.

**Alethea Abuyuan** writes on August 27: "Today is my first day as a Ph.D. student at the University of Southern California. To those not in the know, I moved here late last month, took a two-week trip to the Philippines and now am settled in sunny California. Please email me at [alethea.abuyuan@aya.yale.edu](mailto:alethea.abuyuan@aya.yale.edu). I would love to hear from you."

**Zikun Yu** writes: "I have been working in the testing lab, called MITKEM Corp., in Rhode Island for two years, and finished training in volatile lab, semi-volatile lab, preparation lab, and pesticides lab. Now my title is upgraded from chemist to senior GC chemist. I live in Warwick, R.I."

**Linus** "the kick-boxing baritone biologist" **Chen** works for the U.S. Fish & Wildlife Service (FWS) as its endangered species listing national litigation coordinator. Having just completed his 2000 Presidential Management Intern fellowship, where he worked in the Office of the Assistant Secretary of Fish and Wildlife and Parks, Linus has just been accepted to and will be starting this

fall in the FWS's Stepping-Up to Leadership Program. Linus also teaches kick-boxing at the Washington Sports Clubs and sings in the Choral Arts Society of Washington, D.C., which this past summer toured England and included a concert to open London's "Proms" concert series that was broadcast over BBC.

**Christy Vollbracht** is getting married in October to Jason Merrick and she'll be changing her name (a little regretfully). She hopes all is well in New Haven.

**Julie Stein** is working as a consultant for the Jane Goodall Institute in the capacity of North American conservation advisor to the Institute's Conservation and Community Conflict Study team. She also is the scientific coordinator for the Bushmeat Crisis Task Force.

**Ashley Prout** writes: "After graduation, I worked as the major gifts officer for the Union of Concerned Scientists at their national headquarters in Cambridge. It was a great experience! I am currently in Vermont—soaking up the beauty of the Green Mountain state by hiking every free second I have! I live right on Lake Champlain, overlooking the Adirondacks. Recently, while out to dinner on Church Street in Burlington, I bumped into **Heather McGray!** Great to see her—she loves it up here, too."

**Berry Brosi** is starting a Ph.D. program in conservation biology at Stanford University in September 2002.

**Heidi Clark** is immersed in two major projects in Massachusetts. The first is an independent contract with the Southeastern Massachusetts Aquaculture Society, and the second involves taking care of the National Marine Fisheries Service Aquarium in Woods Hole.

**Olena Maslyukivska** is working as the in-country director for Ukraine with the Children of Chernobyl Relief Fund. She also just began a Ph.D. program in environmental studies at the University of Kiev-Mohyla Academy in Kyiv, Ukraine. In addition to her studies, Olena teaches two graduate school classes, environmental economics and the economics of natural resources. As if that were not enough to keep her busy, she collaborates with Brad Gentry, F&ES director of the Yale-UNDP Collaborative Program

on the Urban Environment, to teach public-private partnerships in conjunction with other universities throughout the world.

**Yuki Matsuoka** is working for Groundwork, Wrexham and Flintshire as a project assistant in North Wales. She writes: "After finishing soil research in organic farms in North England, I have moved to North Wales to work for community regeneration projects. Due to countryside settings here, what I have developed is called 'Local Food for Local People,' starting from community allotments to brainstorming sessions for producers (local farmers). Luckily, we got a grant for a feasibility study, so I will identify if there are enough demand and needs from local people to give a go for this project. The EU is planning to reform Common Agriculture Policy according to the enlargement of the EU in 2004. This will require a fundamental change in each nation's farming policy. I am hoping this will be a good opportunity to let farmers rethink what really matters to them as producers, especially healthy soil management, focusing on sustainable farming techniques from compost making to crop husbandry. It would be great if I can exchange information with someone who is working for a similar project. My e-mail is [yuki.matsuoka@flintshire.gov.uk](mailto:yuki.matsuoka@flintshire.gov.uk)."

**Terry Kellogg** writes: "Living in Newburyport, Mass. Closing in on the two-year mark running environmental affairs for the Timberland Co. Making some progress on projects like solvent minimization, organic cotton, energy management and green building. Expecting our first-born in a couple of weeks."

**Shannon Heyck-Williams** is working on air quality and climate change issues for Senator Jeffords on the Senate Environment and Public Works Committee in Washington, D.C. She and her husband, Jeff, live in Alexandria, Va., with their dog, Maggie.

**Jason Patrick** is a land use analyst with Environmental Defense at its headquarters in New York City.

# ClassNotes

2001

**CLASS SECRETARIES:**

**Adam Chambers**

sebastianchambers@hotmail.com

**Leigh Cash** leighcash@aya.yale.edu

**Jennifer Grimm**

jwgrimm@earthlink.net

Did you see the op-ed by **Ashley Lanfer**, “Urban Places of the Heart,” in the *Boston Globe* on July 14? Ashley manages the Heart of the City Project, an effort of the Rappaport Institute for Greater Boston at Harvard’s Kennedy School of Government and the Arnold Arboretum.

**Leigh Cash** is “happily working at the EPA in Washington, D.C., for the Office of Policy, Economics and Innovation under the Office of the Administrator. My family (husband and two wonderful dogs) and I live in Rockville, Md. My work e-mail is cash.leigh@epa.gov.”

**Chris Nyce** is starting his second year as a Presidential Management Intern at the U.S. Forest Service in Washington, D.C. He is likely to move out to one of the national forests soon to complete his internship.

**Lisa Schulman** is currently working as an environmental engineer at Merck and Company in Rahway, N.J. She recently published her master’s project in coordination with Merck and Yale advisor John Wargo, entitled “A Human Health Risk Assessment of Pharmaceuticals in the Aquatic Environment” in the *Journal of Human and Ecological Risk Assessment*. The manuscript details the presence and potential adverse human health effects of trace levels of pharmaceuticals in aqueous environmental media. Lisa also co-authored a second publication in the same journal entitled “The Importance of Human Data in the Establishment of Occupational Exposure Limits.”

**Chie Nakaniwa** writes: “In June, **Alex Baillie**, **Heather McGray ’00** and I got together in Johannesburg, South Africa. Heather and I came to the ISO TC207 (environmental management) annual assembly. Alex works for IUCN in Pretoria. Alex took us to Melville, which was a very nice area in Jo’burg. How nice to see our classmates! Wherever you go, you are with F&ESers!”

**Alexandra Baillie** writes in August 2002: “I’m in South Africa working for IUCN—The World Conservation Union. I spend most of my time working on an initiative to green the WSSD or ensure that it was hosted in a way that reflected best environmental practice. When the WSSD ended I had time to get out into the African bush and enjoy the wildlife.”

**Heather Cabrera** welcomes hearing from classmates. Contact her by e-mail at heather.cabrera@aya.yale.edu.

**Nick Holland** is the conservation easement stewardship specialist in the Land Protection office of the Massachusetts Audubon Society. Every day is like Terr-Eco!

**Lin Idrus** is currently based in Kuala Lumpur but will be returning to the United States to pursue her Ph.D. in environmental anthropology at Harvard. She will be investigating indigenous land rights and forest management issues.

**Calvin Kiehn** and **Kristen Ohlson** are both working as research consultants with BOLFOR in Bolivia. Calvin and Kristen are also engaged, with the wedding planned for summer of 2003.

**Jennifer Wells** is pursuing a doctoral degree in philosophy at the Sorbonne in Paris. Her focus is complexity theory and methodologies, as well as biotechnology analysis. She is also taking a seminar on sustainable development at Sciences Po University, pursuant to her receipt of the Fox Fellowship. When her studies are not keeping her busy enough, Jennifer helps out at an environmental consulting firm and is involved with a network of Parisian women working in the environmental field.

**Yujun Zhang** is working at the Division of Institutional Coordination and Reform for SEPA in China.

**Kim Ziegelmayr** writes: “I am working with the National Network of Forest Practitioners in Providence. It’s a small nonprofit networking/umbrella organization that works with community forestry issues. The issues are interesting and the people are great! The executive director is **Thomas Brendler ’94**. Whelan and I are doing great. He just turned

one—he’s a good-natured, bright and happy boy. I’m so lucky!” Kim received a proclamation in recognition of her Yale M.E.M. degree from her state representative in her hometown of Smithfield, R.I.

**Michel Woodard** writes: “My biggest news is that I just got married. I married Derek Ohly on August 17 and am now Michel Elizabeth Woodard Ohly. Derek and I just bought a house in Somerville, Mass. I am still working at Industrial Economics Inc. and Derek just quit his job to begin an M.B.A. program at Babson.”

**Peter Hill** is working for the D.C. Watershed Protection Division on stream and wetland restoration projects in the Anacostia River watershed.

**Michael Sterner** writes: “I have been working for Interforest LLC for a year now. This summer we opened an office in Portland, Ore. Also, my wife, Blair, and I just had a baby girl on August 4. msterner@iforest.com.”

**Scott Hedges** writes: “I have joined ‘Breakfast Woodworks’ (www.breakfastwoodworks.com), which is a premier cabinet and architectural millwork shop in Guilford, Conn., as a project manager and cabinet maker. Our clients are generally builders and architects from Boston to N.Y.C. I love working as part of the forest products industry and building trades in this capacity. My wife, Ann, and I are expecting our first child in November and have bought a three-family house across from Lulu’s which we are working on in our spare time.”

2002

**CLASS SECRETARY:**

**Roberto Frau** roberto.frau@yale.edu

**James E. Coleman** was married in Nigeria in January 2002. Then he and his wife departed for Monrovia, Liberia, where James is president of the lead conservation NGO, the Society for the Conservation of Nature of Liberia (SCNL), established in 1986. SCNL focuses on ecosystems and species management as well as conservation awareness and education.



# Five Alumni/ae RECEIVE AWARDS



J. Morgan Grove, M.F.S. '90,  
Ph.D. '96



Mark Duda, M.E.S. '85



Ann Swanson, M.E.S. '83



Philip Conkling, M.F.S. '76



Hurlon Ray, M.F. '49

**J. Morgan Grove '90, Ph.D. '96**, a researcher with the USDA Forest Service's Northeastern Research Station in Burlington, Vt., received the 2001 Presidential Early Career Award for Scientists and Engineers (PECASE) at a White House ceremony on July 12. The PECASE was established in 1996 to honor the nation's most promising young researchers, who receive up to five years of funding from their agencies to continue their work critical to government missions.

Grove is being honored for his work in urban ecological research. He has contributed significantly to the success of the Baltimore Ecosystem Study (BES), obtaining large research grants, producing numerous publications and addressing the needs of the community while conducting high-quality science. The BES is part of the National Science Foundation's Long-Term Ecological Research Network and is one of only two urban sites in the United States. The project examines both the built and natural ecosystems of Baltimore as part of an overall ecological system and seeks to understand how these ecosystems work and how they change over time.

**Mark Damian Duda '85**, CEO and owner of Responsive Management, received the 2002 Ducks Unlimited National Conservation Achievement Award for his research on the human dimensions of the conservation of natural resources and the environment. He writes, "... We essentially have taken (F&ES professors) Steve Kellert's and Bill Burch's teachings ... and developed a private business based on the idea ... that good natural resource and environmental stewardship is based not only on a thorough understanding of the ecological and biological side of things, but also on the people side of things. We have been involved in the human dimension of grizzly bear, gray wolf and Mexican wolf reintroductions, conflicts over roads in the national forests, ballot initiatives and referenda on various natural resource issues and dozens of other environmental issues." Duda's firm has grown to almost 50 employees since he founded it in 1990. They specialize in social science research methods such as opinion and attitude surveys, and focus groups.

**Ann Pesiri Swanson '83** was named the 2001 Conservationist of the Year by the Chesapeake Bay Foundation, the nation's largest regional environmental organization. The award was established in 1980 to recognize superlative service and commitment to the restoration and protection of the Chesapeake Bay. Since 1988 Ann has served as executive director of the Chesapeake Bay Commission. She has galvanized strong citizen support for restoring and protecting the bay and worked with state

and federal governments to coordinate management of bay issues. She also chaired the drafting committee for and was principal author of the 2000 Chesapeake Bay Agreement. She served as the American delegate at the 1998 Conference on Enclosed Coastal Seas in Stockholm. She is now involved in the interstate negotiations regarding conservation of the Chesapeake Bay blue crab.

**Philip Conkling '76**, president and founder of the Island Institute in Rockland, Maine, has been awarded the New England Aquarium's David B. Stone Medal for distinguished service to the environment and community. The award, named in honor of the Aquarium's principal founder, is given biannually and recognizes two outstanding leaders in marine conservation and science throughout the world. Past winners have included the late Jacques Cousteau, Walter Cronkite and filmmaker Sir David Attenborough.

Founded by Conkling in 1983, the Island Institute provides marine science programs, community development and publications that focus on the Gulf of Maine and the communities on the islands of Maine. The institute's fundamental goal is to be a bridge between the users of the Gulf of Maine and the scientific community. Under his leadership, the Island Institute has developed satellite imagery software, called GAIA (Geographic Access Image and Analysis), for education, conservation and natural resource management organizations. It has been used in over 150 Maine classrooms. The Institute recently developed a series of Web-based geographic information tools for fisheries outreach. He has published several books, including *Cape Cod to the Bay of Fundy* and *Environmental Atlas of the Gulf of Maine*, which was recognized by the American Publishers Association with a "Best Book Award" in the Professional and Scholarly Books category.

**Hurlon Ray '49** and his late wife, TyJuana, were honored on June 20 by Saline County, Ark., and the Arkansas State Highway Department. The occasion was the dedication of a granite marker inscribed with the couple's names and citing their many years of community service to the people of Saline County. The monument is designed to be a permanent fixture at the scenic overlook named after them on Arkansas 5, or Old Hot Springs Road. The Arkansas Highway and Transportation Department constructed the overlook, which is one of the most picturesque rural scenes in all of Arkansas, on land donated by the International Paper Company. According to Hurlon, TyJuana, who died two and a half years ago, did most of the work for developing the scenic overlook.

# F&ES Holds First-Ever Alumni/ae Weekend

A tour of Yale-Myers Forest, a seminar on sustainable forestry, a professional roundtable and dinner at Mory's were the highlights of the first-ever alumni/ae weekend for the Yale School of Forestry & Environmental Studies.

The alumni/ae weekend, which was held over three days last May, featured a discussion on "Sustainable Forestry: What is It? How Do We Achieve It?" Over 70 people gathered in Marsh Hall to hear presentations by Chad Oliver, M.F.S. '70, Ph.D. '75, director of Yale's Global Institute for Sustainable Forestry; Jeffery Burley, M.F. '62, Ph.D. '65, director of the Oxford Forestry Institute; and Wangari Maathai, the Dorothy McCluskey Visiting Fellow for Conservation last spring. The presentations were the inaugural event in the Global Institute's "Achieving Sustainable Forestry" seminar series that is continuing this fall.

Also, a guided tour of Yale-Myers Forest was conducted by Mark Ashton, M.F. '85, Ph.D. '90, director of school forests, and David Smith, M.F. '46, Ph.D. '50, Morris K. Jesup Professor Emeritus of Silviculture. A tour of New Haven Water Company lands was led by Tim Hawley, M.F. '77, natural resources manager for the New Haven Regional Water Authority.

The weekend concluded with a roundtable that explored the array of professions served by F&ES, a meeting of the Alumni/ae Association and dinner at Mory's. For more information about the F&ES Alumni/ae Association, call Kathleen Schomaker, director of alumni/ae affairs, 203-432-5108.



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1. Ruth Allen, M.F.S. '72, Ph.D. '77, Jeff Stewart, M.E.S. '97 (center) and Adam Moore, M.F. '95 at a meeting of the F&ES Alumni/ae Association
2. Dorothy McCluskey, M.F.S. '73, and Dean Speth chat during the seminar on sustainable forestry at Marsh Hall. The Dorothy McCluskey Visiting Fellowship in Conservation at F&ES supports senior managers and scientists from the nonprofit environmental community in pursuing academic study or independent research for up to one year.
3. Don McCluskey chats with Wangari Maathai, the Dorothy McCluskey Visiting Fellow for Conservation last spring. Maathai talked about the Green Belt Movement, which she founded in 1977 to conserve the environment and improve the quality of life, especially for women, in Kenya. The movement has led to the creation of over 2,000 green belts and the planting of several million trees.
4. Jeffery Burley, M.F. '62, Ph.D. '65, (left), director of the Oxford Forestry Institute and a presenter at the seminar, with David Smith, M.F. '46, Ph.D. '50, Morris K. Jesup Professor Emeritus of Silviculture
5. Chad Oliver, M.F.S. '70, Ph.D. '75 (left) director of Yale's Global Institute for Sustainable Forestry, co-presented on the evening's theme: "Sustainable Forestry: What is It? How Do We Achieve It?"



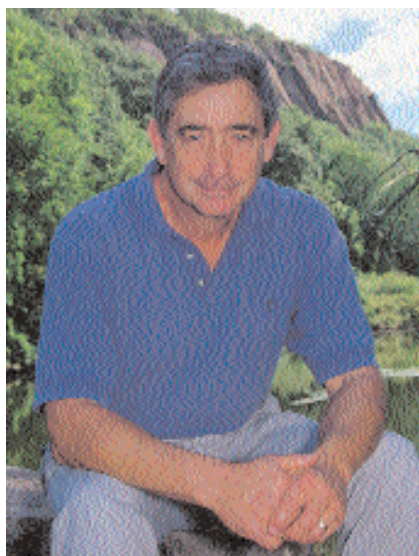
# Children and the City

## New Opportunities for Conservation Biology?

By **Stephen R. Kellert**

Tweedy/Ordway Professor of Social Ecology

**R**achel Carson, confronting her death and wanting to impart her enduring wisdom to young people, wrote a remarkable book at the end of her life, *The Sense of Wonder* (1998). She remarked in this book: “A child’s world is fresh and new and



Stephen Kellert

beautiful, full of wonder and excitement. ... What is the value of preserving and strengthening this sense of awe and wonder, this recognition of something beyond the boundaries of human existence? Is the exploration of the natural world just a pleasant way to pass the golden hours of childhood or is there something deeper? I am sure there is something much deeper, something lasting and significant. ... Those who contemplate the beauty of the earth find

reserves of strength that will endure as long as life lasts.”

Yet the fundamental importance of the health and integrity of natural systems and biodiversity for youth in an increasingly urban world often goes unnoticed and unrecognized. Most urban dwellers, decision makers and developers remain unappreciative of the significance of healthy and diverse natural systems, especially for youth, in the modern city. Few recognize the connection between a city’s natural environment, the quality of human life and long-term prosperity.

This prevailing disconnect is sustained by two widely held assumptions. First, many assume that the modern city is largely devoid of natural diversity, despite the existence of more biological richness in a handful of urban soil than in the rest of the universe as we know it. More seriously, most people believe that urban life and economies have largely transcended their dependence on natural systems for sustaining human lives of meaning and prosperity. Yet, a major recent study examining the link between human and natural systems found this to be otherwise. This study, which I and some colleagues conducted, explored how ecological and social systems shape one another, particularly how the structure and function of natural systems affect human environmental values and socioeconomic behaviors, as well as the reverse. The study area included some 400 square

kilometers, part or all of 22 towns and cities, occupied by some half-million people in the Greater New Haven area.

The area was divided into 18 subwatersheds. In general, we found that the inhabitants of subwatersheds characterized by relative health and integrity (e.g., greater species richness, lower levels of fecal coliform, higher dissolved oxygen) had more positive environmental values (e.g., greater affinity for nature, stewardship) and a higher quality of life (e.g., neighborhood quality, social amenities). By contrast, inhabitants of subwatersheds with impaired environmental conditions reported lower quality of life, less outdoor recreational interest and a greater inclination to dominate and subvert nature. Importantly, this finding held for urban as well as nonurban subwatersheds and was independent of income and education.

These results suggest that the long-term health and vitality of the city depend upon people continuing to experience the natural world in aesthetically attractive, ecologically sound and materially accessible ways. The current lack of meaningful contact with the health and integrity of natural systems and diversity in the modern city constitutes a design deficiency rather than an intrinsic flaw of urban life. Yet effective environmental design will necessitate more than “low-impact” efforts aimed at reducing resource use, increasing energy efficiency or achieving better ways to minimize and avoid waste. And it will mean capturing basic values of nature in the urban environment in ways that enrich the human capacity for physical and mental growth.

We need to recognize that experiential contact with nature has an inherent impact on human physical and mental development and that, even for a creature as capable of lifelong learning as the human animal, the most significant developmental period will always be childhood. Indeed, we are learning that few aspects of life provide young people with as much opportunity for developing critical thinking, creativity, problem solving and other intellectual and emotional skills as interaction with the natural world. As the psychiatrist Harold Searles noted in *The Nonhuman Environment* (1959), “The nonhuman environment, far from being of little or no account to human personality development, constitutes one of the most basically important ingredients of human psychological existence.”

Unfortunately, various dimensions of our contemporary environmental crisis—widespread habitat destruction, species loss, environmental contamination, natural resource depletion—have also resulted in substantially fewer opportunities for urbanites to have contact with high-quality natural environments. Particularly problematic has been the elimination, fragmentation and isolation of pockets of naturalness once characteristic of most neighborhoods and communities. Major shifts in family traditions, recreational activities, social networks and community relations have also eroded traditional opportunities for contact with nature. The result has

been what the conservation biologist Bob Pyle called in *The Thunder Tree: Lessons From an Urban Wildland* (1993) an “extinction of experience,” arguably as serious a consequence of biodiversity loss to human well-being as the more acknowledged declines in resources and ecosystem services. As Pyle remarked: “Direct, personal contact with living things affects us in vital ways. ... One of the greatest causes of the ecological crisis is the state of personal alienation from nature in which many people live. ... The extinction of experience. ... implies a cycle of disaffection that can have disastrous consequences. As cities and metastasizing suburbs forsake their natural diversity, and their citizens grow more removed from personal contact with nature, awareness and appreciation retreat. ... The extinction of experience sucking the life from the land, the intimacy from our connections.”

Scholars like Rachel Carson and Harold Searles realized that a child’s experience of nature exerts a crucial and irreplaceable effect on physical, cognitive and emotional development. Moreover, our research has revealed that these people-nature dependencies remain significant even in a modern urban context. Yet conservation biology has largely focused its attention on conserving relatively pristine areas and mainly articulated biodiversity’s importance in narrow material and resource terms. A challenge for the profession is to recognize and demonstrate the significance of biodiversity to the lives of all humanity, even in urban areas and especially among young people. We need to rediscover that robust natural systems are essential to the health, economy and quality of life of the modern city and provide opportunities for youth to experience a wisdom once recognized by Wallace Stegner in *Wolf Willow* (1962): “There is a time between five and twelve when an impression lasting a few seconds may be imprinted for life. ... Expose a child to a particular [natural] environment at his susceptible time and he will perceive himself in the shapes of this environment until he dies.”

## Students Examine Potential for Industrial Ecology in Puerto Rico



**T**wenty F&ES master’s degree students, led by professor Marian Chertow, visited Puerto Rico last March to explore the potential for transforming the Caribbean Commonwealth into an island of sustainability. Joined by six business and engineering students from the University of Puerto Rico, the students spent a week investigating the potential to increase efficiency, decrease emissions and improve economic performance at six different industrial sites around the island.

The F&ES students, who are taking a class in industrial ecology, are involved in a project called “Puerto Rico: An Island of Sustainability” at the Yale Center for Industrial Ecology. With the valuable advice and sponsorship of Victor Gonzalez, M.E.S. ’77, the project is supported by the Luis Muñoz Marín Foundation, named for the first elected governor of the island and traditionally associated with conservation projects. Further support has come from the Department of Economic Development and the governor’s office in Puerto Rico.

While in Puerto Rico, the students visited numerous industries, including pharmaceutical plants, electronics production facilities, large shipping ports, textile and apparel manufacturers, pineapple plantations and an innovative gas-fired power plant that uses excess steam to desalinate seawater. In the process, government officials, city planners, plant managers, entrepreneurs and developers from all over the island welcomed the students to discuss the potential role of industrial ecology in the future of Puerto Rico.

Industrial ecology is a growing field of study that seeks to understand industry in concert with its natural surroundings, not in isolation from them, with a particular focus on environmental sustainability. The students were especially interested in the potential for industrial symbiosis in Puerto Rico, which advocates turning the waste of one company into the raw materials of another. As an outgrowth of the trip, one student team found the potential for reusing waste heat and desalinated water from power plants in industries surrounding a nearby port.

The work of the industrial ecology class in the spring paved the way for a research program last summer at Yale with support from Puerto Rico’s Banco Popular Foundation. Three students from the University of Puerto Rico joined Weslyne Ashton, M.E.M. ’03, and P.J. Deschenes, M.E.M. ’02, to pursue in greater depth some of the proposals generated by the spring course. Ashton focused on the large pharmaceutical industry of the island and examined the competitive advantages to be realized when similar firms in a cluster work together to solve common resource problems using industrial symbiosis. Deschenes worked with Chertow to consider how industrial symbiosis may be used as a tool for economic development and how this approach may be particularly useful in island settings such as Puerto Rico. The students’ work in Puerto Rico is expected to continue through at least next summer.

*Contributed by P.J. Deschenes*

# Tribute

## REMEMBERING JOY BELSKY '72 (1944-2001)

By David Miller '72

Joy Belsky first blazed a trail across my sky in 1970-72. A 1966 graduate of Smith College in botany, Joy and I first met during Tom Siccama's fieldwork in Patterns and Processes of Terrestrial Ecosystems, probably at the Bethany Bog. She had an impish smile and a twinkle in her eyes, to my "cold-roast Boston" ways engagingly enthusiastic about learning and understanding everything. Her parents must have been psychic in naming their daughter Joy, because she personified it. Ten years older than she, I had been a historian, and this was a new and strange career for me. I was used to the solitary-scholar-in-the-stacks type of research, but I found my new colleagues' emphasis on cooperative planning, teamwork and synthesis of results a better way for learning.

It was an historic time for the School of Forestry (the name was changed to School of Forestry & Environmental Studies in 1972), because Yale College had become coeducational in 1969, undergraduates were taking courses at the school and the school now had many postgraduate women and men with nonforestry, even nonscience, backgrounds. There were "retreads" like me with degrees and early careers in history, music, economics, theology, business, writing and even high fashion, with Gary Taylor '72, former general manager of Bergdorf Goodman on Fifth Avenue in New York City! There were Viet Nam veterans, like John Black, Gary Drobnack and Steve Wells. Many of the faculty seemed suspicious of women there, especially some environmentalists of both genders and their emphasis on healing and saving the environment instead of concentrating on the traditional forest soils, and forest conservation, mensuration, economics and management. Even so, teachers and thinkers like William Burch, D.M. Smith, Herbert Bormann, Tom Siccama and Joe Miller were brimming with ideas.

It was an historic turning point for women and may have been difficult for Joy and her female comrades. They had the intelligence and will to cultivate and establish their professional knowledge and skills. Even with Yale Forestry School credentials, it was another test to gain employment in their chosen fields and overcome the doubts or prejudices of male colleagues and potential employers, reviewers and funders. The school, in fact, led by President Kingman Brewster and Professor William Burch, formed a committee, which included Joy and Ruth Allen '72, Ph.D. '77, that produced a slate of speakers at the School on "Women in Forestry." In 1974, the Yale Forest School Bulletin, number 84,

published 50 pages of the texts of these programs under the title *The Environment for Women Working on Environmental Problems*. Speaker/authors included Jeanne Clare Ridley; Adele H. Goss; Jeanne Randall, (then chief of personnel with the U.S. National Park Service); and Jane Westenberger, then chief of the USFS's Environmental Education Branch. These speakers' statements, experiences and opinions regarding women's place in the emerging environmental workforce may have been a caution as well as a clarion call to Joy and others, but she let nothing hold her back.

Historians are fond of looking for keywords that seem to characterize the spirit of a time, its talk, action, values and priorities. Joy's curriculum vitae is rich in names, concepts, passion, action and commitments reflecting her work in the field: tundra, savanna, grassland and desert; Tsavo, Serengeti and Prudhoe Bay; grazing, fire, competition, disturbance, invasive species, poachers, nutrients and coyotes; research, writing, speaking and advocacy for elimination of cattle and sheep from wildlife refuges.

With the M.F.S. in forest ecology from Yale, Joy plunged into years of



After giving a plenary session talk at a U.N.-sponsored meeting in Harare, Zimbabwe, in 1995, Joy and her husband Bob Amundson flew to Thika, Kenya, to visit former employees who had helped with their research. According to her husband, Joy always said her assistants made her work possible, so she reciprocated with continued contact.

extensive work as a range ecologist and earned a Ph.D. in plant ecology at the University of Washington in 1979. In 1979-84 she was a principal investigator of NSF projects to study the integrated roles of grazing, fire, competition and disturbance and community structure and pattern in the Serengeti National Park. In 1986-89 she was a co-principal investigator with John Duxbury and Robert Amundson at the Boyce Thompson Institute of Cornell University with regard to the dynamics of tropical

savanna, the tree and grass-soil interface. In 1989-94, she was co-principal investigator on an Alaska Science & Technology Foundation grant with Robert Kohut, Robert Amundson and John Laurence, focusing on the environmental impact of oxides of nitrogen on a tundra ecosystem at Prudhoe Bay, Alaska.

Over the years she participated in professional meetings, panels and lectures in Israel, Venezuela, Australia, Scotland, Brazil, Japan and Zimbabwe, as well as at many institutions in the United States. In 1992, her husband, Bob Amundson, and she moved from Cornell to Oregon, and for the next 10 years she immersed herself in every aspect of Oregon's diverse ecosystems and natural and human resources: native plant society; trails; steelheaders; forest strategy; ancient forests; sustaining range ecosystems, possibly with the elimination of domestic cattle and sheep; as well as reviewing grants for NSF, the Smithsonian Institution, the National Geographic Society, the U.S. Department of Agriculture Ecosystem Program and The Nature Conservancy. Joy published in more than 15 scientific journals, such as *Ecology*, *Biotropica*, *Journal of Range Management*, *Conservation Biology*, the *American Journal of Botany* and *American Naturalist*.

Joy's fervent commitment to an equitable environment for women in the field and in academia never flagged. Tired of hearing only from professional panels stacked with white males in her profession, she cooperated with and fought to prove that female professionals deserved positions of authority and prominence. In 1992, when the U.S. Bureau of Land Management rejected Joy for the GS-14 position as "plant ecologist/range scientist to take scientific leadership of a ten-year, seven-state, multi-million dollar research project," she took the dangerous step of publicly contesting the decision. This project's primary goal was to develop techniques to restore 7,000,000 acres of severely overgrazed rangelands managed by BLM in the Great Basin. Secondary goals were to develop

techniques to monitor vegetation, protect rare species and study the effects of global climate change. BLM told Joy that she was one of three on the short list for interviews. To document the process by which BLM appointed a severely less-qualified male candidate, Joy took what she characterized as "the probably career-ending step" of disputing the process and later published a six-page, thoroughly detailed account of the whole matter, naming all who were involved, in *Women in Natural Resources* (Vol. 15, No. 4) titled "Fighting Sexual Discrimination in Hiring by the Federal Government." [I will send copies of it postpaid to readers who request it (hltrust@netfox.net).]

Later, as staff ecologist of the Oregon Natural Desert Association, Joy showed how even good science can be buried if its findings are unwelcome. By this time, perhaps she didn't care if she made more enemies among the management of Hart Mountain National Antelope Range and the U.S. Fish & Wildlife Service, who were intent on eliminating coyotes. Joy pointed out that their own scientific studies showed that fluctuations of prong antelope populations indicated causes such as severe spring snowstorms, low nutritional quality of the range and migration of antelope out of the Hart Mountain Range's territory. [Her published critique in the Klamath Falls, Ore., *Herald & News*, September 27, 1999, is also available from me postpaid.]

In November 2001, Joy became so ill that she had to go to a hospital. Her husband told me that on the morning they went to the hospital, Joy completed 12 pages of single-spaced comments on the proposed management plan of the Oregon Natural Desert Association. She died at home with her family on December 14.

In a letter dated January 1, 2001, after recounting the panoply of work she had been doing for 29 years, Joy had written, "Except for never being able to get a real job, I did very well. I think I was just five to 10 years too early for women to get jobs in ecology."

## Exercising Your Will Power

Thanks to the ongoing generosity of alumni/ae and friends, the tradition of excellence that marked your years at the Yale School of Forestry & Environmental Studies is alive and well. You can help safeguard this tradition by remembering the school in your will or trust. You can create a scholarship, endowed chair or special use fund. Such bequests, small or large, have a powerful impact on the generations of students to come.

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# Obituaries

**Willard S. Bromley, M.F. '39** (1909–2002) came from Philadelphia and was a graduate of Penn State. Prior to WWII he was a CCC supervisor. Later, as forester for the Cleveland Cliffs Iron Company in Upper Michigan, he established one of the earliest uneven-aged management programs. Then he served on the faculty of the University of Michigan and held posts in the U.S. Forest Service and the Ohio Division of Forestry. For 25 years he was on the New York City staff of the American Pulpwood Association, and served as executive vice president. After he retired he was a consultant to forest industries. He died in Springfield, Mass., on April 2. His survivors include Frieda, his wife of 70 years, six children, 19 grandchildren and 25 great-grandchildren.

**John R. McGuire, M.F. '41** (1916–2002) was the 10th chief of the U.S. Forest Service, from 1972 to 1979, and the sixth Yale forester to hold that position. He came from Milwaukee and was a 1939 forestry graduate of the University of Minnesota. During WWII he served in the Western Pacific as a major in the Army Engineer Corps, now the U.S. Army Corps of Engineers. He had a long career in economics research in the USFS, starting with the Northeastern Forest Experiment Station when it was on Prospect Street in New Haven. In 1950 he moved with that station to Upper Darby, Pa., and while there obtained a master's in economics at the University of Pennsylvania. In 1962 he became director of the Pacific Southwest Forest Experiment Station in California. In 1967 he went to Washington as deputy chief. During his tenure there he played a major role in formulation and implementation of the Renewable Resource Planning Act and the National Forest Management Act and in efforts to cool mounting controversy about National Forest management. He received the President's Award for Distinguished Federal Service. He died in Gaithersburg, Md., on April 6. Survivors include his wife, Marjory, and daughter, Joan. Memorial contributions may be made to the National Museum of Forest Service History, P.O. Box 2772, Missoula, Mont.

**Howard F. Tyler, M.F. '41** (1915–2001) spent most of his life in the Rochester, N.Y., area, where he had a long career as a production manager in manufacturing radio and TV cabinets for the Stromberg Carlson Co. He was a 1940 forestry graduate of the University of New Hampshire. He went from Yale into the Army and served in the infantry in Europe, where he received the Bronze Star decoration. He resided at Keuka Lake, N.Y., when he died on July 24, 2001. His survivors include Edna, his wife of 56 years, a son and a daughter.

**Michael M. Pochan, M.F. '46** (1915–2002) came from Pennsylvania, was a 1936 forestry graduate of Penn State and first worked for Weyerhaeuser in the Northwest. Then he came to New England with the USFS Timber Salvage Administration after the 1938 hurricane. For a couple of years he was with the Otsego Forest Cooperative in upstate New York. During WWII he served in Europe with the Army Engineers, rising from the ranks to become a captain. He and his wife, Nancy, then an Army nurse, were married in the Normandy beachhead soon after D-Day. He helped

build a key bridge across the Rhine during the final push into Germany. After the war they came to Connecticut, where he got his M.F. in 1946 and also organized and managed the Connwood cooperative. In 1962 he joined the state forestry organization as a regional forester. After retiring he remained very active in the state Christmas Tree Growers Association, the Connecticut Forest and Park Association and land conservation in the Town of Guilford. Among many other good works he played a key role in restoring the rural Episcopal Church in North Guilford to vigorous health. He died on February 21, the day after his 87th birthday. His wife, Nancy, three daughters and four grandchildren survive him. Part of the Cockaponset State Forest in Guilford is named the "Mike Pochan Block."

**Arthur F. Muschler, M.F. '48** (1922–2002) came from Aurora, Ill., and was a 1947 forestry graduate of Michigan State. During WWII he was an officer in the 10th Mountain Division and received the Bronze Star twice for heroic service in the Italian Apennines. After he finished his Yale M.F. in wood technology he studied at the Swiss Technological Institute in Zurich and then at the University of Michigan. In 1950 he returned to Yale to participate in research on the properties of tropical American woods. In 1953 he started a long career in Chicago with the Edward Hines Lumber Company. First he was technical director for mills in Oregon and Arkansas, and later he was head of research and product development. In 1961–62 he was president of the Society of Wood Science and Technology, and in 1966–67 he was president of the Forest Products Research Society. He retired in 1986 and soon became president of the Association of the 10th Mountain Division. In the early 1990s he was also head of the International Association of Mountain Soldiers, an organization devoted to peace and reconciliation among former enemies. He was active in civic affairs in the Chicago area and resided in Oak Park. He died on April 16. Audrey, his wife of five decades, three sons and six grandchildren survive him.

**John E. Lutz, M.F. '49** (1920–2000) grew up in the Pittsburgh, Pa., area and was a 1942 Penn State graduate. During WWII he was a Navy blimp pilot. After that he and his wife, Josephine, worked for two years for the Firestone Rubber Co. in Liberia, he as a plantation manager and she as a hospital supervisor. After his time at Yale he did research on veneer and plywood technology at the U.S. Forest Products Laboratory for 27 years. After he retired in 1976 he devoted much of his time to hiking and exploration of wild areas in North America. He died in Madison, Wis., on July 27, 2000. His wife, six children and four grandchildren survive him.

**Robert T. Adams, M.F. '50** (1920–2001) came from New Jersey and served in the Marines during WWII. Then he studied forestry at the University of Maine before attending Yale. For several years he was in Montana as a biologist for the U.S. Fish and Wildlife Service, then as timber management forester for BLM. In 1955 he returned to New Jersey and its Department of Fish and Game and soon became editor of its publication *New Jersey Outdoors*. When he retired he moved to Santa Fe, N.M., and later to Port Charlotte, Fla., where he died on September 10, 2001. His survivors



# Obituaries

include his wife of 58 years, Margaret, as well as a son Robert and a daughter Diane.

**Eugene V. Zumwalt Ph.D. '51** (1912-2001) died in San Diego on December 19, 2001. He served on the faculty of the School just after WWII and had a major role in rebuilding its educational program. He grew up in San Diego and developed a boyhood interest in forestry from vacations spent at the nearby Cleveland National Forest. He graduated from the New York State Ranger School in 1930 and at the age of 18 started work for the USFS. He received a B.S.F. from the University of California in 1934 and was assigned to the USFS research branch. In 1936 he joined the faculty of the University of Washington, where he also obtained an M.F. degree in 1938. In 1942 he became a naval officer and served to the rank of lieutenant commander. His last assignment was as the senior forestry official of the Military Government of Japan, with responsibilities for restoring the forest industry. He joined the Yale forestry faculty in 1946, overseeing the reopening of the summer camp at Great Mountain Forest that year. He taught economics, policy, photogrammetry and mensuration. In 1953 he became assistant regional forester for the U.S. Bureau of Land Management in Alaska. In 1961 he went to Washington as chief of the BLM Forestry Division and later became assistant director for resources at the bureau. He retired to San Diego in 1975. Among his survivors are Clarissa, his wife of 67 years, a son Robert, a daughter Susan, five grandchildren and two great-grandchildren.

**Albert J. Boris, M.F. '52** (1927-2001) came from Worcester, Mass., and earned a forestry degree from the University of Massachusetts in 1951. From 1952 to 1957 he was a forester for the USFS in Idaho, the New England Forestry Foundation in Massachusetts and the Sable Mountain Corporation in Vermont. For the next 20 years he was with Timber Products Co. in Medford, Ore., becoming chief forester in 1970. In 1977 he moved to Hi-Ridge Lumber Co. in Yreka, Calif. He died on July 2, 2001, in California.

**Joseph L. Mennill, M.F. '52** (1916-2001) came from Ontario and graduated in forestry from the University of Ontario in 1948. He was a forester for the provincial Department of Lands and Forests and in 1954 became director of the Ontario Forest Ranger School. From 1962 to his retirement in 1977 he was director of the Ontario Police College. After that he devoted his efforts to his 330-acre tree farm in Aylmer, Ontario. He died on December 12, 2001.

**Donald A. Watson, M.F. '55** died on December 7, 2001. He resided in Springfield, Mass., for some years and received his bachelor's degree from Yale in 1951, but we have no further information.

**Schuyler Hollingsworth, M.F. '55** (1918-2000) was a 1940 Harvard graduate. When he came to Yale he was already a graduate of Harvard Law School and a practicing lawyer. After 1955 he ran the Annett Co. in Jaffrey, N.H., a lumber and box manufacturing concern, and had a

tree farm in the Monadnock Region of New Hampshire. Later he was executive director of the Harvard College Alumni Fund and then the recording secretary of Harvard. In 1979 he was an officer of the Hollingsworth & Voss Manufacturing Company. He died in August 2000 at the age of 81.

**Clare B. Mitchell, M.F. '58** (1929-2001) came from New Hampshire and was a 1952 forestry graduate of the state university. For more than 20 years he was an engineer and sales manager in the forest products industry in New England, Virginia and Ohio. In 1978 he became a forest products utilization and marketing specialist with the USFS at the Intermountain Region's State and Private Forestry branch in Ogden. He was a wood technologist and an avid skier and hiker. He died in Ogden, Utah, on October 7, 2001. His survivors include his wife, Esther, two sons and two grandsons.

**Dale S. Solomon, M.F. '62** (1939-2002) was a New Jersey native and Penn State forestry graduate. He had a 40-year career in USFS research in Maine, mostly as project leader for spruce-fir management at the Northeastern Research Station. He received a Ph.D. from the University of Maine and, as adjunct professor, organized its Forest Management Research Cooperative. In recognition of these efforts he was recently elected a Fellow of the Society of American Foresters. He died in Bangor, Maine, on March 14. His survivors include his wife, Carol, three sons and one grandson.

**Glenn F. Standley, M.F. '64** (1940-2000) came from Southern California and was a 1963 graduate of the University of California. After Yale he was in the U.S. Navy for some years and then lived in Stockton, Calif. He died on November 1, 2000.

**Ephraim E. Enabor, M.F.S. '68**, known as Ephraim Omonkhegbele when at Yale, died on March 16, 2002. He came from midwestern Nigeria. For many years he taught forest management on the Faculty of Forestry at the University of Ibadan in Nigeria.

**Joy Belsky, M.F.S. '72** (1944-2001) (See article by David Miller '72 p. 60).

**Timothy D. Buckelew, M.F.S. '72** (1937-2002) was soon to be remarried when he died at Norton, Mass., on January 11 at the age of 64. He came from New Jersey and attended Brown University. Then he worked for the Army Engineer Corps (now the U.S. Army Corps of Engineers), helping design and implement satellite technology for assessing river flooding. In 1969 he took time off from that to get a B.A. from the University of Maine and an M.F.S. from Yale. After 1980 he became a senior hydrologist for the National Weather Service flood forecast center in Taunton, Mass. In 2001 he received the Bronze Medal award of the Department of Commerce for scientific ingenuity. He is survived by his fiancée, Anna Kelley, two children and four grandchildren.

# Commentary

## Rio Earth Summit Anniversary



Kathleen McAfee

### No Ecology Without Equity, No Equity Without Ecology

By Kathleen McAfee

Assistant Professor of Geography and Sustainable Development

The Earth Summit 10th Anniversary Conference in Johannesburg, South Africa, at summer's end was attended by 65,000 people, surely an indication that environmentalism is an enormous world concern. Nevertheless, most assessments of the global environmental record in the decade since the first Earth Summit are gloomy. As Dean Speth recently wrote in *Foreign Policy*, deforestation and species loss have accelerated, irreplaceable ecosystems are being destroyed more rapidly than ever, genetic resources vital for farming and medicine are disappearing, toxic pollution has increased and the planet is heating up dangerously fast.

Our own government has followed a policy of distance, denial and delay. The United States is nearly alone among the world's states in refusing to join the international Convention on Biological Diversity, launched at the 1992 summit. Our country has failed to support the summit's other major treaty, the Convention on Climate Change, and has led the resistance by the world's wealthy nations to meeting their summit promises of substantial new environmental aid to the developing world. But rich countries do not bear all the blame: governments of many poor and middle-income nations have done as much to evade as to fulfill the commitments they made in 1992. Why?

The 1992 Earth Summit was based on a fragile alliance between defenders of the "natural" (conservation) and advocates of the "social" (equitable development). Efforts to implement the summit accords have been weakened by a near-fatal flaw: the treatment of ecological sustainability and economic development as conflicting goals. While alluding piously to the concept of "sustainable development" that is meant to unify these two objectives, many governments of the global North (the industrialized nations) and South (most of Asia, Latin America and Africa) have hinted to their citizens that compliance with the Rio Conventions on biodiversity and global warming will require great sacrifices in their quality of life.

The notion that there is a choice between environment and development has allowed governments to get away with anti-environmental policies, from mere avoidance to state-supported ecocide. Revenues and patronage from devastating mining and logging activities—from the tropical belt to Siberia to the United States and the Canadian West—have enriched those who are well-connected locally and have suited perfectly the interests of transnational corporations. Some business leaders are making sincere efforts toward greening their operations, but in the absence of strong state and citizen vigilance and full-resource-pricing policies, the best short-term bottom line for most corporations still results from grabbing resources quickly and cheaply, letting nature and future generations pay the real price.

A further challenge in implementing the Earth Summit accords is that some of their most important goals may be thwarted by liberalized trade and the World Trade Organization. WTO rules restrict the rights of countries and communities to regulate private investors, leaving them with little control over how, and for whose benefit, their land, water and labor will be used and cared for. Some governments are already using fear of WTO-backed sanctions as an excuse for watering down their Earth Summit commitments.

A view of  
environmentalism  
from the  
grassroots offers  
tremendous  
reason for hope.

The irony in all this—but also a cause for real optimism—is that a livable environment and sound, socially just development, far from being a trade-off, are profoundly inseparable. In the North, this is already obvious. We have experienced decades of impressive but *unsustainable* development in which the costs and damages of the ways we produce our surfeit of goods are shunted away from the producers—through smokestacks, waste dumps and tax write-offs—and onto the natural environment and the public purse. We suffer the consequences daily in the form of choking traffic, sterile landscapes, serious public health problems and a deep unease caused by our loss of connection to the land and living nature.

It is dawning on world leaders and ordinary people that this model of fossil fuel-driven industrialization, growth at all costs and profit by any means is not replicable by the entire world: material resources are too few and there is no place left to export the system's massive wastes. More importantly, growing numbers of people believe that pursuit of this model, with its dangers of social polarization and irreversible ecological loss, is also not desirable.

There is, therefore, growing interest in “alternative developments”: models of production, consumption and social relations that are resource-light, energy-efficient and equitable. This new approach was sidelined in the official Johannesburg Summit. Instead, despairing of their ability to make governments keep their promises, U.N. officials fell back on a weaker substitute: voluntary partnering with business by government, U.N. agencies and nongovernmental organizations (NGOs). But the theme of development alternatives based on ecological principles and partnerships among equals was predominant at the NGO “side events” surrounding the conference. As any summit veteran can testify, it is at these side venues that coming trends take shape.

An inspiring example, well represented in Johannesburg, is the international movement for food sovereignty and agroecology. Made up of farmers, fishers and rural laborers from six continents, the movement's goal is basic food self-reliance based on sound environmental practices that combine the best of the traditional and the modern. Their proposals are practical because they are drawn from the actual experiences of rural and coastal communities. At regional and international workshops, their representatives share information about successes and obstacles in increasing food production while conserving biological and cultural diversity. They have built alliances with organizations of indigenous peoples and women in developing countries who also see their survival as linked to the fate of the environment.

This movement welcomes “globalization” in the sense of a lively exchange of goods and ideas among communities worldwide. However, its members are strongly opposed to global “free-trade” rules that would require countries to open their doors to investors of all sorts, regardless

of the social impacts and ecological costs of their activities, and to least-cost exporters of food. Transnational agribusinesses have been flooding world markets with a surplus of “cheap” foods that are really costly when taxpayer subsidies, energy use, polluting wastes and the ruin of small farmers are taken into account. Many of these companies are expanding their industrialized farm operations into the global South, displacing traditional food varieties and introducing the same model of high-chemical-consumption farming that has done so much damage in the North.

The specific alternatives posed by the food sovereignty movement are as diverse as the communities they represent. Indeed, a guiding principle is that sustainable food systems work only when they are adapted to the unique biophysical and cultural setting of each producing community. A second key principle is that of the right to food, best achieved by ensuring that family farmers have access to land, water and other food-producing resources and that farm and fishing laborers are guaranteed fair wages and safe surroundings. A third principle is that governments should not be declared obsolete in favor of unfettered “market forces”; rather, governments must be held ecologically accountable for the activities they pursue or permit.

For these movements, there is no question of environment vs. development. Sustainable development depends directly upon the ecological integrity of land; lakes, rivers, and watersheds; forests; and vital coastal and marine zones. It also depends on the social well-being and empowerment of the communities that rely upon those environments and have a direct interest in their preservation. “No ecology without equity, no equity without ecology,” these grass-roots-based alliances say. Many conservationists in the North and South alike have also come to understand that precious ecosystems will not be spared unless livelihoods are ensured and local people have both a reason and the ability to act as environmental guardians.

Alliances of grass-roots movements have already done much to mold the flesh of firm commitments onto the bones of Earth Summit treaty language that calls for “fair” benefit sharing, “prior informed consent” of local people as a condition of access to resources, and protection of the “lifestyles relevant to biodiversity” of local communities. The linked principles of equity and ecology that guide these movements must now be translated into action at the national and global levels.

Because most governments, international agencies such as the World Bank and some divisions of the United Nations have yet to incorporate this linkage into their policies, the most promising developments since Rio are not yet visible at the level of high officialdom and multilateral meetings. A very different perspective—a view of environmentalism from the grass-roots—offers tremendous reason for hope.