

Fall 2004

THE JOURNAL OF THE School of Forestry & Environmental Studies

Environment Yale

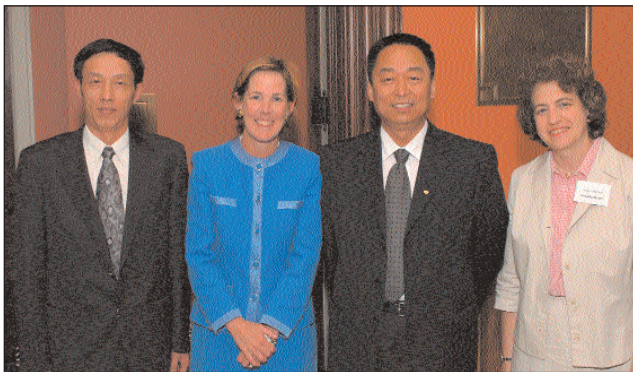


Foreign Invaders Threatening Global Biodiversity And The Public Hasn't Noticed—*Yet*

Inside: *Greenspace Program Reshaping the Urban Environment*, page 12

CHINESE ENVIRONMENTAL OFFICIALS PARTICIPATE IN EXECUTIVE PROGRAM

See At the School page 28



Clockwise, from the top:

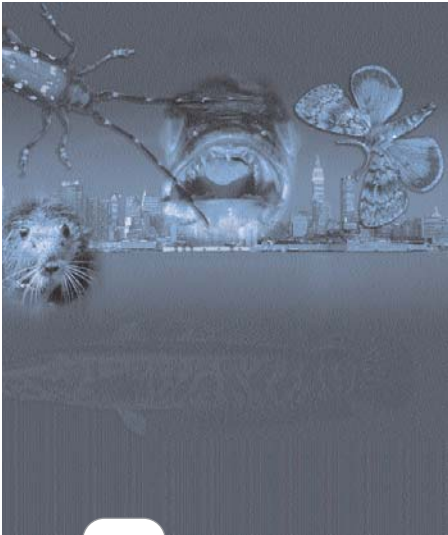
Officials of China's State Environmental Protection Administration gathered outside Betts House with Marian Chertow, Ph.D. '00 (seventh from right), director of the Industrial Environmental Management Program; Jane Coppock (third from right), assistant dean; and Gretchen Rings (far left), coordinator of the Center for Industrial Ecology.

Members of the delegation during classroom instruction at Bowers Auditorium, Sage Hall. In the foreground, Zaiming Li of the Environmental Protection Bureau (EPB) of Fu Jian Province and Weixiang Li of the EPB of Hei Long Jiang Province.

Left to right, Jian Zhou, director-general of China's State Environmental Protection Administration's (SEPA) Department of Planning and Finance; Linda Koch Lorimer, vice president and secretary of Yale University; Jianxin Li, director-general of SEPA's Department of Institutional Affairs and Human Resources, and head of the delegation; and Marian Chertow at a university reception with Yale colleagues and invited guests, hosted by Lorimer at Betts House.

Facing Camera, left to right, Chaofei Yang, director-general of SEPA's Department of Policies, Laws and Regulations; Deputy Dean Alan Brewster; Yujun Zhang '01, a translator for the delegation; and Daniel Esty, director of the Yale Center for Environmental Law and Policy, sharing a toast with members of the SEPA delegation at the farewell dinner at the Yale Graduate Club.

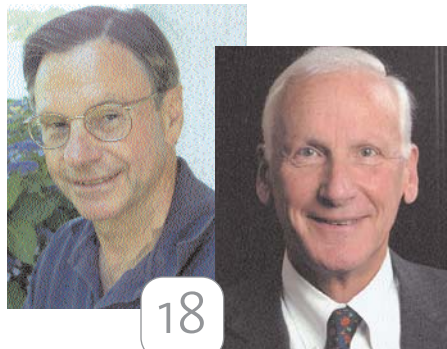
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Environment: Yale
The Journal of the School of
Forestry & Environmental Studies
Fall 2004 • Vol. 3, No. 2

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Environment: Yale is published twice a year
(Spring and Fall) by the Yale School of Forestry
& Environmental Studies. Editorial offices
are located at 205 Prospect Street,
New Haven, CT 06511.

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Dean James Gustave Speth

On September 22, as Florida prepared for an unprecedented fourth hurricane of the season, Senator John McCain used the occasion of Congressional hearings on oceans policy to stress that more frequent hurricanes were a likely consequence of global warming and to excoriate the Bush administration for failing to support the climate change legislation he and Joseph Lieberman had introduced.

The McCain-Lieberman bill is modest by international standards, seeking only to cut U.S. greenhouse gas emissions to 2000 levels by 2010, but it is the best hope of getting the United States to rejoin the international community on this crucial issue. The bill garnered 43 votes in the Senate a year ago, and Mr. McCain and Mr. Lieberman are determined to keep raising the issue.

New support will be needed if this legislation is to pass in Congress. This support should come from corporate America. The business community should also be pressing the administration and Congress for the United States to rejoin the climate treaty process—a goal made even more pressing by the Russian government's approval of the Kyoto Protocol.

When Ronald Reagan famously said that “government isn't the solution to our problems; government is the problem,” many in business cheered. But what if business is shackled by forces far more powerful than government and needs government to free it to do the job it increasingly knows must be done? Business leaders know they are trapped by the imperatives of market competition, consumer preferences, investor behavior and other factors. These imperatives often preclude attractive options. When the gap between the required answer and the right answer gets too wide, government action becomes essential.

We now have such a gap with regard to the challenges of the global environment. If governments do not get their act together soon on global warming, the extraordinary economic machine we have created is going to wreak such havoc on the Earth's systems, both natural and

social, that today's disruptions by terrorists will look like child's play. The result will not be good for business or the rest of us. Business needs government action now.

We have already increased the carbon dioxide concentration of Earth's atmosphere by a third and begun the process of warming the planet; we have depleted the Earth's ozone shield without knowing it; and we are destroying tropical forests at a rate of an acre a second. We have spread persistent toxins to the far corner of the globe and into each and every one of us. Whether we like it or not, we are at the planetary controls.

Companies are responsible for a huge share of the appalling environmental deterioration now under way. But on the other hand, companies are the only actors that have sufficient control of technology, access to capital and managerial discipline to provide the transition to sustainability. They now need to fulfill their ethical responsibility and collaborate with government and citizens to adopt far-reaching measures to tackle these environmental challenges.

First, companies must rethink who their friends and enemies are. More than Greenpeace and the anti-globalization activists, business should worry about two true impediments. One is what has been called market fundamentalism. This strange religion worships the unfettered market and seeks to “starve the beast” of government; but in the end, as Benjamin Barber, the political analyst, has noted, it “robs us of the civic freedom by which we control the social consequences of our private choices.” It leaves business ensnared in the old imperatives, with no possibility of reaching a higher level of corporate citizenship in partnership with government and civil society.

The other impediment is less obvious but more prevalent in enlightened corporate circles. Progressive corporate leaders often say they do not want government action “at this time” because they want their companies to be first to stake out a claim on the future and establish a competitive advantage.

Such thinking would not be dangerous if we still had the luxury of time, but we do not. There is only so far companies can go on their own, and it is not far enough.

The high point of the 2002 World Summit on Sustainable Development in Johannesburg was a press conference convened by the World Business Council for Sustainable Development and Greenpeace. They came together to call upon governments to provide the framework for companies and nongovernmental organizations to promote sustainability.

The message of that remarkable moment was that government action is needed to transcend the old imperatives that hold companies back. Vigorous business support for the McCain-Lieberman bill would be another step in the right direction.

This article first appeared in the Financial Times



Foreign Invaders Threatening Global Biodiversity And The Public Hasn't Noticed—*Yet*

By Marc Wortman

By the late fall of 1804, Meriwether Lewis and William Clark's expedition through the Northwest had reached two large Mandan native villages 60 miles north of present-day Bismarck, N.D., along the Upper Missouri River banks. The explorers wintered over there, living and hunting alongside their hospitable neighbors. (It was there that Lewis and Clark met Sakakawea, the Indian woman who would be essential to the success of the expedition.) With the spring thaw, Lewis and Clark continued on in their epochal quest. Three decades later, trade thrived along the routes mapped by the expedition.

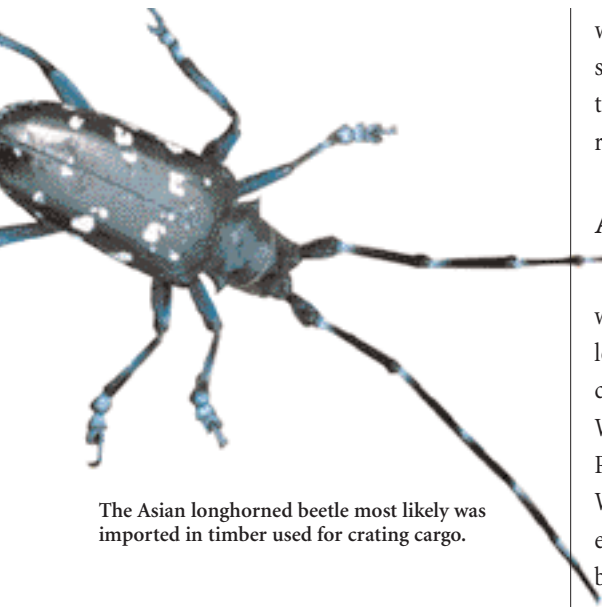
In June 1837, a steamboat, the *St. Peter*, carrying fur traders moored next to the same villages. Together with goods for trade, a few passengers also brought the smallpox virus with them. With little immunity among the natives, the virulent disease flashed through the Mandan settlements. Only 31 of the 1,600 tribe members survived the epidemic. Soon other native tribes living along the Upper Missouri River and the neighboring plains of Canada fell to the pandemic. Before it burned itself out, most natives in the region, as many as 150,000 people, were dead.

Two centuries later, that process ending in disaster now seems all too familiar. A pathway established by human migration and trade led unintentionally to the introduction of a nonnative species, with catastrophic consequences to an existing ecosystem. Today, however, invasive species—not just pathogens but insects and plants that cause harm in a new

environment—can move farther and faster than ever before, traveling around the planet at the speed of an airplane or cargo ship. Within a month after the Severe Acute Respiratory Syndrome (SARS) coronavirus first emerged in southern China in November 2002, cases popped up in other Southeast Asian countries. Another month later, SARS began to show up in Europe, the United States and Canada—two dozen countries in all—eventually totaling some 8,000 cases worldwide, resulting in around 800 deaths. Fear that SARS might cause a worldwide epidemic virtually shut down global travel and drastically curtailed commerce.

According to the International Air Transport Association, SARS caused more damage to the global airline industry than the September 11 terrorist attacks and the war in Iraq combined. Some experts contend that a few additional safeguards might have averted what became a

Foreign Invaders Threatening Global Biodiversity



The Asian longhorned beetle most likely was imported in timber used for crating cargo.

“Invasive species is
the overlooked big
issue in biodiversity.”
Thomas Lovejoy

worldwide health and transportation crisis with devastating economic consequences. Without those safeguards, they believe we should expect similar disasters to occur in the near future. Others say that the arrival of foreign species bringing harm to new locations around the globe has already reached devastating proportions, but the public has not perceived the damage they are causing. Yet.

A Sixth Extinction?

The spread of nonnative species, such as viruses, along human pathways into new environments where they cause serious harm to existing ecosystems has begun to attract increasing attention, at least among ecologists and the industries directly affected by the damage so-called invasive species cause. For instance, the American Institute of Biological Sciences (AIBS) annual meeting, held in Washington, D.C., last March, focused on the issue. In his address to the gathering, Thomas Lovejoy, Ph.D. '71, president of The H. John Heinz III Center for Science, Economics and the Environment, a Washington, D.C., organization focused on improving the scientific and economic foundation for environmental policy, pointed to a potential mass extinction of species worldwide that he believes is being hastened by the spread of invasive species.

Paleontologists have identified five previous, sudden mass species extinctions shown by fossil records to have occurred over the last 500 million years. All are believed due to natural cataclysms—the most recent and famous being the disappearance of the dinosaurs at the end of the Cretaceous period some 65 million years ago. In 1993, Harvard biologist E.O. Wilson estimated that Earth was losing something on the order of 30,000 species per year—about three species per hour. Lovejoy said, “I think we can state with fair authority that we are in the very first stages of what could be, but doesn't have to be, the sixth great extinction in the history of life on Earth. And the cause of this is just a single species.” Unlike past extinctions, virtually all of the current loss of species can be traced to human actions, including the intentional and unintentional introduction of alien species into new environments where they kill off native species or otherwise compete with them for survival.

Next to habitat loss, Lovejoy told the gathering, invasive species present the greatest threat to global biodiversity. Yet few people outside the environmental community have much awareness of the destruction they cause. “Invasive species is *the* overlooked big issue in biodiversity,” he says. “It happens so easily with global trade. The challenge is you read about one species being a problem and never put it into a larger context. People don't understand it's going on all the time.”

A Broadening Invasion

Microbes directly and critically affecting human health draw the most public attention and concern, but the arrival of exotic species can take many forms with many different consequences. Humans have introduced alien species into new homes for as long as they have migrated, essentially throughout their existence. However, the speed and extent of that movement have never been greater, and as a result, the number and speed of new species arriving around the world have also never been greater.

Sometimes the consequences have proven immediately catastrophic, such as happened with SARS and foot-and-mouth disease, an exotic virus species which wiped out the \$30 billion British cattle industry. Far more often, as has happened with the recent spread of the various wood-boring insects in the United States, such as the Asian longhorned beetle (*Anoplophora glabripennis*) and the emerald ash borer (*Agrilus planipennis*), both likely imported in timber used for crating cargo, the effects—in their case, fatal damage to trees—may not be as readily apparent to the general public but can have just as drastic an impact over time. These beetles have the potential to cause heavy

mortality in host species. The emerald ash borer has killed thousands of trees in southern Michigan, adjacent Windsor, Canada, and locations in Ohio and Indiana. The Asian longhorned beetle, which exists primarily in New York City and Chicago, and in parts of New Jersey and Toronto, has the potential to wreak havoc nationwide, affecting such industries as lumber, maple syrup, nursery, commercial fruit and tourism, as well as depriving New Englanders of the sight of the maples' vivid autumn red and orange leaves.

Not all alien species bring harm to their new homes. Very often, humans deliberately introduce alien species for their beneficial properties. Life would be much poorer in America without tomatoes, honeybees, dogs, horses, peaches and apples, as well as ornamental flowers, trees and shrubs of all sorts, to name just a few of the more than 50,000 nonnative species that have become established in this country. Introduced species such as soybeans, wheat, rice and other food crops, cattle, poultry and other livestock now provide more than 98 percent of the food consumed in the United States.

Less often, however, humans introduce alien species, whether on purpose or by accident, which lead to unexpectedly harmful consequences. Although only an estimated 1 percent of exotic species, about 500, have caused known harm, some have arrived and spread with obvious destruction. For instance, kudzu (*Pueraria montana* var. *lobata*), zebra mussels (*Dreissena polymorpha*) and gypsy moth caterpillars (*Lymantria dispar*) have become notorious by virtue of their great destructiveness. Kudzu was introduced to the United States in 1876 at the Centennial Exposition in Philadelphia, Penn., in a Japanese government garden exhibit. Enticed by kudzu's large leaves and sweet-smelling blooms, American gardeners soon began planting it. The climate of the southeastern United States proved ideal for the woody, climbing vine, which can grow as much as 60 feet in a year, spreading over and smothering entire forests, snapping trees under its weight. Resistant to most herbicides and difficult to pull, kudzu now cloaks more than 7 million acres in the South. With foresters, farmers, power companies and departments of transportation having to deal with the vine, a congressional office in 1993 estimated control costs at more than \$50 million per year.

Native to the Caspian and Black seas, the zebra mussel has spread throughout the eastern United States and Canadian waterways since its 1988 arrival in ship ballast water discharged into Lake St. Clair, which connects two of the Great Lakes—Huron and Erie. Once established, the tiny, striped bivalve quickly out-competes native zooplankton for phytoplankton, disrupting food webs and seriously depleting lakes and rivers of aquatic life. Its sharp edges also render beaches unusable, and the rapid buildup of mussels can block water intake pipes, causing damage to hydropower and freshwater sources and boat engines. Zebra mussel control now costs as much as \$1 billion annually.

The gypsy moth was originally introduced into Medford, Mass., in 1869 by an amateur botanist who hoped to develop a disease-resistant strain of silkworm for the commercial silk industry. Several caterpillars escaped, and difficult to destroy, they slowly spread across temperate

forests; today they defoliate millions of acres of trees annually. Over the past 20 years, gypsy moths have destroyed more than \$20 million worth of trees. That is just a drop in the bucket relative to the multibillion-dollar total cost of the damage caused by nonnative insect pests (40 percent of all insect pests) in this country.

A Growing Web of Invaders

The federal government defines invasive species as “nonnative animals, plants or diseases that become established where they did not previously occur, causing harm to the environment and the economy, as well as animal and human health.” An expert on invasive species, Laura Meyerson, D.F.E.S. '00, works as a staff scientist for the environmental reporting program of the Heinz Center. She says that when it comes to alien species, “what we really care about is impact.”

With the increase and globalization of trade, many more alien species are now arriving in new homes. Rarely, however, are consequences considered—or even calculable—when an alien species first gets introduced into a new ecosystem. By the time they are, it can be too late. Like natural time bombs, many as-yet-unknown invasive species arrive virtually every day in the United States through the growing web of international commerce. “The threat from invasive species due to increases in global trade is growing, and it is not going to go away,” says James Lyons '79, a lecturer and research scholar at F&ES and a United States Department of Agriculture (USDA) undersecretary during the Clinton administration.

As the Agriculture undersecretary responsible for natural resources and environment, Lyons participated in a symposium held at F&ES on invasive alien species in May 1998. Organized by Meyerson, then a doctoral student, and then-Dean John Gordon, an early advocate for more attention to the issue, that forum marked the public policy beginnings of the first significant U.S. effort to come to grips on a national basis with the emerging global threat from invasive species. Many on hand already recognized the urgency of the cause. “Invasive alien species used to be treated as isolated problems and were thought of primarily as a problem unique to Western states,” Lyons told the gathering. “Clearly what is now occurring is more than a series of isolated incidents.”

That F&ES symposium brought together most of the leaders in a then-fledgling field. They came to comment on a draft Presidential Executive Order of the Clinton administration that was introduced at the symposium, to launch a new federal initiative establishing an interagency approach to the issue. The order, finalized at the beginning of 1999, included creation of the National Invasive Species Council (NISC) to coordinate efforts that now take in more than 40 separate federal agencies, along with local, state, private and tribal organizations, involved in managing and responding to invasive-species issues.

Based at the USDA, the council co-chairs are the Secretaries of Agriculture, Commerce and the Interior, with membership drawn from the Departments of Defense, Health and Human Services, Homeland

Foreign Invaders Threatening Global Biodiversity

Security, the Environmental Protection Agency and other federal organizations concerned with regulating cross-border movement of people, species and goods. Besides coordinating the interagency network, the council recommends measures to enhance international cooperation, develops a Web-based information network on invasive species (www.invasivespecies.gov) and advises Congress on invasive-species issues through its biennial update of the National Invasive Species Management Plan.

Although the council represented a first, unified national acknowledgement of the seriousness of the invasive-species issue, Lyons believes that steps taken so far have proven inadequate. He points to the increasing spread of noxious invasive weeds that crowd out native species in the nation's public lands. "I don't see where we've made a lot of progress since 1998," he says. "In fact, progress is eroding." He now believes the nature of the problem has grown more urgent. "There are wholesale changes to our ecosystems going on right now."

Lori Williams, executive director of the NISC, agrees that the council by itself does not seem to have an answer to the global web of forces that are propelling the spread of invasive species. "The problem," she says, "is accelerating. You're playing a serious game of catch-up."

After an invasive species takes hold, however, catching up may be impossible. Ann Camp '90, lecturer and research scientist in stand dynamics and forest health at F&ES says, "The general public doesn't care too much unless it affects human health or their pocketbook." She believes that most people have failed to see a major catastrophe in the making. "We're dying from a thousand paper cuts."

A Human and a Biological Issue

The failure of the general public to call for more action on invasive species can be attributed to many sources. Species are often entirely benign in their native ecosystem and only prove invasive when released into a new environment. Even then, a species' harmful impact may not emerge for decades. Mary Tyrrell '97, director of the Program on Private Forests at F&ES, points out that "it may take 20 years or more after a species gets introduced before it becomes invasive. It is not necessarily a simple cause-and-effect pathway, but a whole cascade of events that intuitively you couldn't anticipate. Climate variation may occur, competition blinks out and suddenly it's a problem."

For instance, during the last few centuries, human activities such as sport fishing and the importation of agricultural and horticultural materials have introduced earthworm species from Europe, Asia and the southern United States into Northern forests in Canada, Alaska and elsewhere. As exotic earthworm species invade these forest systems and consume forest-floor organic matter, they have the potential to disrupt critical nutrient-cycling dynamics, reorganize microbial and fungal soil

communities and ultimately alter native plant and animal communities, according to David Ellum '01, a Ph.D. candidate in silviculture and forest ecology at F&ES who studies invasive earthworms. "I doubt anyone thought earthworms could be a problem," says Camp.

Earthworms are valuable creatures in temperate climates where they work as part of a long-standing, coevolved disturbance regime. Only when a species, such as the earthworm, gets introduced into a new area with a different disturbance regime—where it does not face the predators, climate factors or other controls on its proliferation—can it set off the unanticipated cascade of events leading to serious harm to its new home. Until that harm becomes clear—which could take decades—the alien species may appear to offer no threat. "It's a Catch-22," says Williams. "You have to show it's harmful to get [a species] listed" for control or banning. "That's after the fact."

Banning species has proven politically difficult in the United States. Many species represent commercial opportunities that can compete with their potential to cause harm. Says Department of Interior Invasive Species Coordinator A. Gordon Brown: "One person's invasive species is another person's opportunity to bring a new product into the country. The whole issue is a challenge because it has a human dimension and a biological dimension." So far, comprehensive federal legislation exists banning the importation of only zebra mussels and nutria (*Myocaster coypus*), with additional legislation being considered for tamarisk (*Tamarix aphylla*) in the western United States, and the brown tree snake (*Boiga irregularis*).

"There are some serious gaps in the legal and regulatory framework at the federal, state and local levels," says Williams. "Species fall through the cracks."

The needs of various interest groups play a central role in the debate over the impact of an invasive species. "There are as many concerns as there are invasive species. It's one of those issues that cut a whole bunch of ways," says Williams. As a result, generating strong legislative action on the issue as a whole has been impossible. Unlike air or water pollution or endangered species, no comprehensive piece of legislation exists for the control of invasive species. Instead, Williams and her colleagues on the NISC try to bring all those who have an interest in a species into discussions about their benefits and potential to cause harm. "We need stakeholders at the table because there is no one master list of invasive species. It doesn't lend itself to blanket prohibitions."

That's particularly true in the horticultural industry, which has been responsible for numerous deliberate introductions of species that have proven invasive. "Many species [of garden plants] are bred for hardiness, with long flowering and fruity periods and big, showy flowers," says Tyrrell. "Those are traits that garden centers can push because the plant will do well and gardeners will be happy. Those are also just the traits that can lead to hopping from the garden to other ecosystems."

That is what happened with purple loosestrife (*Lythrum salicaria*),

CONTINUED on page 8



Purple loosestrife (*Lythrum salicaria*) is over-running wetlands throughout the United States and Canada.

Banned In Connecticut

Invasive plants introduced for commercial sale by nurseries remain a major problem throughout the country. Very few states have drafted legislation to regulate their sale. Last spring, the Connecticut General Assembly became one of the first to attach penalties (\$100 per plant) for the sale of any of 81 plants considered invasive in the state. "From the standpoint of plants," says Ann Camp, lecturer and research scientist in stand dynamics and forest health at F&ES, "a handful of states are out ahead of the curve. Connecticut is a leader."

“The threat from
invasive species due
to increases in
global trade is
growing, and it is not
going to go away.”

James Lyons

Effective October 1, 2004:

curly leaved pondweed	white poplar
fanwort	false indigo
eurasian water milfoil	Russian olive
variable water milfoil	wineberry
water chestnut	kudzu
egeria	Canada thistle
hydrilla	jimsonweed
common barberry	crested late-summer mint
autumn olive	Cypress spurge
Bell's honeysuckle	slender snake cotton
amur honeysuckle	ground ivy
Morrow's honeysuckle	giant hogweed
common buckthorn	Japanese hops
multiflora rose	ornamental jewelweed
Oriental bittersweet	common kochia
garlic mustard	ragged robin
narrowleaf bittercress	Scotch thistle
spotted knapweed	bristle knotweed
black swallow-wort	giant knotweed
pale swallow-wort	sheep sorrel
leafy spurge	ragwort
Dame's rocket	cup plant
perennial pepperweed	bittersweet nightshade
Japanese knotweed	garden heliotrope
mile-a-minute vine	hairy jointgrass
fig buttercup	drooping brome-grass
coltsfoot	Japanese sedge
Japanese stilt grass	reed managrass
common reed	Canada bluegrass
sycamore maple	tree of heaven
princess tree	

Effective October 1, 2005:

purple loosestrife
forget-me-not
Japanese honeysuckle
goutweed
flowering rush
pond water-starwort
European waterclover
parrotfeather
brittle water-nymph
American water lotus
yellow floating heart
onerow yellowcress
watercress (excludes
watercress sold for
human consumption)
giant salvinia
yellow iris
water lettuce
border privet
tatarian honeysuckle
dwarf honeysuckle
garden loosertrife

Source:
Connecticut General Assembly

Foreign Invaders Threatening Global Biodiversity



Over the past twenty years, gypsy moths have destroyed more than \$20 million worth of trees.

“We’re dying from
a thousand
paper cuts.”

Ann Camp



Snakeheads, one of the most feared ecological invaders, recently have been found in the Potomac River basin around Washington, D.C., the Schuylkill and Delaware rivers in Philadelphia, and Lake Michigan.

which arrived in the 1800s as an ornamental plant prized for its spikes of bright purple flowers. It has now overrun wetlands throughout the United States and Canada. Purple loosestrife drives out native plant species and restructures habitat on which many other species depend. The loss of wetland habitat and native species today threatens endangered orchids, several rare amphibians and butterflies. Still, purple loosestrife continues to be sold commercially in about half of the nation’s states. For some, the plant is a scourge, for others a pretty addition. And for the nursery industry it is a source of revenue. Although Connecticut is considered a national leader in its legislative efforts to control invasive species by the horticulture industry, it will not begin banning purple loosestrife until October 2005. (See “Banned in Connecticut,” page 7)

Assessing Impact

Without an available assessment of the impact of introduced species, convincing legislatures to halt importation of even clearly harmful individual species has proven difficult. Among its activities, the NISC has guided a concerted effort to calculate the impact of nonnative species, a first step toward mustering the resources to manage them. But the council has a long way to go. According to Williams, “We still haven’t studied impacts to the point where we can present them in a coherent way.” Working in conjunction with the Heinz Center and others, the council has been trying to put data together to convince agencies at all levels, and a reluctant Congress and administration, to devote more resources to the issue.

In an era of budgetary constraints and resistance to new federal regulation, though, little progress has been possible in finding the resources to identify the next kudzu, zebra mussel or gypsy moth caterpillar before it arrives. “It is very difficult to begin to wrap our arms around this problem,” says Meyerson.

Meyerson and colleagues at the Heinz Center and elsewhere have been identifying and aggregating large-scale databases on native and nonnative species. Their team is developing national-level indicators of nonnative species to begin tracking different aspects of species’ introductions over time. This is in an effort to report on nonnative species to the public and policy makers on a regular basis, much in the way that gross domestic product does for the economy. In this way, the team can track the changes and trends in nonnative species. “We report data, and leave the interpretation of the data to the users of the information so that we are able to remain nonpartisan and credible,” says Meyerson.

However, baseline data for many species do not exist at all, making it difficult to determine the extent of an invasive species’ advance into other territories. According to Meyerson, “We have a good idea for plants, vertebrates and some invertebrates of what is native or nonnative. But for many other invertebrates, microbial populations and fungi, it can be difficult to determine whether or not they are introduced.”

Also, what makes a species invasive can be hard to determine except in the incremental changes to the landscape, and linking those changes over time to the spread of an alien species is not simple. For instance, ornithologists cite the decline in songbird populations in many parts of the United States, and point to spreading flocks of exotic House sparrows (*Passer domesticus*) and European starlings (*Sturnus vulgaris*)—first introduced in New York City in the 19th century—as a culprit in the native birds’ disappearance. But what data exist to document that connection?

Along with the initial data on the range and concentration of native and nonnative species, some first stabs at estimating the overall costs of invasive species have been made. The direct costs of many invasive species are known, and experts generally cite a 1999 study, revised in 2000, led by David Pimental at Cornell University, as at least a start at tallying the total direct cost of invasive

Estimated annual costs associated with some nonindigenous species introduced to the United States, in millions of dollars.

Type of Organism	Losses	Control Costs	Total Costs
PLANTS			
Purple loosestrife	NA	45	45
Aquatic weeds	10	100	110
Melaleuca tree	NA	3-6	3-6
Crop weeds	23,400	3,000	26,400
Weeds in pastures	1,000	5,000	6,000
Weeds in lawns, gardens, golf courses	NA	1,500	1,500
MAMMALS			
Wild horses and burros	5	NA	5
Feral pigs	800	0.5	800.5
Mongoose	50	NA	50
Rats	19,000	NA	19,000
Cats	17,000	NA	17,000
Dogs	250	NA	250
BIRDS			
Pigeons	1,100	NA	1,100
Starlings	800	NA	800
REPTILES & AMPHIBIANS			
Brown tree snake	1	4.6	5.6
FISHES			
	1,000	NA	1,000
ARTHROPODS			
Imported fire ant	600	400	1,000
Formosan termite	1,000	NA	1,000
Green crab	44	NA	44
Gypsy moth	NA	11	11
Crop pests	13,900	500	14,400
Pests in lawns, gardens, golf courses	NA	1,500	1,500
Forest pests	2,100	NA	2,100
MOLLUSKS			
Zebra mussel	NA	NA	100
Asian clam	1,000	NA	1,000
Shipworm	205	NA	205
MICROBES			
Crop plant pathogens	21,000	500	21,500
Plant pathogens in lawns, gardens, golf courses	NA	2,000	2,000
Forest plant pathogens	2,100	NA	2,100
Dutch elm disease	NA	100	100
Livestock diseases	9,000	NA	9,000
Human diseases	NA	6,500	6,500
ALL ORGANISMS			136,630

NA Not Available

Source: *BioScience* • January 2000/Vol. 50 No. 1

species to the nation as a whole. His team estimated the annual direct cost from damage caused by invasive species at just under \$137 billion (see table at left). That's about 1 percent of the annual gross domestic product. "That's real money," says Meyerson.

However, even that figure does not take into account the enormous hidden costs of invasive species, such as the loss of other species. Invasive species impact somewhat fewer than half of the roughly 1,000 species currently listed as threatened or endangered under the U.S. Federal Endangered Species Act. The American Fisheries Society has documented that introduced species were a contributing factor in 68 percent of the 40 North American freshwater-fish extinctions over the past century.

But what is the value of an extinct species? Or of the aesthetic changes to the land and sea? Or of the loss of recreational opportunities, shade or storm protection? Meyerson says, "We don't know how to value ecosystem services, economically at least. We're at the very beginning of understanding what invasive species really cost."

Understanding and Controlling Pathways

In cases like SARS, West Nile virus and other public health crises, and the damage to the California grape and wine industry caused by the glassy-winged sharpshooter's spread of parasites, the costs are clear enough. The result has been development of rapid, global or state-based response systems to contain invasions by controlling the specific pathways of spread. Far more often, however, alien species arrive unannounced via unmonitored channels—such as "hitchhikers" in ballast water in ships, cargo holds, wooden crates, pallets and plants, or even mud-encrusted shoe and tire treads—with few safeguards to check their spread.

The reality seems to be that banning species that cause major harm, when necessary, almost always happens too late to prevent their further spread. Moreover, species-by-species approaches tend to miss the forest for the trees. Instead, invasive-species scientists and policy experts are just beginning to focus on controlling the pathways that alien species take to reach new homes.

Foreign Invaders Threatening Global Biodiversity



Federal legislation to ban the brown tree snake is being considered.

“It may take
20 years or more
after a species
gets introduced
before it
becomes invasive.”

Mary Tyrrell

“Most research is done on species that have already arrived,” says Linda Puth, a fellow of the Yale Institute for Biospheric Studies. “From a management point of view, that may already be too late.” In an effort to understand how organisms move across the landscape over ecological corridors, Puth studies aquatic organisms’ movement to new bodies of water. She sets up pristine pools in the Yale-Myers Forest at various distances from an existing pond—creating model pond systems to mimic vernal ponds in Connecticut. After a season, she filters the water to count and study the size and types of colonies various species establish.

She hopes to understand the pathways that different species take to establish new colonies and which types of aquatic organisms disperse and reproduce most effectively. “The stage where we can have the most effect on species is at their initial dispersion,” she says. “Often we can’t predict what a species will do in changing conditions. If you wait to start managing a species, you don’t have another option once it gets established. That is why we need to study how species move. Prevention is cheaper than having to deal with a species once it arrives.”

Williams concurs, “We need to identify the pathways taken by the major invasive species. Then we can zero in on the most important pathways and mitigate their ability to allow passage of exotic species or, ideally, close them down.”

Local Problems, Global Solutions

With global trade growing and leading to the accelerating introductions of invasive species, most pathways of concern require international cooperation to reduce the chances of species taking up residence with harmful impact in a new region. Some steps have begun to be taken. Invasive species were never considered a subject for international trade negotiators. With the Office of the U.S. Trade Representative recently joining the NISC, Williams says, “They are looking at trade agreements from an invasive-species perspective for the first time.”

Camp believes such a step is vital, but only a first step. “You have to think about the environmental consequences of the movement of goods,” she says. “You can’t let the trade lobbies simply have their way. They won’t pay the cost of what they unleash.”

Moreover, the global nature of the invasive-species problems often makes national or regional solutions ineffective. Nowhere is that more true than in international shipping traffic. Ships carry ballast water in tanks in their hulls to balance out their loads for safe and efficient travel over the high seas. When a ship arrives in port, it typically empties its ballast tanks while off-loading cargo. The ship then takes on new ballast water in preparation for departure. As a result, approximately 3 to 5 billion tons of water get transferred from port to port around the world each year. With that water come nonnative species to new coastlines.

Studies show that ship ballast tanks are carrying at least 7,000 different species around the world, constantly reshaping coastal ecosystems and sea-life-dependent economies. On average a nonnative species gets introduced every 12 weeks into the San Francisco Bay, an area whose ecology has been significantly altered by invasive species. “Marine areas, coastlines,” says Mary Tyrrell, “have completely changed worldwide.” Elsewhere, the filter-feeding North American jellyfish (*Mnemiopsis leidyi*) has depleted native plankton stocks to such an extent in the Black Sea that it has contributed to the collapse of entire Black Sea commercial fisheries. In several countries, introduced microscopic red tide algae (toxic dinoflagellates) have been absorbed by filter-feeding shellfish, such as oysters. When eaten by humans, these contaminated shellfish can cause paralysis and even death.

An international effort has begun to mandate ballast water exchanges at sea. The International Convention for the Control and Management of Ships’ Ballast Water and Sediments adopted last February in London, if accepted by enough nations, will require a ballast water management

program for every ship and the exchange of ballast water in the open ocean, which is less hospitable to nonnative species' reproduction. However, the shipping industry is fighting the treaty, claiming mandatory water exchanges in rough seas will put ships at risk. The U.S. Congress is also considering legislation mandating ballast water exchange at sea. Only three states require discharge of ballast water at sea prior to entry into port.

With the movement toward free markets sweeping the world, few nations, industries or companies have been willing to accept restrictions on the movement of goods. (There are exceptions, such as the horticultural industry, which considers sudden oak death, for example, bad for business and the environment.) Such restrictions can potentially cost millions of dollars and result in the loss of jobs, says Meyerson. She also points out that as of 2002 fewer than 100 inspectors had the responsibility for checking wildlife arriving in U.S. ports, and that less than 2 percent of all shipping containers arriving in the United States were inspected. Even that small effort may decline. As part of the reorganization of federal national security responsibilities, the Bush administration transferred the personnel of the Animal and Plant Health Inspection Service (APHIS), the agency responsible for preventing port entry of foreign plant and animal pests and diseases, from the USDA to the Department of Homeland Security. "In that setting," says Yale's Tyrrell, "APHIS is much more likely to be marginalized from the work it was initially set up to do."

Slowing the Invaders

Preventing or alleviating the sixth great extinction event Lovejoy fears may now be under way will not be possible without multiple and coordinated efforts to manage pathways that invasive species travel. At last March's AIBS meeting, Lovejoy spoke about the difference between the current threat of mass species extinction and previous extinctions in natural history. "The thing that could be different [about this extinction]," he said, "is that we could stop it, because we are aware of what we're doing." However, he warned, "There's no easy solution. There is no global biological abracadabra. The solution is clearly multifactorial, and it's tough, messy and complex."

Solutions may be possible, if complex, but the current fraught political environment makes development of a workable national invasive-species policy unlikely. Williams says, "Managing a pathway requires significant resources from a lot of federal agencies and coordination with the individuals involved. Finding the resources and political will is the issue." One encouraging sign she points to is the Department of Defense's recently established rule requiring the cleaning of all military equipment prior to its return to the United States from overseas. "That's a significant pathway," she says.

Meyerson suggests that preventing the spread of an invasive species should be the first line of attack. Preventive measures would include better inspection controls at U.S. borders to curb the unintentional introduction of invasive species and greater efforts at public education about invasive species. She advocates pathway-control strategies that can be implemented at little cost and with minimal disruption to trade and other human traffic. Lovejoy says, "A series of relatively simple things won't eliminate the problem, but they will reduce its probability."

He also believes that educating people about the steps they can take to prevent the uncontrolled spread of alien species will help, including showing films to airline passengers on international flights warning of the unintentional transmission of harmful, invasive species. "Every citizen should be aware of the threat posed by alien species," he says, "because every citizen has the potential to contribute to the problem, or to help solve it."

Once a known invasive species has arrived, Williams says she would like to see the development of a rapid-response system to contain its spread. "Rapid response happens at all kinds of different levels," she says. "The federal government can help in planning and resources for that."

Given that invasive species rarely go away once they have been established, programs need to focus on containing their further spread. Meyerson says, "We need to manage and, where possible, eradicate the problem by killing weeds, fishing out snakeheads and using biocontrols, pesticides and herbicides where appropriate." Michael Bohne, an entomologist with the U.S. Forest Service, points to Chicago, where a group of volunteers organized by the USDA and called the "Beetle Brigade" is surveying trees to identify any remaining populations of the Asian longhorned beetle.

Other regions in the United States have begun to learn from their neighbors' catastrophes. As part of the bicentennial of the Lewis and Clark expedition this year and next, Northwestern states expect a large influx of visitors retracing the explorers' trail. Besides welcoming visitors, those states have launched well-publicized efforts to prevent them from bringing a new invasive species with them: the zebra mussel, which has yet to invade the Upper Missouri River basin. Some states want to keep it that way. For instance, Washington state requires that all boats leaving a body of water be free of aquatic weeds and other debris. Northwestern citizens have also become active through the Zebra Mussel Monitoring Network coordinated by Portland State University's Center for Lakes & Reservoirs. Volunteers will pay attention to their local bodies of water, watching for the first signs of zebra mussels. They will also be on the lookout for boats and trailers that may have hitchhikers on them.

"If average citizens understood more about their native habitat," says Camp, "they could keep an eye out for what is invading it. So often it's along our human pathways where invading species spread. We need to learn how different pathways work and how to manage them. We have to take a proactive approach, because once the genie is out of the bottle, you can't put it back in." **EY**

Greenspace Program Gives New Haven Residents Tools To Help Reshape the Urban Environment

—Lipstick Not Included

By Richard Conniff

In the ordinary course of things, planting hostas might not seem like a political act. But when Rebecca Angeletti-Turcio bought a house in the Cedar Hill neighborhood on the east side of New Haven a few years ago, she embarked on a campaign consisting almost entirely of such small gestures of civility, of decency, of neighborly concern. In the evenings after work, she went out and picked up litter on the street—crack bottles and 20 or so discarded condoms on a typical day. The drug dealers and prostitutes favored a barren, shadowy strip up the street from her house where the sidewalk and curb had disappeared under a mountain of dead leaves turned to dirt. One time a man who parked there several hours a day rolled down his darkened window and said, “Get in your house. Mind your business. Or I’ll get you.”

“Excuse me, do you live here?” asked Angeletti-Turcio, shaking her head in disbelief. She is a single mother, short, with curly red hair and prominent blue eyes, friendly and quick to laugh. But you wouldn’t want to get in a fight with her, especially on her turf. And none of the culprits seemed to live in Cedar Hill. They just liked the area because it was convenient to highways and because nobody seemed to care. She took down the man’s license number and called the police. Other times, she took out her lipstick and scribbled, “Stay out of our neighborhood” on the windshields of suspect cars.

The hostas were just a way of saying the same thing with flowers.

They came from a 10-year-old program called Community Greenspace, which gives New Haven residents like Angeletti-Turcio tools to reshape the urban environment (lipstick not included). Early this year several people in Cedar Hill found out about the program and sent in applications. Then, with a sinking feeling, they found out about each other.

“Selfish me, I just wanted to work on my street,” said Betty Thompson, a grandmother who lives around the corner from Angeletti-Turcio. “They said, ‘It doesn’t work like that.’” Community Greenspace provides trees, bushes, flowers, mulch, stone dust, shovels and know-how, much of it delivered by F&ES interns hired through the Urban Resources Initiative (URI). But the goal is to grow neighborhoods, not just foliage. The program requires neighbors, who may never previously have spoken, to meet and plan their projects together. They also have to dig the holes, and not just in front of their own houses. So Thompson and her neighbors went over to help Angeletti-Turcio remove the mountain of dirt, excavate the old sidewalk and curb line and put in a neat row of hostas. And on a rainy Saturday in July, Angeletti-Turcio was one of 10 people planting a tree lilac beside the curb on Thompson’s street.

“Isn’t it wonderful to have all these people out here working in the rain?” said the intern, a contagiously exuberant graduate student named Elaine Lewinnek, her hair smeared flat and water running down the lenses of her eyeglasses.

“You love the suffering,” said Thompson.



To help create the Ivy Narrow Bird Sanctuary, Greenspace Coordinator Christopher Ozyck dug a pit 30 feet across and five feet deep, installed a liner and spread 20 tons of clay and 15 yards of compost and soil with an excavator borrowed from his own landscaping business. City water from the site ran for two days to saturate and settle the marsh, and goldfish were added later to help control the mosquito larvae population.

Photos © Josh Schachter



Jeannette Thomas often looks out her window at the Ivy Narrow Bird Sanctuary, where an abandoned building once stood.

“Between the three
of us we will fix this
neighborhood.”

Betty Thompson

“I like the commitment,” said Lewinnek. Thompson, she told a visitor, was a breast cancer and heart patient who had ordered her doctors to make her healthy enough so she could work in her backyard garden. Not only had she survived, now she was bringing the garden out into the street. And over on Angeletti-Turcio’s block, said Lewinnek, the simple act of planting hostas was sending a message that someone does in fact care about the neighborhood. (Just in case they didn’t get it, Angeletti-Turcio was going out to tend the new plants every day after work. She was hoping that the sight of a woman watering hostas would be demoralizing to drug dealers, crack whores and their clients. “Oh, you’re the people who garden,” a woman remarked one night. “We’ll go somewhere else.”) By the end of the summer, the combined Cedar Hill group had planted 11 new trees on their two streets, and people were stopping by to find out how to do the same thing next summer on three neighboring streets.

“Powerful women of Cedar Hill,” said Thompson as she and Angeletti-Turcio posed beside the new tree lilac for a photograph with another local instigator, a grandmother named Clara Lawhorn. “Between the three of us we will fix this neighborhood.”

That is the whole idea of Community Greenspace, which got its start, oddly, in Nepal. William Burch Jr., the Frederick C. Hixon Professor of Natural Resource Management at F&ES, was working in the Himalayas on community forestry projects. He brought home his experience that environmental projects succeed only to the extent that local people participate in them. It occurred to him that this should be no less true in the urban environment, and he set out to test the idea first in Baltimore and then at home in New Haven. The program, a partnership of the URI, New Haven’s Livable City Initiative and the Community Foundation for Greater New Haven, now works on open space projects with more than 50 different neighborhood groups each summer, mostly in struggling areas like Cedar Hill.

The projects often start out small, a few flowers in a front yard, or a linden tree between the sidewalk and the curb. They aren’t necessarily in places an expert might choose for an open space project. “Working in low-income neighborhoods, we have learned that the environmental priorities identified by the community are often derelict open spaces that are both a physical and socioeconomic burden,” says Colleen Murphy-Dunning, who oversees the program as director of the URI. “Recovering vacant lots that are polluted with lead, arsenic and other heavy metals is naturally a high priority if you live nearby.” When people decided for themselves what they wanted and worked to put it in place, they were more likely to continue caring for it afterward. For instance, when Community Greenspace groups plant trees, 90 percent of them survive, compared to just 60 percent when a professional contractor does the job.

Some projects, on the other hand, fail. Participants and interns often have to work around racial and ethnic tensions, language barriers and the tendency of city residents and members of the Yale community to mistrust each other. (Someone has written down memorable sayings from the summer on a wall in the interns’ office. On one side of the relationship, it’s “You dig the hole, you get the plant.” On the other, it’s “Don’t be giving me any plants that look like they’re on crack.” And from somewhere out in left field, “Mom, get that saw you keep under your bed.”) It can be difficult, finally, to get people to come out and plant trees in neighborhoods where residents are often holding down a couple of minimum-wage jobs, where absentee landlords own most of the property and where violent crime and drugs are commonplace. This past summer, intern Daniela Vizcaino got handed some of the city’s hardest neighborhoods and confessed to being satisfied with only two of her seven groups. In one case, people finally managed to meet and make plans after six weeks of effort, “but on the day we were scheduled to start work only one person



F&ES intern Elaine Lewinnek said the simple act of planting hostas shows that someone cares about the neighborhood.

Greenspace Program



The Dixwell Avenue lot, top, as it appeared before it was restored as the Ivy Narrow Bird Sanctuary.

showed up. It really kills your spirit.” Lewinnek the optimist argues, on the other hand, that even managing to apply for a grant is a mark of progress in some neighborhoods. She was particularly inspired by one undaunted program participant near St. Raphael’s Hospital who planted flowering vines to help cover the 17 bullet holes in the front of his house. “I don’t think of the seeds that don’t grow as failures,” she said. “You sow more seeds than you are going to grow and you nourish as much as you can.”

It can complicate things that the student interns sometimes come from Venezuela, China, Korea or Nepal and are seeking practical experience in the community forestry skills they have been learning in their F&ES classes. Some city residents look at them at first as if they have dropped in from Alpha Centauri, though Murphy-Dunning says it also “sends a message about mutual pathways of learning.” In fact, the Community Greenspace experience has sometimes shaped the careers of the interns, as much as it has the neighborhoods where they worked. For instance, Jim Woodworth, a Greenspace intern from 1997 to 2000, now leads a larger “Citizen Forester” tree-planting program in Washington, D.C. And at the New York Horticultural Society, James Jiler, an intern in 1995, teaches inmates landscaping skills at a nursery on Rikers Island and helps them find jobs when they get out.

Meanwhile, some of the New Haven projects flourish and spread, to the delight and occasional alarm of the people behind them, who unexpectedly find themselves obsessing about which varieties of viburnum are actually native to Connecticut, or the merits of globe arborvitae versus dwarf Alberta spruce or the best methods for getting rid of Japanese knotweed. Ron Oster, a carpentry contractor, bought a HUD foreclosure in the Goatville section of East Rock eight years ago. He and his neighbors on Nash Street found out about Community Greenspace and set to work clearing an abandoned lot, which had become a dense tangle of garbage and 10-foot-high weeds, with a mattress up a tree and ugly concrete barriers out front. It became The Park on Nash,

with new plantings artfully arranged to create spaces for conversation or a cookout. Oster’s group now regularly sponsors concerts, picnics and pumpkin-carving events there, and it has become the focal point for a neighborhood revival.

From Nash Street, Oster started looking around for another challenge, a common pattern with people who become Community Greenspace enthusiasts. (The man with the bullet holes in his house, for instance, has now pushed his green empire out three blocks from his front yard.) Oster and another neighbor, Marie Sherbin, settled on a no-man’s-land, wooded but infested with knotweeds, on a hillside between East Rock Global Magnet School and Blake Field public park. “We talked about it,” said Oster, one Saturday when he and Sherbin were out, as usual, planting and weeding at the site. “If we were going to tie this site to the school, why not get something the teachers could talk about? We decided it would be nice to make it native species, so kids could learn about Connecticut.” The name they settled on, Blake Field Arboretum, sounds a little ambitious. In fact, it sounds very ambitious, especially when you approach it, not knowing what to expect, through a parking lot dominated by the brutalist concrete shed of the school building. Then you turn and pass through an opening in a smeared concrete wall. And on the other side, under the tall maples, it’s suddenly much cooler on a sweaty summer day, and there are stone benches where you can sit and enjoy the breeze. The footpaths are lined with hydrangeas, mountain laurel, shadblow, blueberries and witch hazel. The sun catches on a redbud growing in a small clearing. And out beyond the edge of the shaded hill, a green swath of ball field stretches like a dream into the distance.

Oster estimates that each of his two parks has cost Community Greenspace about \$6,000 in materials, or about \$1,500 per year over four years of active construction, not counting the hundreds

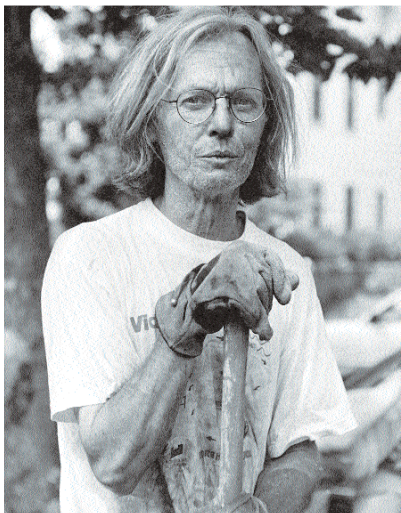


Powerful Women of Cedar Hill: Betty Thompson, Clara Lawhorn and Rebecca Angeletti-Turcio

“You look out the window, it’s pretty damned nice.

Most people in the suburbs don’t have a view that nice.”

Jackie Buster-Lawrence



Ron Oster, a Greenspace enthusiast, said while property values are up and crime is down as a result of the greenspace improvements, his neighborhood is losing its diversity.

of hours of volunteer labor. Calculating the economic benefits is much more difficult, but they go well beyond the obvious social and aesthetic improvements. According to one urban study by the U.S. Forest Service, for instance, even a young tree with a trunk diameter of less than three inches pulls a tenth of a pound of pollutants out of the air annually. So volunteers who plant 10 or 12 such trees in a neighborhood can immediately expect to begin removing roughly a pound per year of airborne particulate matter, ozone, sulfur dioxide, nitrogen dioxide and carbon monoxide which their children might otherwise be breathing. (A single mature tree with a diameter of up to 30 inches removes 2.8 pounds of pollutants a year.) Pocket parks can also lower the heat in urban areas.

Betsy Grauer, a real estate agent, credits the two Greenspace projects with adding \$20,000 to \$30,000 to the value of every house in the Goatville neighborhood. That is, the economic benefit for a single house is double the combined cost of the two projects, and that benefit is multiplied by the effect on dozens of houses in the neighborhood. No one would go back to

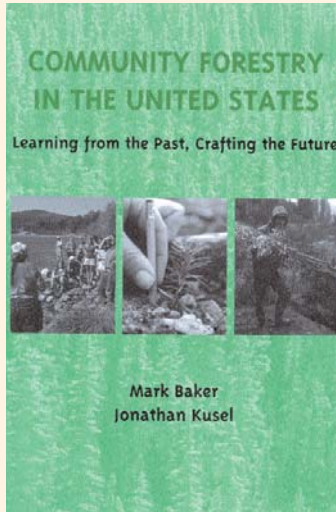
what the neighborhood was before, but Oster is also aware that the improvement may be a mixed blessing. “I feel real good that my house is worth more,” he remarked, as he finished planting a new evergreen. “We have less crime. We know each other a little better. But you also lose something in what’s not there.” When Oster moved in, Goatville was, he recalls, a moderately blighted “buffer zone,” one step up from Cedar Hill and Fair Haven. It is now a highly desirable neighborhood, and that morning, young couples were out cruising the neighborhood for homes that now sell for \$200,000 to \$350,000. Oster worried that Goatville was losing some of its diversity and becoming so gentrified his own stepsons could not afford to live there. “It’s changing the character of the neighborhood.”

Elsewhere, the neighborhoods do not necessarily change, or the changes come more slowly. But the consolation of greenery can make it easier for people to live there in the meantime. Jeannette and Lee Thomas, both now retired, have owned their house in the Dixwell neighborhood for 34 years, and his family owned it for almost 20 years before that. They used to keep the blinds in their living room closed so they wouldn’t have to look out at the abandoned building next door. Jeannette complained about it for so many years that she finally got the building put on a blighted-property list and torn down by the city. Then she and her neighbors set out to turn the quarter-acre corner lot into another ambitiously named greenspace, the Ivy Narrow Bird Sanctuary. Now the blinds in the Thomas living room stay up all the time, and Jeannette finds herself looking out so continually, so compulsively, that it reminds her of the way she and her husband kept sneaking back into the hospital for another look the day their grandchild was born.

They also talk more or less nonstop about what they now see out the window. The centerpiece of Ivy Narrow is something between a marsh and a pond, 30 feet across and five feet deep. Their son Sam campaigned for it and did much of the digging. “He had a vision for it,” says his sister Jackie Buster-Lawrence. It’s bordered now with flowers and tufts of ornamental grass. She and her mother quarrel genially about which is the most attractive type of grass. “The one on the right is the most dynamic,” says Jackie. “It’s got the most color, almost a turquoise-electric blue.” They agree that the footpaths look much better now that they’re covered with pea stone instead of just stone dust. Next week, when the river rock arrives, they plan to build a stream to carry water down from a berm in the middle of the lot. “We want the feeling of water as it runs over the rock on its way back to the marsh,” says Jeannette. The idea of calling it a bird sanctuary is still probably a little ambitious, but not for lack of trying. The Thomases and their neighbors often find themselves going back out three or four times a day to weed or make some fussy little improvement. “We think that when the trees mature, we’ll get birds nesting on the lot,” says Jackie. “But we probably scare them away with the work we do.”

Jackie, who has been living in Fair Haven, spends so much time on Ivy Narrow that she recently bought a property nearby and is now planning to move back. When a visitor asks if Dixwell isn’t still a pretty rough area, she draws herself up a little indignantly. “This is my neighborhood,” she says. “I grew up here. You look out the window, it’s pretty damned nice. Most people in the suburbs don’t have a view that nice.” **EY**

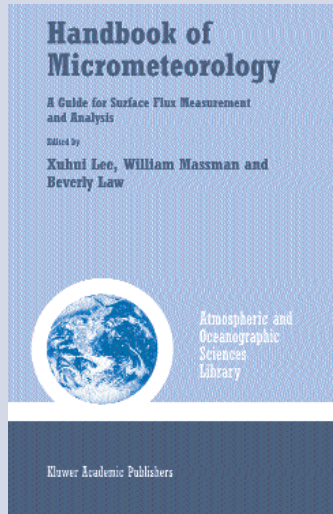
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Community Forestry in the United States

This book is part of a project by the California-based nonprofit organization Forest Community Research (FCR), with support from the Ford Foundation, to study community forestry in the United States. Community Forestry offers an alternative to current forestry practices, focusing on sustaining both the health of forest ecosystems and the health and well-being of local communities and workers. The book clarifies the state of the movement and suggests a trajectory and process for its continued development.

Jonathan Kusel '82 and Mark Baker, both of FCR, capture the richness, vitality and challenge of community forestry. The book, published in January 2003 by Island Press, offers an analysis of the development, promises and pitfalls of the community forestry movement, and demonstrates convincingly the necessary links among sustainable forests, sustainable communities and democratic governance. To purchase the book, call 800-828-1302 or visit www.islandpress.org.

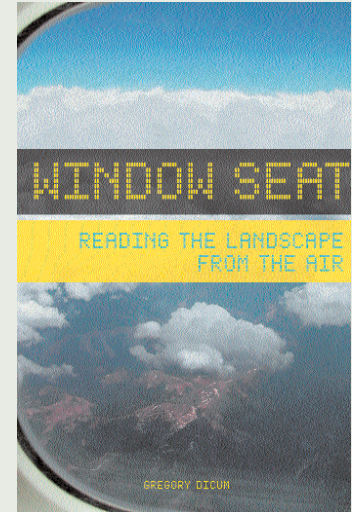


Handbook of Micrometeorology

This book is the most up-to-date reference for micrometeorological issues and methods related to the eddy covariance technique for estimating mass and energy exchange between the terrestrial biosphere and the atmosphere. It is intended to provide micrometeorologists, ecosystem scientists, boundary-layer meteorologists and students involved in micrometeorology with the state of science on measurement and analysis.

The handbook, edited by Xuhui Lee, F&ES professor of forest meteorology and micrometeorology, William Massman of the USDA Forest Service and Beverly Law of Oregon State University, is the culmination of many detailed discussions of theory, analysis and practical applications by the leading scientists in the field. It provides useful advice for bringing coherence to estimates of mass and energy exchange for understanding the role of the terrestrial biosphere in global environmental change.

The Handbook of Micrometeorology will be published in December 2004 by Springer. To purchase a copy, call 800-777-4643.

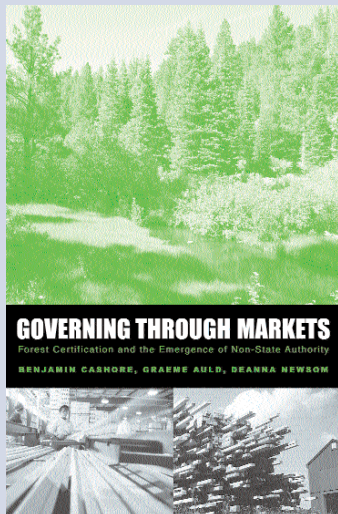


Window Seat

This book, by Gregory Dicum '95, decodes the sights to be seen on any flight across North America. Broken down by region, this unusual guide features 70 aerial photographs from 35,000 feet in the air; a fold-out map of North America showing major flight paths; profiles of each region, covering its landforms, waterways and cities; tips on spotting major sights, such as the Northern Lights, the Grand Canyon and Disney World; tips on spotting less-spectacular sights such as prisons, mines and interstate highways; and straightforward, friendly text on cloud shapes, weather patterns, the continent's history and more.

The book is packed with curious facts and colorful illustrations, proving that flying doesn't have to be a snooze. Dicum is a San Francisco-based writer and co-author (with Nina Luttinger '95) of *The Coffee Book: Anatomy of an Industry From Crop to the Last Drop*. To purchase *Window Seat*, visit www.chroniclebooks.com or call 800-722-6657.

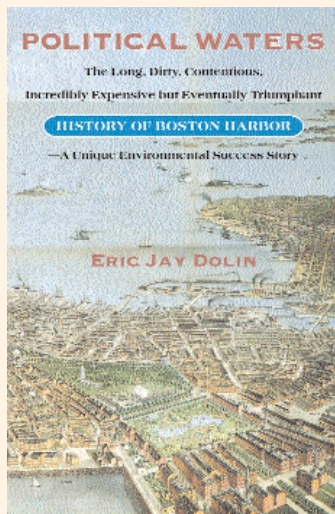
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Governing Through Markets

In recent years an innovative policy has emerged within global and domestic environmental governance: certification systems that promote socially responsible business practices by turning to the market, rather than the state, for rule making authority (www.governingthrough-markets.com) This book documents five cases in which the Forest Stewardship Council (FSC) a forest certification program backed by leading environmental groups, has competed with industry and landowner-sponsored certification systems for legitimacy.

In *Governing Through Markets*, co-authors Benjamin Cashore, chair of the F&ES program on forest certification, Graeme Auld, an F&ES Ph.D. student, and Deanna Newsom of the Rainforest Alliance compare the politics behind forest certification in British Columbia, the United States, Germany, the United Kingdom and Sweden. The book was published in August 2004 by Yale University Press. To purchase a copy, call 800-405-1619.

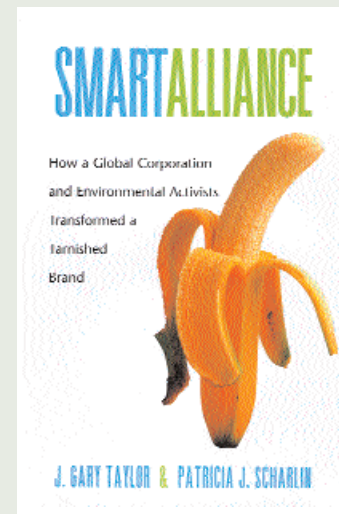


Political Waters

Boston Harbor is considered by many to be America's harbor. It served as a colonial gateway to the world, witnessed the Boston Tea Party and helped Boston transform itself from an outpost of a few hardy settlers into a bustling metropolis.

Yet for hundreds of years, Boston Harbor also was a cesspool. Long before Bostonians dumped tea into the harbor to protest English taxes, they dumped sewage there. As the Boston area grew and prospered, its sewage problems worsened—as did the harbor's health—to the point where in the 1980s it was considered the most polluted harbor in the country and ridiculed as the “harbor of shame.”

Then, in one of the most impressive environmental comebacks in American history, Boston Harbor was dramatically cleaned up. Eric Jay Dolin '88 chronicles the centuries-long struggle to clean up one of the nation's most polluted bodies of water in *Political Waters*, published by the University of Massachusetts Press in June 2004. To purchase the book, call 800-537-5487.



Smart Alliance

J. Gary Taylor '72, Ph.D. '77, president of The Environment Group in New York City, and Patricia Scharlin tell the story of corporate executives, banana workers, local leaders and conservation advocates learning to work together and trust one another. In the mid-1990s, Chiquita Brands International and the Rainforest Alliance established a Better Banana seal of approval to certify efforts to improve soil and water quality, ensure rainforest conservation and enhance worker health and safety. In *Smart Alliance*, the authors describe how Chiquita and the Alliance first worked without public fanfare to improve the company's environment, health and safety performance. The book, published by Yale University Press in March 2004, shows how multinational companies, environmental activists and labor leaders can overcome historic barriers of mutual distrust and join to become a vital force for positive global change. To purchase a copy, visit <http://yalepress.yale.edu/yupbooks/>.

Dramatic, Timely Support for Campaign Puts New F&ES Home on Fast Track

By David Taylor

Four Yale alumni from varied backgrounds, recognizing the magnitude and urgency of the environmental challenges that face the world in the coming decades, have come forward with generous gifts to help F&ES cultivate leadership to address those challenges. The gifts respond to goals laid out by Dean Speth for the school: creating a model, new “green” building, attracting and supporting the best students and strengthening the faculty.

Leading the way is Richard Kroon, Yale Class of 1964, who with the support of his family has committed a multimillion-dollar gift for the new building that will bear his name. Joining Kroon are Gerald Grinstein, Yale Class of 1954, who has pledged to fund an endowed professorship at F&ES, and two anonymous donors who have committed gifts to support, respectively, the Kroon building and student financial aid.

These recent gifts represent an extraordinary investment in the school and a foundation for its future. According to Fred Regan, director of the capital campaign and chief development officer, the campaign had raised \$58.8 million by Oct. 31—which includes these recent gifts—against a minimum goal of \$65 million in support of the campaign’s core needs, which are endowment and the new building. (Overall fund-raising, including all pledges, gifts and grants for all purposes, topped \$75 million at the end of October.)

The dramatic and timely support of Kroon, Grinstein and the two anonymous donors has given the F&ES campaign a powerful boost and confidence that its minimum objectives can be met when the campaign formally concludes in fall 2005. The challenges ahead, however, remain significant and will require continuing strong support from a broader group of donors. “This endeavor needs help from as many people as possible,” noted Kroon. “All of the school’s alumni, other Yale alums and friends need to support the school and Dean Speth.”

New Home on Science Hill

The new green building will embody the school’s commitment to sustainable design, renewable materials and resource efficiency. “My family and I believe deeply in the objectives Dean Speth has set out,” said Kroon, “and in the urgency with which our global environmental problems must be addressed.”

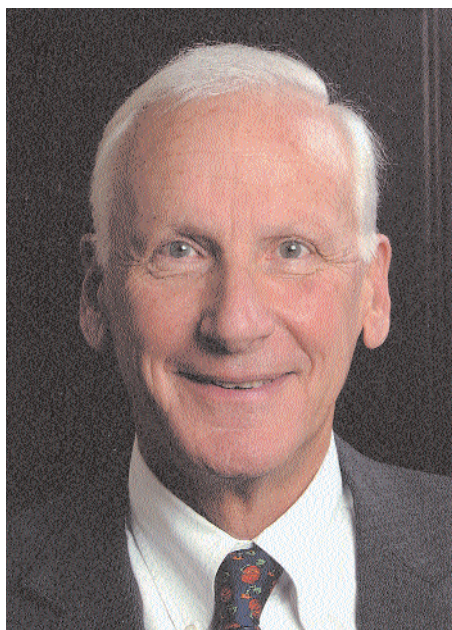
Before retiring in 2001 from the investment brokerage firm Donaldson, Lufkin and Jenrette, Kroon served for 20 years as the managing partner of that firm’s venture capital fund, the Sprout Group. His Yale undergraduate studies were in economics, but he was moved to make his contribution to F&ES after conversations with his son, Andrew, a Yale student, and Dean Speth, an undergraduate classmate of Kroon’s.

The gift expands Kroon’s previous strong support for F&ES. In 2002 he established a scholarship for graduates of Yale College who go on to pursue studies at F&ES and who can demonstrate financial need.

“I’m just so impressed with the school’s commitment to train people to be leaders when we really need that leadership in this field,” Kroon explained. “We’re going to need clear-thinking people to guide us in this so-important area over the next several decades.” The environmental challenges he feels most strongly about include water quality; curbing greenhouse gas emissions, which have been identified as a



Richard Kroon



Gerald Grinstein

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primary source of climate change; and managing economic development in a way that sustains forests.

Of course, Kroon doesn't expect the new building to resolve those issues directly. For him, the focus is on the people who will teach, learn and interact within the building and the leadership that emerges from F&ES.

Furthermore, the green elements of the building's design will help the school highlight its environmental principles in a tangible form, he explained. Just as the school's programs have grown beyond forestry over its history, its new home will embody ideas about the environment and energy use that were unknown when Sage Hall was built in 1923.

The Kroon building is expected to cost approximately \$27 million and take four years to build. The structure will bring together elements of the school that are presently scattered among eight buildings. It will house classrooms, a library, faculty and administrative offices, and the Yale Environment Center, which will consist of an auditorium, breakout rooms and exhibit areas.

Kroon's gift also honors the school's diversity and his own student experience at Yale. "I have been so impressed with the continuing high level of academic excellence and broad cultural experience," Kroon said. "I feel so blessed to have been a Yale undergraduate and a recipient of other people's generosity. I could not have gone to Yale without the very substantial help I got [through Yale scholarships]. I'm very happy to have an opportunity to give some back and help others."

Major Support for Green Design

A donation from an anonymous Yale graduate also will support the school's plan for an environmentally sustainable structure. Like Kroon, this donor sees the new building as an opportunity to extend F&ES leadership into the field of design. The building will, besides showcasing applied principles of green design, also energize the school with exciting aesthetic appeal and comfortable spaces.

The donor explained that environmentally responsible design involves features of a building's "hardware"—its physical materials—as well as "software," or how it is used. In terms of hardware, a building should employ, to the extent feasible, materials made or harvested locally and sustainably (for example, woods certified by the Forest Stewardship Council). The design also should maximize healthy elements, including fresh air, daylight and natural materials, for those who use the building.

In its "software," the building can incorporate an awareness of what makes a comfortable and inspiring environment through principles of biophilia, which suggests that humans possess a deep and biologically based urge to connect with the natural world. The new building can use innovative architecture and a biophilic awareness of space to foster an atmosphere of community.

"The new building will be an inspirational and instructional model of sustainable design," agreed Stephen Kellert, Ph.D. '72, chair of the building committee and the Tweedy/Ordway Professor of Social Ecology.

Endowed Professorship

In addition to leading the effort to transform the school's physical plant, Dean Speth has helped guide a major faculty initiative that has resulted in a refocusing of the school's teaching and research on nine focal areas. A complementary campaign priority has been to expand faculty resources. To date, five new endowed professorships have been established through major campaign gifts. The most recent endowed professorship will be funded by Gerald Grinstein and his wife, Lyn. The gift marks and celebrates Grinstein's 50th reunion, arose from several discussions between Grinstein and Dean Speth about the school's future and strategic priorities and builds on Grinstein's strong relationship with Yale University President Rick Levin. In addition, Grinstein's appreciation for F&ES is underscored by his membership on the school's Leadership Council.

Grinstein, former CEO of Western Airlines and of the Burlington Northern railroad, made headlines in January 2004 when he became CEO of Delta Airlines. He also is on the board of a number of companies, including PACCAR, a multinational technology company.

Grinstein has been a leading supporter of institutions that undergird a healthy society, from education to culture and the arts. He and Lyn helped to build the Seattle Symphony's striking new home at Benaroya Hall with a generous gift. Besides the symphony, Grinstein's other loves are the Seattle Mariners baseball team, art collecting and fly-fishing.

Lyn Grinstein shares her husband's interest in F&ES and his support of its growing role at Yale, and continues to be deeply involved with the Yale Art Gallery's programs. Lyn Grinstein joined the gallery's board in 1999. "She's been a very generous supporter of the gallery's exhibits and publications," noted Jock Reynolds, the gallery's director, "and is a very vital presence on the board." The Grinsteins' support for Yale, Reynolds added, is a "perfect intersection of their interest in the environment, education and art."

Said Dean Speth: "A great school is built on great scholars, and I am delighted and grateful that one of our scholars will be called the Grinstein Professor at the School of Forestry & Environmental Studies."

Leadership Scholarships

A second anonymous donor's gift has established a new endowed scholarship fund for outstanding F&ES master's students. The gift, from a dedicated alumna of F&ES, is intended to foster the spirit of leadership and to support outstanding students who demonstrate financial need. The new Leadership Scholars Fund will be flexible, providing either deep support for one or two exceptional students or broad support for more students, depending on the pool of applicants and their needs in a given year.

"The goal is to have a scholarship that establishes a spirit of teaching by example," the donor noted, highlighting the values of integrity, generosity and reciprocity. Students will be invited to interpret the goal of reciprocity in creative ways. They may decide to honor the spirit of the

fund through teaching, mentoring and advocacy or through innovations in the private sector. From the business sphere come examples such as Ben & Jerry's Phish Food, the ice-cream flavor; a portion of profits from Phish Food sales helped to clean up Lake Champlain. Also exemplifying this vision are William McDonough, a designer who embraces the "cradle-to-cradle" concept of continuously recycled products that eliminate waste, and Karl-Henrik Robert, whose program, The Natural Step, which incorporates the principles of environmental sustainability, is being adopted by major companies such as McDonalds, IKEA and Home Depot.

"Wherever you find yourself, ask yourself how you can make the planet a better place," the donor explained. "There are many ways you can interpret that."

While the donor's primary aim is to provide major financial support to outstanding individual students, she also is deeply committed to strengthening financial support for students in other ways. Recognizing that her own fund can offer generous, but only limited, support, she is hopeful that gift support such as hers will be supplemented by much larger low-interest loan initiatives aimed at financially disadvantaged students at Yale. The donor believes that both paths (that is, direct scholarship support as well as loan support) are essential to meet the leadership needs of the future.

"It's about creating opportunities for master's-degree students to enroll at the school without regard for their ability to pay," the donor explained.

If anything, the gifts are a reminder that one of the school's greatest resources is its students, a recognition that is close to the dean's heart. In lighter moments, Dean Speth has said that when he has a bad day, he goes and talks to the students to replenish his own inspiration. "They always have creative approaches and energy to bring to an issue," the donor recalled Speth saying. **EY**

CAPITAL CAMPAIGN TALLY

Through October 31, 2004

CORE CAMPAIGN*

Funds Raised

\$58.8 million

Minimum Goal

\$65 million

* funds for new building and endowment only
 ** all pledges, gifts and grants for all purposes

OVERALL FUND-RAISING**

\$75 million



Five-Year Program Attractive to Career-Minded Undergraduates

By Christine Woodside

Kelly Levin '03 was one of those unusual students who found that the new five-year bachelor's and master's program offered by Yale College and F&ES satisfied the ambition she'd had since early in her college career—to work in environmental policy. She had planned to be a veterinarian from a very early age, but changed her mind in middle school while on a student trip to China. "I'd be standing in Beijing, and you'd know it was sunny, but it was gray skies. The smog was unbelievable."

She enrolled in the Yale/F&ES program because John Wargo, director of undergraduate studies for the undergraduate environmental studies program, recommended it. "The professors were amazing. The students were amazing. It was partially because the forestry and environmental studies school is an experience that's hard to give up if you have that opportunity."

Only a handful of undergraduates are accepted into the five-year program each year. Three are enrolled for 2004-2005. This is because it is a rare student who can pinpoint professional goals before finishing undergraduate work, according to Gordon Geballe, associate dean for student and alumni affairs at F&ES. But for the student who knows what lies ahead, the five-year program saves them an entire year of schooling.

Because students must fulfill core natural and social sciences and statistics courses before finishing their undergraduate studies, the five-year program best suits those majoring in the sciences or policy-oriented studies such as biology, the new undergraduate environmental studies major or political science, Geballe says.

Levin now lives in Boston and is working on climate change policy. Her employer is the nonprofit Northeast States for Coordinated Air Use Management. Without her master's degree, she would not have been a serious candidate for the job, she says. Because federal regulations have not addressed climate change, Levin says, "We're building a greenhouse gas registry for about 10 states, the New England states and a couple of Mid-Atlantic states. Companies come and register their emissions reductions. We hope for some kind of record so that they can say, 'We acted early—can you give us credit?'"

Since graduating with his master's degree in 2003, Brenden McEneaney has been working for Weston Solutions, first in Glastonbury and now in Manchester, N.H. The firm specializes in remediation of industrial pollution, but is devising a program of "green" construction. While the green construction project gets off the ground, he found himself doing work at Weston that is slightly different from his ultimate goal.

One of his jobs entailed middle-of-the-night pumping of trichloroethylene (TCE) from groundwater at an industrial site in Massachusetts. He had to work those hours because the company was active on other projects during the day. "We bid on the project for an innovative technology which involved drilling injection wells all over the site and injecting a chemical to oxidize the TCE," McEneaney says. "The standard method of treatment is to pump the water out of the ground, treat it in a treatment plant and discharge it somewhere else. The pump-and-treat method would have taken 20 or 25 years, but the injection process takes only six or seven years."

He stresses that he would not be doing this work without his master's degree, but he's eager to get working on the green business project. In all, he's glad he got his master's when he did.

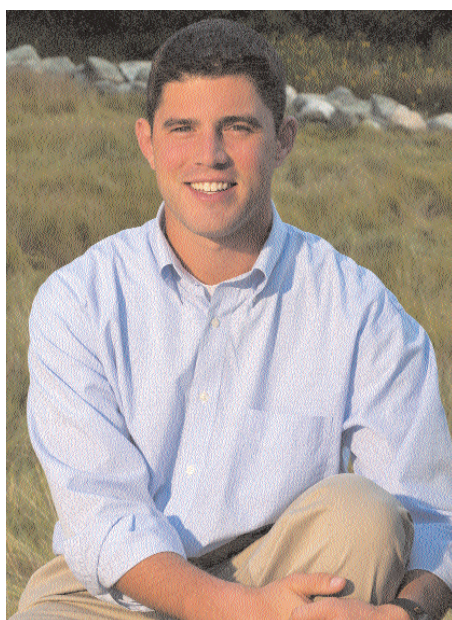
"The benefit for me was probably being on the fast track, I guess you could say. Being done with my master's early and ready to get out there and go get 'em. I loved my time at the environment school, but I also was itching to get out there. That's far and away the biggest benefit." **EY**



Kelly Levin's office has a view of downtown Boston.

"The forestry and environmental studies school is an experience that's hard to give up."

Kelly Levin



Brenden McEneaney

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Wangari Maathai

F&ES Community Praises Selection of Kenyan Nobel Peace Prize Winner

When Wangari Maathai recently received the Nobel Peace Prize, the F&ES community reacted to the news as if a member of the family and her cause—the environment—had won. “Needless to say, everyone is very excited,” said Dean Speth. “We feel like she is part of the family. It was a great treat to have her here.”

Maathai, who was the Dorothy McCluskey Visiting Fellow in Conservation at F&ES in 2002, received the Nobel Peace Prize for her work on reforestation and forest development in Africa. While at F&ES, she co-taught a course on sustainable development in developing countries, and returned to Yale last May to receive an honorary degree.

Dean Speth said Maathai’s achievement takes on special significance because it is the first time that the prize has recognized work to preserve the environment. “The more profound issue that the Nobel group in Norway is presenting is people learning not to do violence against our natural setting, our natural environment, that sustains us,” he said.

Gary Dunning, executive director of Yale’s Forests Dialogue, who worked with Maathai when she was at F&ES, said Maathai represents a connection between environmental security and human rights. “I think this award has recognized a great leader and a great human being,” he said.

Born in Nyeri, Kenya, Maathai earned her undergraduate degree in biological sciences at Mount St. Scholastica College, Kansas, in 1964, and two years later obtained a master’s degree in biological sciences from the University of Pittsburgh. In 1971, she earned a Ph.D. in anatomy at the University of Nairobi, becoming the first East and Central African woman ever to get a doctorate.

In 2003, she was appointed deputy minister of Environment, Natural Resources and Wildlife in Kenyan President Mwai Kibaki’s cabinet. In

1977, she founded the Green Belt Movement, which has mobilized poor women to plant millions of trees. In 1976, she became the first female to chair the Department of Veterinary Anatomy at the University of Nairobi, and the following year she became the first female associate professor in that department. Maathai ran for the presidency of Kenya in 1997, but lost to Daniel Arap Moi.

In a recent interview for a United Nations Environment Program documentary, Maathai said, “I love the trees, I love the color. To me they represent life, and they represent hope. I think it is the green color. I tell people I think heaven is green.”

GE Foundation Grant Enables Yale’s Environment School to Attract Diverse Talent

The Yale School of Forestry & Environmental Studies has received another \$100,000 two-year grant from the GE Foundation to offer full financial support for up to five students from historically underrepresented U.S. communities. This is the third consecutive year that the GE Foundation has funded the Environmental Scholars Program.

“The School of Forestry & Environmental Studies is a recognized center of excellence on environmental and natural resources issues. It develops the leaders needed to manage these important issues for the years ahead,” said Steve Ramsey, GE vice president for corporate environmental programs. “This GE Foundation grant will help attract more diverse talent into the program and ultimately into industry and the nonprofit sector.”

The goal of the scholars program is to increase the number of applicants and matriculating master’s students from historically underrepresented groups in the United States, which comprise urban and rural poor and ethnic and racial communities including Native Americans. When matched with Yale and other funding sources, the students will have full financial support for both years of study in the master’s program.

The current GE Foundation Scholars are first-year students Stephanie Horn of Lower Peach Tree, Ala., Christopher Hudak of New Sharon, Maine, and Evelyn Silva of Flushing, N.Y. Second-year students are Drena Howard of Charlotte, N.C., Lisa Botero of Orlando, Fla., and Jacqueline Guzman of Houston, Texas.

“The scholarship is very important to me. Without it I would not be studying at Yale,” said Howard, who will pursue a career in environmental health education after she graduates in 2005. Said Botero, “The GE scholarship is a priceless benefit to me, and I am grateful to those who honored me as a recipient. The scholarship has granted me a certain degree of independence by lessening the financial burden and related stresses associated with earning a master’s degree, which will be the first of its kind earned by anyone in my family since coming to this country.”

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Chinese Environmental Officials Participate in Executive Program

A delegation of 21 high-level officials from China participated this past summer in an executive program developed for them by F&ES.

The 10-day program last July focused primarily on industrial ecology, ecosystem management, environmental leadership, economics and environmental law and policy for eight of the 11 directors-general at the Chinese State Environmental Protection Administration (SEPA) and 13 commissioners of the provincial-level Environmental Protection Bureaus. The goal was to acquaint the Chinese officials with environmental management theory and practices in the United States that will help China achieve environmentally sound development.

The delegation was accompanied by Yujun Zhang '01, chief of staff to Jianxin Li, SEPA director and leader of the delegation, and Qian Wang, deputy division chief of international organization at SEPA and member of the Yale Class of 2002. Zhang and Wang served as translators and program coordinators.

Highlights of the officials' stay included field trips to a state-of-the-art fuel cell installation, the EPA Region 2 office in New York, to meet with the delegation's U.S. counterparts, and a visit with GE environment and innovation officials. They also took a tour of the New York Harbor, from the tip of Manhattan to Elizabeth, N.J., conducted by the U.S. Army Corps of Engineers and the Port Authority of New York and New Jersey.

In addition, the delegation was honored at a reception hosted by Linda Koch Lorimer, vice president and secretary of Yale University, and by a proclamation from Connecticut Governor Jodi Rell, designating July 15 as Environmental Protection Day to commemorate the visit.

Marian Chertow, Ph.D. '00, assistant professor of industrial environmental management, and Daniel Esty, professor of environmental law and policy, were co-chairs of the program, and Jane Coppock, assistant dean, helped plan and organize it. Many F&ES faculty also participated, including Michelle Bell, assistant professor of environmental health; Brad Gentry, senior lecturer in sustainable investments and research scholar; Thomas Graedel, the Clifton R. Musser Professor of Industrial Ecology; Xuhui Lee, professor of meteorology and micrometeorology; Sheila Olmstead, assistant professor of environmental economics; and David Skelly, professor of ecology, as well as former F&ES Dean John Gordon and Public Health Dean Michael Merson. Gretchen Rings, coordinator of the Center for Industrial Ecology, managed logistics, and four students—Shi Han, Woon Kwong Liew, Juan Espinosa and Xue Wang—worked to implement the program.

In November 2004, Professors Chertow, Graedel and Reid Lifset, editor of the *Journal of Industrial Ecology*, traveled to Beijing to present a workshop on industrial ecology to 35 professors from across China.

The SEPA Executive Program marks the first time SEPA has collaborated with a private organization outside China, and is the latest China-related F&ES program. F&ES faculty have taught recently in executive programs in Shanghai, Nanjing and Beijing. In May, the Environment and Sustainable Development Leadership Program began a three-year program for jointly sponsored short courses between Yale and Tsinghua University.

Three Students Receive Switzer Fellowships

Three master's candidates at F&ES have received \$13,000 fellowships from the Robert and Patricia Switzer Foundation for their dedication to environmental change. The foundation, based in Maine, awards 20 fellowships annually to emerging environmental leaders who are pursuing graduate degrees at universities in New England and California.

Peter Otis, director of the Career Development Office, said, "The highly competitive Switzer program selects master's and doctoral students who it believes will make an immediate and direct impact on critical environmental issues. Recipients benefit from the scholarships, but they also are supported by a mentoring program, join an impressive network of other recipients whose activities include an annual retreat, and are eligible to apply for Switzer Leadership Grants that could link them with employers."

The F&ES recipients of the Switzer Environmental Fellowships are Ann Grodnik and Radha Kuppalli, both joint-degree candidates at F&ES and the Yale School of Management, and Andrea Johnson, a candidate for a master's degree in environmental science.

Grodnik is pursuing joint master's degrees in environmental science and business administration. Her research focuses on the economics of climate change and how corporate strategy and national economies are affected by climate-change mitigation policy. She is particularly interested in how corporations can achieve competitive advantage through superior environmental and social performance.

Kuppalli specializes in environmental finance, focusing on issues related to emissions trading, markets for ecosystem services and corporate environmental responsibility. After graduate school, she plans to work in the private sector to develop market-based mechanisms that can help improve the environment.

Johnson's work focuses on the linkages between conservation problems and solutions—linkages between financial flows and environmental impacts, international markets and rural communities, and academics and the public—with particular emphasis on the developing world. Her thesis research last summer focused on the contested Camisea natural gas pipeline development project in Peru, where she is

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investigating the role of civil-society participation in holding the project's funding sources (Inter-American Development Bank, among others) and implementers (a transnational energy consortium) accountable to social and environmental standards.

Five Students Named Heinz Scholars

Five students from F&ES will receive grants to study pressing environmental challenges as Teresa Heinz Scholars for Environmental Research.

"It is quite an honor for our school to have five of the 16 fellowship recipients," said Dean Speth.

The fellowship recipients were selected by a committee of environmental experts. At F&ES, two Ph.D. candidates and three master's candidates will receive \$10,000 and \$5,000 awards, respectively, to pursue environmental research.

The environment school students and their projects are doctoral candidates Alissa Hamilton, "Fabricating Fresh: The Growth of Florida's Orange Juice Industry and the Transformation of Taste, Tradition and Territory," and Anastasia O'Rourke: "Innovations in Finance and Policy for High-Growth Environmental Ventures," and master's candidates (environmental science) David Kneas, "Assessing the Assessments: Environmental Impact Assessments and Community Relations with Multinational Mining Companies," Ann Grodnik, "The Clean Development Mechanism as an Instrument for Carbon Mitigation and Sustainable Development: Early Lessons from Two Case Studies," and Andrea Johnson, "Researching the Researchers: A Comparative Case Study Exploring Linkages Between Institutional Structure, Stakeholder Perceptions and Conservation Activities at Indonesian Ecological Research Stations."

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

International Symposium Explores Challenges Facing Forest Certification in Developing Societies

The Yale Program on Forest Certification, in cooperation with the Rainforest Alliance, the University of Tasmania and SUNY Buffalo, hosted a collaborative symposium exploring the social, ecological and economic effects of forest certification on developing and transitioning societies in June at F&ES.

"This event represents a truly outstanding achievement in global-scale collaboration," said Dean Speth, who delivered an address to the audience of over 100 experts from 36 countries in attendance on the second day.

Symposium participants evaluated cutting-edge research from local experts, presenting case studies from 16 developing countries throughout Asia, Eastern Europe, Latin America and Africa. To complement case-study presentations, Forest Trends, a Washington, D.C.,-based nongovernmental organization, organized a panel on local land rights, traditional land use, local economies and governance. All presentations were followed by commentator analyses and an open discussion.

Forest certification is a unique nongovernmental policy tool that was originally developed to address problems of deforestation and forest degradation in the tropics. The goal of certification is to create market-based incentives for responsible forest management by providing market recognition for products originating from forests managed according to a specified set of environmental, economic and social standards. The purpose of the symposium was to assess the successes and challenges faced in the implementation of forest certification in the world's developing countries.

Conference participants identified numerous challenges to the growth of certification in developing countries, including rampant rates of illegal logging, inadequate domestic or regional demand for certified forest products, inadequate government capacity to enforce environmental regulations, disputed land tenure and lack of access to research and technology addressing sustainable forest management and economic growth.

Participants in the symposium included a diverse group of practitioners, donor agency representatives, nongovernmental organizations, and members of the academic community and the private sector. The professional, as well as geographic, diversity of attendees provided an excellent opportunity to compare the forest certification experiences of different actors in the certification process across a wide range of countries and regions, and to identify common themes and priorities for further research. **EY**

Study Assessing the Impact of Climate Change on Africa

By Alan Bisbort

As a Yale professor with appointments in the School of Forestry & Environmental Studies and the Economics Department, Robert Mendelsohn often finds himself caught between passionate public opinion and dispassionate data.

In recent years, for example, Mendelsohn, the Edwin Weyerhaeuser Davis Professor of Forest Policy, has analyzed data on the impact of climate change on the United States economy. He has used these data to build a model that forecasts what impacts future climate change may bring. The model predicts that some areas of the United States will benefit economically from slow global warming trends. Conditions for agricultural productivity will become “more optimal” in Northern states while some Southern states will face a slight agricultural decline.

Applying this model globally, Mendelsohn has noticed a similar pattern. Climate change anticipated over the next century may economically benefit nations in the middle to high latitudes but be considerably more harmful to those in the lower latitudes.

“Environmentalists have gotten angry about that finding, but it is what the model predicted,” said Mendelsohn. “It’s not a good-versus-evil thing. True, the ‘winners,’ ironically, are the developed countries that have done the most to produce these warming trends.”

His model predictions have been borne out by data emerging in Brazil and India.

“Some fears have been confirmed,” he said. “Agriculture in Brazil and India has been shown to be more vulnerable to temperature changes.”

Africa, for which few climate change impact studies have been done, is especially vulnerable, according to this model. To test how sensitive African agriculture is actually going to be to climate change, Mendelsohn has, with the energetic assistance of F&ES doctoral student Pradeep Kurukulasuriya, directed a study of climate change impacts on African agriculture underwritten by the Global Environment Facility, a United Nations/World Bank initiative. The goal of the study, “Climate Change and Agriculture in Africa,” is to study what will happen in the very place that models predict damages from climate change will be greatest. The study also is intended to develop the skills of African scholars interested in climate change research.

To get a grounding in data, Mendelsohn and Kurukulasuriya forged a working relationship with Professor Rashid Hassan and postdoctoral student James Benhim, both of the Centre for Environmental Economics and Policy in Africa (CEEPA) at the University of Pretoria, as well as teams in the 11 participating nations: Burkina Faso, Cameroon, Egypt, Ethiopia, Ghana, Kenya, Niger, Senegal, South Africa, Zambia and Zimbabwe.

“Though these are not completely representative, we tried to get countries from all parts of Africa and the main climatic zones [the humid equatorial West, the eastern Savanna and the southern temperate region],” Mendelsohn said. “We had to avoid places with armed-conflict zones, such as Angola and Congo.”



Robert Mendelsohn and Pradeep Kurukulasuriya

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Study Assessing the Impact of Climate Change on Africa

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Mendelsohn and his colleagues focused the study on agriculture—a particularly important sector for developing countries worldwide. In developed countries, agriculture represents 5 percent of the collective gross domestic product (GDP), but it constitutes 30 percent of Africa's GDP, makes up 50 percent of the continent's total export value and employs nearly 70 percent of the continent's population.

"Many farmers there are still using old agriculture methods, which makes them even more vulnerable to climate change," Mendelsohn said.

At the December 2002 launch meeting in Cape Town, all parties (Yale, the World Bank, CEEPA and scientists from the 11 nations) discussed the logistics of implementing such a monumental project. Out of these talks and many follow-up discussions with scientists in the 11 nations, a "survey instrument" with "standardized data entry formats" was collaboratively designed by Yale and CEEPA. Survey teams visited more than 10,000 farms in these 11 nations over the next year. A four-day workshop was held in South Africa in December 2003 to train the survey teams in the use of econometric and global information system tools in order to analyze their data sets.

To date, economic studies of the farmers in seven of these countries have been completed, including detailed surveys of crop yields, revenues, number of workers, workers' compensation, types of crops and amount of rainfall. The main crops are grains, such as corn, sorghum, wheat and millet, but all 11 countries also grow specialty crops particular to each nation.

"The last 18 months have seen substantial progress in the study," said Kurukulasuriya. "There has been tremendous enthusiasm in the research community in Africa to understand the issue of climate change and agriculture and to figure out policy prescriptions. I am working closely with all the African teams and together we are cleaning the data and getting the data sets ready for analysis."

"Our primary focus is the net effect on these nations right now. Then we will project the future, with a range of climate scenarios," Mendelsohn said.

Mendelsohn and his colleagues are pleased with the response and the efforts of those working in the field to collect the data.

"As many as 40 African scientists are involved, doing the legwork," he said. "In the process, we're training a cadre of Africans, all of whom are motivated. Yale is responsible for the regional analyses, but each country will learn from this."

The study has been a success in unanticipated ways, too.

"Originally we had eight countries involved, but three others petitioned to be included when they learned about the study,"

Mendelsohn said. "You might say we have more than 100 percent participation."

At present, it's an open question as to how bad the effects of climate change will be for Africa, but the entire continent is expected to be negatively impacted. Some of the preliminary findings of the study are summarized on the CEEPA website (www.ceepea.co.za/climate_change/index.html).

In general, the rise in temperature will likely lower crop yields and invite a wider proliferation of crop pests, as well as exacerbate current drought cycles and reduce soil fertility. The more arid northern region of Africa is expected to see an increase in desertification and a gradual decrease in forest cover.

"There could be enormous consequences. Most African countries have two growing seasons, but it depends entirely on rainfall levels, and they could possibly lose a whole season as things heat up," Mendelsohn said.

"The worrying factor is that climate change (and its long-term changes in temperature and rainfall) may well force large regions of marginal agriculture out of production," Kurukulasuriya said. "Some of the earlier studies have indicated possible damages of 0.13 percent to 2 percent of GDP in Africa by 2010."

Kurukulasuriya foresees that there will not be a "single recommended formula" for adaptation, that each strategy will be "specific to local conditions." Though the strategies might include shorter-term efforts like crop diversification, changes in intensity of production, nutrient and pest management programs and food storage, they will also require measures to reduce long-term vulnerability, such as improving water management and utilizing new technologies.

The study's findings will be presented at a conference in Africa in late 2005. "We intend to make our findings known to the political bodies in each of the African countries that are part of this study but also to others on the continent, as we will be making inferences of climate impacts on all African countries," Kurukulasuriya said.

"They can't afford to just let it go," Mendelsohn said. "Climate change is slow and steady. There is still time to make these adaptations over the course of, say, five generations. And they have the desire to do this. If they didn't, the World Bank would not be paying to do the study."

The World Bank has been sufficiently impressed with the African climate study that it is funding a second-wave study for Latin America. **EY**

Sri Lankans Reaping Benefits of Professor's Commitment to Rain Forest

“Anyone interested
in how forests work
and how people
use them has to
make a lifetime
commitment to a
particular region.”

Mark Ashton

By James McElroy

Mark Ashton '85, Ph.D. '90, professor of silviculture and forest ecology, made a commitment to Sri Lanka's people and rain forest back in 1985. He had just received his master's in forestry from Yale and was beginning work toward a doctorate when he decided to study the dwindling but still beautiful and important rain forest that once extended across Sri Lanka's entire southwestern region but is now only roughly 10 percent of its original size.

Over the past 20 years, Ashton has made regular trips to Sri Lanka—the island country off the southern tip of India—to study this forest, to try to develop techniques to rehabilitate the land where it once flourished, to learn how to manage the forest that still exists and to work with the Sri Lankan government and people to take better advantage of the land's numerous riches. Already, Ashton has made great strides in his research, but he feels that he still has much work to do there.

“Anyone interested in how forests work and how people use them has to make a lifetime commitment to a particular region,” says Ashton. “You don't flit around from one place to another.”

During the course of his studies, Ashton has become part of a team of researchers, including his father, Peter Ashton, a botany professor at Harvard, and a number of Sri Lankan scientists from Sri Lanka's Peradeniya and Sri Jayawardenapura universities, who over the past 15 years have studied everything they can about the Sinharaja forest—the economics of products and services from the rain forest, the cultural and recreational significance of the forest for the Sri Lankan people and the biodiversity of plant and animal life that call the forest home. For his part, Mark Ashton has focused on how to regrow the trees and plants that once inhabited the depleted lands surrounding what is left of the forest. The Sinharaja—meaning lion king—is a 50,000-acre (20,000-hectare)

Man and Biosphere Reserve and United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site. It is the largest remaining unlogged rain forest on the island.

All of this study has immediate application in Sri Lanka. Already, the research by Ashton and his colleagues has helped the Sri Lankan government and people grow and harvest numerous valuable products on formerly abandoned agricultural lands surrounding the forest, including cinnamon, nutmeg, cardamom, various medicinal herbs, juggary sugar from palms and timber. Their research has helped the government with reforestation programs that have been focused on stabilizing upland watersheds for the purpose of yielding clean water downstream for rice irrigation and as a source of drinking water for nearby cities and towns.

Furthermore, Ashton and his colleagues' research project—now formally organized as a nongovernmental organization called the Sri Lanka Program for Forest Conservation—has received a great deal of attention from the international community. In 1997 the program received the UNESCO Sultan Qaboos Prize for Environmental Preservation, one of the most prestigious awards in the field of international conservation. The award was given in recognition of the work done in Sri Lanka and for its relevance to the conservation of forests of south and Southeast Asia.



Mark Ashton

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Students Seeking Career Experiences in the Pacific Northwest

Have Friends in Al and Ray Jubitz

By John Courtmanche

Rotary club dinners aren't typically life-changing events. But one evening in 1989, Al Jubitz, then co-president of Jubitz trucking services company of Oregon, attended a Rotary dinner on the environment and heard a speech by celebrated Canadian ecologist David Suzuki. In Jubitz's words, it was "the best after-dinner speech of my life. In one hour I was a committed environmentalist."

Back at the office, Jubitz took steps to reduce his company's impact on the environment, including the simple step of encouraging staff to "reduce, reuse and recycle." But Jubitz wanted to make a more significant impact on environmental stewardship and policy in his home state of Oregon.

So Jubitz, a member of the Yale Class of 1966, approached the Yale School of Forestry & Environmental Studies to create an endowment to fund student research internships in the Pacific Northwest. He says the decision stemmed from his own experience benefiting from scholarships as a Yale student, as well as from "my awareness of environmental degradation caused by human activity and my concern for public policy changes. Good science leads to good public policy. I felt investing in students, the future policy makers and scientists, was the way to go."

The result of Jubitz's donation was the Jubitz Family Endowment for Research Internships, which gives summer stipends to F&ES students to conduct environmental research internships in ecosystems from Oregon to Alaska, as well as in the Bhutan region, one of Jubitz's other favorite places. The endowment gives special preference to projects linking science with the legislative process. Jubitz worked with F&ES to structure the endowment so it would fund as many student internships as possible.

Since being founded more than a decade ago, the size of the endowment has grown through Yale's successful financial management of the fund and through additional donations from Jubitz, who has since sold his stake in the Jubitz Corporation and retired. The number of students receiving awards, which are administered through the F&ES Career Development Office, has grown steadily. The Jubitz endowment funded three research fellows in 2001, four in 2002, five in 2003 and eight this past summer.

The 2004 Jubitz fellows spent their summer assisting nonprofits and government agencies with important research projects. Ann Grodnik, a candidate for a joint degree from F&ES and the Yale School of Management, used her Jubitz funding to produce a research project for Ecotrust in Portland, Ore., a nonprofit organization promoting a conservation-based economic policy for the Pacific Northwest.

Specifically, Grodnik generated a report on the U.S. carbon market to inform Ecotrust about the potential to generate revenues by selling carbon stores of Northwestern forests. She explains that power companies throughout the world have invested in maintaining healthy forests, which store carbon and therefore offset the companies' unhealthful carbon emissions; Grodnik researched the potential for companies to invest in Pacific Northwestern forests.

She says the Jubitz funding supplemented her small salary from Ecotrust and allowed her to



Al and Ray Jubitz

"Al is a benefactor who is involved with F&ES in many different ways, and who has enriched students' lives and the school's ability to support students."

Peter Otis

undertake the project. The internship contributed to her master's thesis on the international carbon market, and "it was a great opportunity for me to make connections with people in carbon markets in the United States, including the Pacific Northwest, and worldwide," says Grodnik.

The Career Development office also awarded a Jubitz fellowship to Brett Golden, a candidate for a master's degree in environmental management, to intern with the federal National Marine Fisheries Service out of Seattle. Golden helped the agency assess the 2004 population of endangered Chinook Salmon on the Snake River in Idaho, and investigate the reasons for the small number of salmon in the population. "Eventually I'd like to go into river restoration and help develop restoration projects," he says. "This project showed how the lack of management practices is affecting the salmon population. It gives me the background for evaluating other management practices from a restoration standpoint."

The Jubitz endowment is not only helping students advance their career goals, it's also helping nonprofits and government agencies accomplish valuable projects. Guido Rahr '94, president and CEO of the Wild Salmon Center in Portland, recruited Michelle McCarthy Lichtenfels, studying for her master of forestry degree, to produce an analysis of policy issues facing the Oregon Department of Forestry.

"The Pacific Northwest has a need for people who understand the conflicting pressures of a natural-resource-based economy," explains Rahr. "Our population is increasingly valuing quality of life over the days when logging was king." Rahr says he plans to seek F&ES interns regularly.

Lichtenfels says her Wild Salmon Center internship allowed her to get an in-depth look at forestry practices and government regulations, and to meet employees of nonprofits and public agencies in the Pacific Northwest, where she hopes to work after graduation.

Master's student Jocelyn Hittle interned with The Northwest Environment Watch, conducting research in support of a campaign to defeat a Portland, Ore., ballot measure relaxing land-use regulations. says Hittle, "My experience improved my understanding of the way cities are measured and how Census data is organized, and helped me get a sense

of how city government operates and is integrated with county government and regional authorities."

(The other four 2004 Jubitz Fellows are Victoria Critchley, Livia DeMarchis, Alison Macalady and Dave Mitchell.)

As the endowment continues to grow, Jubitz is looking to increase the number of nonprofit organizations hiring Yale interns. In addition to the Jubitz endowment at Yale, Jubitz also administers the Jubitz Family Foundation out of Portland, whose mission includes awarding grants to environmental nonprofit organizations in the Columbia River region. Through the foundation, the Jubitz family maintains relationships with administrators of many nonprofit organizations in the Northwest. This past summer, the Jubitzes hosted a barbeque and invited the administrators to meet the summer 2004 Jubitz interns and F&ES area alumni. "We brought in several environmental nonprofits so they could find out for themselves what the value of having an intern would be," says Ray Jubitz, Al's cousin and executive director of the Jubitz Family Foundation.

The Jubitz endowment is structured in such a way that nonprofits can advertise at F&ES to recruit interns, or students can develop their own research project and find a host organization. Jubitz fellowship awards range from \$2,000 to \$6,000 and often supplement funding from other sources, such as from the host organization itself or from another grantmaker.

Peter Otis, director of the Career Development Office, explains that all F&ES students are required to complete an internship as part of their studies, and that the school is fortunate to have a number of endowments to help students work in internships. Some, like the Jubitz endowment, are exclusive to Yale, while others require F&ES students to compete with students from other major schools of forestry and environmental studies.

But Otis says what distinguishes the Jubitz endowment from the others is the personal involvement by Al and Ray, particularly their efforts to encourage their associates in the Northwestern environmental community to recruit F&ES interns.

"Al is a benefactor who is involved with F&ES in many different ways, and who has enriched students' lives and the school's ability to support students," Otis says. "And his endowment enriches nonprofit organizations he believes in. These organizations might not be able to bring in interns otherwise."

One of the most important ways Al is involved with F&ES is as a member of the Leadership Council, visiting campus every October to attend the council's annual meeting. While on campus, he arranges to meet all the Jubitz fellows from the previous summer and to hear about their experiences, which is to him the most rewarding aspect of his involvement. "The joy of it all is talking to the students. Their eyes widen, they get excited about their summer experience—about what they do. That excites me. They know so much more than I do. They have curiosity, time, energy and the future to make a difference." **EY**



2004 Jubitz fellows, left to right, Brett Golden, Michelle McCarthy Lichtenfels, Ann Grodnik and Jocelyn Hittle with Peter Otis, director of the Career Development Office.

Sri Lankans Reaping Benefits

“The economic benefits of the forest are important, but in terms of the psyche of the Sri Lankan people, the forest is extremely important.”

Mark Ashton

CONTINUED from page 33

And currently the program has made plans to use some recently purchased agricultural land to demonstrate some of its newly developed methods for domesticating, growing and harvesting the forest's many valuable products, as well as to create an arboretum that will conserve some of the forest's most endangered flora.

Like so many forests throughout the world, much of the rain forest of southwest Sri Lanka was cut down over a 100-year period to make way for lucrative plantations of rubber and tea. Many of these clearings have reverted to fire-dependent ferns.

As a silviculturist, Ashton studies what he calls “the technology of growing trees and forests.” So he has devoted much of his time in Sri Lanka to trying to find ways to rehabilitate the rich tapestry of forest life that once existed in these fern lands.

To do this, his colleagues constructed 50-acre plots that mapped plant demographic patterns across the rain forest topography. These plots illustrate precisely where and in what density the 200-plus species of woody plants over one centimeter in diameter tend to live. Ashton described the mapping process as a way of viewing the forest as an extremely complex, three-dimensional jigsaw puzzle composed of interlocking species of plants that occupy different parts of the topography and habitat strata of the forest canopy.

With these maps in hand, Ashton went to work to test what underlying environmental mechanisms were driving such patterns. For instance, how shade-tolerant are the species in relation to each other? Are there site differences that relate to frequency, type and size of disturbance? How do species vary across hydrological and soil fertility gradients?

So, after culling a great deal of data on the geography and dynamics of tree species growth in the rain forest, Ashton can begin developing techniques to manage the rain forests' regeneration.

“We are trying to obtain as much information as we can about the dynamics of these forests to apply to a series of different management schemes for land rehabilitation,” says Ashton. As soon as you say, ‘management,’ people ask, ‘for whom and for what?’ Some people are really interested in the conservation value of the forest. Others are interested in the economic value. Still others are interested in land stabilization for watershed protection.

Each of these goals is worthwhile. So Ashton has focused on developing regenerative management techniques that are capable of reaching any and all of them. As one example, Ashton describes a portion of land outside the rain forest where the government has planted pine trees to harvest timber and to demonstrate ownership. Armed with his data regarding the conditions under which different native rain forest species thrive, Ashton and his Sri Lankan colleagues underplanted and thinned the plantation in order to cultivate medicinal herbs and spices that could be managed by the villagers, and developed guidelines for plantation conversion to rain forest species through succession. Since then, villagers have imitated Ashton and his colleagues' techniques to grow and harvest such plants in collaboration with the government. Many of these ideas are now being applied in the work initiated by Ashton in Panama on rehabilitating abandoned agricultural lands (see “Reforestation Effort in Panama,” *Environment: Yale*, Spring 2004).

Ashton takes the well-being of the Sinharaja rain forest and of Sri Lanka, in general, rather personally. His mother was born and raised on a tea plantation run by her family for six generations. And traveling twice a year for 20 years to Sri Lanka, teaching Sri Lankan students and working with Sri Lankan professors, farmers, foresters and government officials, he has come to care deeply about both the forest and the Sri Lankan people.

“The Sinharaja forest is very near and dear to their hearts,” says Ashton. “The economic benefits of the forest are important, but in terms of the psyche of the Sri Lankan people, the forest is extremely important.” **EY**

ClassNotes

1909

Meyer Wolff was the first Jewish forester from Yale. His great-great niece Elizabeth Hoyt is working on the story of all her family forebears at Yale. Elizabeth's son just learned that his great-great-great-uncle was a classmate of the famous **Aldo Leopold**, whose writings he admires.

1942

CLASS SECRETARY:

HAMLIN WILLISTON
williston@watervalley.net

1946

CLASS SECRETARIES:

PAUL BURNS pyburns@lycos.com
DAVID SMITH david.m.smith@yale.edu

Paul Burns' wife, Kathleen, died on March 14 at age 84 in Baton Rouge, La., where she and Paul had lived for 49 years. She and Paul entertained classmates and their wives in their North Haven home while Paul was a student at Yale. Paul reports that he attended a memorial service in Baton Rouge on July 29 for the late Katherine (Missy) McDermid, 90-year-old widow of **Robert McDermid '37**. Missy kept up with her late husband's classmates and other F&ES graduates of the 1930s for many years. Further, Paul reports that his classmate and fellow WWII weather officer **Dave Smith, Ph.D. '50**, had another stroke in March. Dave and his wife Bobby live in a retirement facility in Hamden, Conn. Dave uses a metal walker to get around. He is still helping the alumni office with notes at the advisory council meetings and with writing obituaries for this magazine.

1947

CLASS SECRETARY:

EVERT JOHNSON
swede-doc@mindspring.com

1948

CLASS SECRETARY:

FRANCIS CLIFTON
fhcbyfor@webtv.net

Hap Mason wrote: "I am still growing saw logs, firewood, pulpwood and Christmas trees on my tree farm. My friend, Bill Hull, bought 7,000 acres of the land that I used to manage for Peck Lumber Co. He is doing an excellent job of managing it. In addition, he bought a defunct paper mill in my town of Russell that he is utilizing as a saw log and pulpwood concentration yard, and plans a sawmill in a few years. His daughter, Mary, and her husband, Mark, a forester, are now my next-door neighbors. My grandchildren are all world travelers. My oldest girl spent about a year in the Near East and Europe. Her younger brother spent a term in Ireland. The next granddaughter is now in Samoa and planning to go on to New Zealand. The youngest girl spent a term in Costa Rica and is now in

college in Florida. Three foster grandchildren were born in Russia and live in L.A. All are college material but unfortunately no Yale students or foresters."

Francis Clifton wrote in July: "Last week a new barber came to work at the shop in DeLand, Fla., where I hang out in. In the process of getting acquainted he said, 'I'm from Connecticut.' I said, 'Where about in Connecticut?' He said, 'New Haven, have you ever been there?' I said, 'Yes, I spent two years there at the Yale School of Forestry.' He said, 'My wife was the secretary to the dean of the School of Forestry & Environmental Studies.' Her name is Rosemary Teodosio. They live in Palm Coast, about 40 miles north of DeLand. I have not met her. Through her husband, she sends warm regards to Dean Speth and the staff at the school. It's a small world." Francis wrote again in early September: "Hurricane Charley's line of destruction passed about 10 miles southeast of DeLand, but hurricane Frances' feeder bands gave DeLand a good blow. Many trees uprooted or snapped off but not much structural damage to buildings. A few of the trees fell on rooftops. My yard was covered with twigs and small tree limbs, no damage to the house. I was without power for two and a half days. My six-inch-capacity rain gauge overflowed, so I'm still in the process of cleaning up. Received a phone call from **George Hindmarsh**, who reported that he and Janet evacuated Punta Gorda for Hurricane Charley. Upon returning he found only superficial damage to the home, no flooding."

1949

CLASS SECRETARY:

FRANK ARMSTRONG
farmst1037@aol.com

1950

 50th Year Reunion May 6-8, 2005

CLASS SECRETARY:

KENNETH CARVELL kencarvell@aol.com

1951

CLASS SECRETARY:

PETER ARNOLD arnoldp@nccn.net

1952

CLASS SECRETARY:

MILTON HARTLEY
redheded@olympus.net

1953

CLASS SECRETARY:

STANLEY GOODRICH

Perry Hagenstein was recently appointed to the real estate committee of the Massachusetts Pension Reserves Investment Management Board. He is a consultant on timber and natural resources policy, economics and management to government, industry and private organizations. Prior to his consulting career, he served as principal economist with the USDA Forest Service and as a policy analyst with the

U.S. Public Land Law Review Commission. He also was director of the American Forestry Association for 10 years. He is active in the Society of American Foresters.

Bob Teeters wrote in early spring: "We're getting my wife, Nancy, ready for surgery on her bum right knee on April 26, and she seems to have seen every specialist she's ever seen for an OK before she goes. No wonder Hospital for Special Surgery has such a good record for few complications. Assuming she makes a reasonably normal recovery, I'd be delighted to participate in the reunion activities, and so informed someone at F&ES."

1954

CLASS SECRETARY:

RICHARD CHASE RACHase@aol.com

Pausolino Martinez wrote from Venezuela in the spring: "This month my class is celebrating its 50th anniversary. I am still alive and in good working condition as a professor at the University of Guyana, Venezuela. I would like to get in touch with classmates."

1955

 50th Year Reunion May 6-8, 2005

Warren Doolittle, Ph.D., announced his retirement from the staff of the International Society of Tropical Foresters (ISTF). He has been part of the staff for nearly 23 years, and served as ISTF president from 1984 to 2001—all as an unpaid volunteer. His involvement with ISTF began in 1980 after his retirement from the USDA Forest Service. His career with the Forest Service began in 1946 as a researcher; by the time he retired he had attained the rank of associate deputy chief of research. He also is a member of the Society of American Foresters (SAF), having served as SAF president in 1986 and on the SAF Council from 1974 to 1975.

1956

CLASS SECRETARY:

JACK ROSE jackrose@iopener.net

1957

Thomas Dierauf received one of 10 national 2004 SAF Presidential Field Forester Awards in recognition of his work in applying scientific forestry on the ground during his long career with the Virginia Division of Forestry. He started there as a county forester after Yale and retired after 25 years as chief of research in 1995.

1958

CLASS SECRETARY:

ERNEST KURMES
ernest.kurmes@nau.edu

Herster Barres reports on his work with Reforest the Tropics and The Klinki Forestry Program for Costa Rica. He provided a photo (www.yale.edu/forestry/alumni/photos.html) of

ClassNotes

NEW HAMPSHIRE FORESTER RECOGNIZED BY NATIONAL ORGANIZATION



Harry Valentine

Harry Valentine '72, Ph.D. '82, of Madbury, N.H., a research forester with the Louis C. Wyman Forestry Sciences Laboratory in Durham and a research affiliate at F&ES, received the Society of American Foresters (SAF) Award in Forest Science in October. The award recognizes distinguished individual research in any branch of the quantitative, managerial or social sciences that advances forestry.

A research forester with the USDA Forest Service for the past 30 years, Valentine is credited with making significant contributions to forestry in a variety of subject areas, including insect modeling, forest inventory, forest growth modeling and importance sampling. Although best known for his innovative research in the fields of forest sampling and process modeling, he also has contributed substantially to knowledge about the population dynamics and herbivory of an important exotic forest insect—the gypsy moth.

Valentine has published more than 80 scientific papers, and his scientific contributions have been reported in journals of botany, ecology, entomology, forestry, pathology, statistics and tree physiology, as well as in chapters of several books. While the breadth of his research has been wide, he has specialized in two thematic areas that have impacted forestry internationally. First, he has been instrumental in devising sampling methodology, which has been applied worldwide, for the unbiased estimation of biomass, volume and elemental constituents of individual trees. Second, he adapted a Japanese theory of tree form—the pipe-model theory—to develop a dynamic model of carbon allocation. The pipe-model approach is now used worldwide, and has become the most commonly used method for modeling carbon allocation in process-based models of forest growth. Further, he developed and released a computerized, process-based model of carbon allocation and growth for even-aged stands, which has been used to analyze the effects of predicted increases in carbon dioxide and climactic warming, and is frequently cited by the forest industry.

Valentine has been a member of the SAF since 1977. SAF is a nonprofit organization that represents more than 17,000 professional foresters and natural-resource professionals.

the Mohegan Carbon-Offset Project in the Las Delicias farm in Costa Rica, funded by the Mohegan Tribal Nation to offset the CO₂ emissions of two large fuel cells in Uncasville, Conn. Reforesting pastures that were created by the destruction of the tropical forests is an unrecognized and potentially very large opportunity to manage U.S. carbon emissions.

1959

CLASS SECRETARY:

HANS BERGEY hberg16@aol.com

1960 45th Year Reunion May 6-8, 2005

CLASS SECRETARY:

JOHN HAMMER jgham@bulloch.com

At the end of June, **Gregory Brown** retired as dean of the College of Natural Resources at Virginia Tech, a position he has held since 1992. He is the only dean that the college has had since it was established. He also is associate director of the Virginia Agricultural Experiment Station and a tenured professor. Brown leaves Virginia Tech after 26 years of academic administrative work and 15 years in teaching and research.

1961

CLASS SECRETARY:

ROGER GRAHAM

Karl Spalt writes from Arizona: "I am retired and modifying a new home to make it livable for my wife,

who acquired extreme chemical sensitivity cleaning up toxic black mold (*Stachybotrys*) in 2000 in our former house here that had had a roof leak. I advise you to repair all plumbing and structural leaks quickly and bleach any mold. Better still, hire a professional to remediate and safely remove damaged cellulosic materials before replacing and repairing."

1962

CLASS SECRETARIES:

JAMES LOWE JR.

LARRY STAFFORD

lsaffordnlh@earthlink.net

1963

CLASS SECRETARY:

JAMES BOYLE jim.boyle@orst.edu

1964

CLASS SECRETARY:

G. WADE STANIAR

1965 40th Year Reunion May 6-8, 2005

CLASS SECRETARY:

JAMES HOWARD jhoward@sfasu.edu

1966

CLASS SECRETARY:

HOWARD DICKINSON JR.

1967

CLASS SECRETARY:

ROBERT HINTZE bclues@aol.com

1968

CLASS SECRETARY:

GERALD GAGNE

Gerald.gagne@sympatico.ca

1969

CLASS SECRETARY:

DAVIS CHERINGTON cheringvt@aol.com

1970 35th Year Reunion May 6-8, 2005

CLASS SECRETARY:

WHITNEY BEALS wbeals@neforestry.org

1971

CLASS SECRETARY:

HAROLD NYGREN tnygren@juno.ocm

1972

CLASS SECRETARY:

RUTH HAMILTON ALLEN

ruth.allen@aehinstitute.com

Jim Grace, a Pennsylvania State forester, received an outstanding alumni award from Pennsylvania State University, where he got a doctoral degree and had been an extension forester.

1973

CLASS SECRETARY:

LAUREN BROWN leb481@aol.com

Bob Cashel writes: "I know it's hard to believe but I am back in school, this time studying plant biology at Rutgers. This is definitely much harder than I remember. My area of concentration is golf courses, so I will know what kind of grass ate my ball. The rest of the family is doing well. My wife is supporting the starving grad student and our son is gainfully employed while still living at home. Our daughter just finished two years with the Nevada Conservation Department, and is now interning with the American Council on Renewable Energy in Washington, D.C. Hope all is well with the rest of the class."

Tom Dunn was elected to the board of directors of RadTech North America, the North American trade group for the advancement of ultraviolet and electron-beam-cured inks and coatings (VOC-free). He also leads the substrate subcommittee for the RadTech alliance that is seeking FDA approval of some of these coatings for direct contact food packaging. In his day job at Printpack in Atlanta, he is pursuing commercial qualification of the company's food packages made with electron beam coatings.

Lloyd Irland, Ph.D., taught forest finance at F&ES again this fall and is introducing a one-credit course on professional ethics. His major consulting activities include an assessment of changing forest landownership on biodiversity in the Northeast and a review of the competitive position of the Maine paper industry. In a keynote address at the Allegheny Section of the Society of American Foresters meeting in Dover, Del., last spring, Lloyd reviewed economic forces behind the recent changes in ownership of large private forests in the United States. Lloyd also gave a talk at the fall 2004 Western Wood Products Association Forecast Conference. He reviewed 30 years of structural changes in the North American softwood lumber and paper industries. He also is a contributing author for the chapter "Timber, Fuels, and Fiber" of the Millennium Ecosystem Assessment, a global review by the United Nations.

From **Dix Leeson**: "Only news here is that I continue to enjoy raising funds for Harvard Business School. The most practical use of lessons learned from Professors Gartska, Siccama, Smith and Bormann relates to the trout fishing club I frequent in Uxbridge, Mass."

Kathy Stockwell reports: "I just attended my 40th high school reunion. My husband, Fred, and I have been living on the family farm for two years now, and are negotiating with the Tecumseh Land Trust about an agricultural easement. Development pressures are accelerating and we want to keep our 101 acres, including four acres of woods, in agriculture. I am still teaching in the public schools in Xenia, Ohio, as a Title 1 teacher. I spend half my day with math and reading remediation. I am a reading recovery teacher for the other half. Reading Recovery provides 8 to 20 weeks of intensive one-on-one literacy intervention for first-graders at highest risk."

1974

CLASS SECRETARY:

JAMES ROGERS
Jimrogers3@aya.yale.edu

Eva Mueller: "The most important news is that in August I left ITTO and Japan to join FAO's Forestry Department in Rome as chief of the Forestry Policy and Institutions Service. Apart from the challenge of a new job, I am happy to be back in Europe after 24 years of living and working overseas. In June I visited F&ES for the first time in 18 years, when I attended the international symposium on forest certification."

1975 30th Year Reunion May 6-8, 2005

CLASS SECRETARY:

ANN CORCORAN

1976

CLASS SECRETARY:

HOWARD CORCORAN

1977

CLASS SECRETARY:

JAMES GULDIN jguldin@prodigy.net

From Bar Harbor, Maine, **Charles E. Hewett, Ph.D.**, '82, has been named vice president and chief operating officer of The Jackson Laboratory, a nonprofit genetics research institute. Hewett will oversee operations for JAX Research Systems, which includes JAX Mice and JAX Services. He also will provide managerial oversight for scientific support services and laboratory operations such as human resources, finance, information technology and purchasing. Previously, Hewett served as chief operating officer for the State of Maine executive branch (1995 to 1998) during the first three years of Governor Angus King's administration. Prior to joining the King administration, Hewett worked for Hafslund Nycomed AS, an energy and pharmaceutical firm with headquarters in Norway, from 1987 to 1995.

1978

CLASS SECRETARIES:

SUSAN CURNAN curnan@brandeis.edu

MARIE MAGLEBY lomamag@aol.com

REGINA ROCHEFORT
regina_rochefort@nps.gov

Luke Umeh has retired from his position at the African Development Bank.

1979

CLASS SECRETARY:

JOHN CAREY carey@aya.yale.edu

Gary Machlis, Ph.D., is a program coordinator for the Canon National Parks Science Scholars Program. He organized a retreat of 14 students in December 2003 in Vieques, Puerto Rico. He works for the National Park Service, a partner with Canon USA and AAAS in establishing this program. The students' introduction to Vieques covered the island's ecology, history, culture and politics through firsthand observations. They also heard the people of Vieques

discuss how best to move the island toward a sustainable future. **Shere Abbott '84**, AAAS chief international officer, took part in the retreat.

1980 25th Year Reunion May 6-8, 2005

CLASS SECRETARY:

SARA SCHREINER-KENDALL
sara.kendall@weyerhaeuser.com

Susan Braatz has moved back to Rome.

Phil Brylski wrote: "I'm working as the environment and social coordinator for the World Bank's program in Vietnam, based in Hanoi. I recently moved here after developing natural resources management programs in Europe and Central Asia (mainly in the former Soviet Union but also the Balkans) for 10 years. Visitors are welcome. Married (finally and recently), no kids (yet). Best to all!"

1981

CLASS SECRETARIES:

FRED HADLEY mrm@evansville.net

CAROL YUELL envstew@snet.net

1982

CLASS SECRETARIES:

BARBARA HANSON

KENNETH OSBORN
forstman@fidalgo.net

Jonathan Kusel was part of the Hixon Center for Urban Ecology panel "Pioneering Urban Ecology Research." He is the founder and executive director of Forest Community Research. He received a Ph.D. from the University of California, Berkeley, where he was a visiting scholar and instructor before launching Forest Community Research. He has co-authored the book *Community Forestry in the United States: Learning from the Past, Crafting the Future* (see *Bookshelf*).

Kent Wommack: "I have accepted a job as The Nature Conservancy's Australian Program director for two years and we are moving to Brisbane. I will be taking a few courses at the University of Queensland. Come visit!"

Junaid Kabir Choudhury writes from Bangladesh: "I served as a professional forester to the government of Bangladesh from 1969 to 2001, and retired as conservator of forest. I have worked as a forestry expert for the Fish Aggregating Device section of the Ministry of Fisheries, Agriculture and Marine Resources and Asian Development Bank (ADB) in Maldives and Indonesia. In June I worked as a member of an ADB mission. My degree from Yale helped me a lot."

1983

CLASS SECRETARY:

STEPHEN BROKER lkbroker@snet.net

Mary Ann Fajvan has joined the staff of the USFS Northeastern Research Station branch in Morgantown, W. Va., where she had been silviculturist on the faculty at West Virginia University.

Guillermo Castilleja, Ph.D., met with students and others in April in Sage lounge to discuss his work as vice president of the World Wildlife Fund (Latin

ClassNotes

TOM MCHENRY '80 APPOINTED CHAIR OF SAND COUNTY SOCIETY



Tom McHenry

At the F&ES reunion in May, Dean Gus Speth announced that Tom McHenry '80 would chair the Annual Fund's Sand County Society. He succeeds Jim Rogers '74, who led the Sand County Society from its founding. McHenry is a partner at Gibson, Dunn & Crutcher in Los Angeles and a member of the firm's Environment and Natural Resources Practice Group, where he practices general environmental law, with an emphasis on air quality, hazardous waste, environmental diligence, land use and energy issues. He also serves on the boards of the California State Parks Foundation and the Santa Lucia Conservancy, and

was president of the board of Wildlife Trust. A tireless volunteer in many capacities on behalf of F&ES, particularly with the Class of 1980 Project Fund, McHenry is a member of the F&ES Leadership Council.

America), where he now coordinates regional conservation programs. He oversees a partnership between the World Wildlife Fund, the Government of Brazil, the World Bank, the Global Environment Facility and other partners that was formed to preserve 193,000 square miles of Amazonian forest in parks and reserves. This ambitious, five-year, \$400 million Amazon Region Protected Areas (ARPA) project will create a system of parks in the Brazilian Amazon. The ultimate goal is to triple the amount of forest under protection.

1984

CLASS SECRETARIES:

THERESE FENG

Therese_feng@yahoo.com

ROBERTA TABELL JORDAN

rjordan@clinic.net

1985

20th Year Reunion May 6-8, 2005

CLASS SECRETARIES:

ALEX BRASH alex.brash@parks.nyc.gov

MARGARET KING theskings@attbi.com

Alex Brash wrote: "I am leaving Parks & Recreation after nearly 17 years. . . . More than pulling off some of the largest events in New York City's history, I always will be incredibly proud of how all the officers in the Urban Park Service responded to, and stood tall on, 9/11. I am proudest of the fact that in my time, under a series of great commissioners, we were able to shift from patrolling the forbidden reaches of the city to actually restoring its native biodiversity. The return of grey tree frogs, flying squirrels, piping plovers, American chestnuts and bald eagles will remain as some of my most tangible accomplishments. I will become a senior director for the National Parks Conservation Association (NPCA) in NYC, where we

are launching a regional office that will cover New York, New Jersey and New England to enhance visibility and resource protection of the national park system in the area."

1986

CLASS SECRETARY:

CAROLINE NORDEN

cnorden@maine.rr.com

Betsy McGean: "I have moved from Washington, D.C., to Hanover N.H., and am telecommuting."

1987

CLASS SECRETARIES:

CHRISTIE COON cacoony7@aol.com

MELISSA PALY mpaly@aol.com

Heidi ("Jo") Albers: "I am a fellow at Resources for the Future in Washington, D.C. I do decision analysis and research on natural resource management and biodiversity conservation. I have projects right now on spatial land trust decisions in the United States, shade-grown coffee farmer decisions in Oaxaca, Mexico, and spatial aspects of nontimber forest product extraction from tropical forests. I also am a coordinating lead author on the biodiversity policy chapter for the Millennium Ecosystem Assessment. I am planning to move to Corvallis, where I will be an associate professor in the Department of Forest Resources in Oregon State University's College of Forestry. Some of my research and teaching there will focus on managing public forest and rangeland, with an eye toward ecosystem health and restoration. I married Clay Johnson 12 years ago and we have two wonderful and rambunctious sons, Nate, 6 years, and Milo, 2 years."

Jim Pissot wrote: "I now serve as executive director of Defenders of Wildlife Canada, based in Canmore, Alberta. Our main projects are keeping wolf jaws off Canadian beef (and providing secure wolf habitat), helping wildlife cross the road (i.e., ensuring ecological connectivity across roadways) and conserving grizzly bears in western Canada. Valerie and I enjoy work and play in the Canadian Rockies. We can be reached at jpissot@defenders.org. I enjoyed a few days on the F&ES campus this spring examining the strengths/challenges of Y2Y as a large landscape effort. Good conversations with current students, Gordon Geballe, Tom Siccama and **John Wargo, Ph.D. '84** (and, of course, Tim Clark, who hosted the event)."

Tony Hainault wrote: "I joined Hennepin County Environmental Services as an air quality and energy analyst this past spring. We're evaluating how much energy we consume and from what sources, with the intent to reduce gross consumption and per capita consumption over time and increase reliance on renewable fuels. This includes sustainable design, recommissioning buildings, transit and fleet maintenance, procurement, distributed generation, biofuels, wind, PV and fuel cells. I'd welcome hearing from other alums working on conservation and renewable energy."

From **Melissa Paly**: "Jess is in fourth grade, Jeremy in second, and Ellie just turned 4 and loves playing her new violin in her tutu. I'm finishing a one-hour documentary for PBS with one of my partners about the Fernald State School, America's first institution for the mentally retarded that is still operating after 160 years. It's a piece about the best, and the worst, of human intentions. Also under way are a few spinoff projects from Livable Landscapes, a PBS piece about sprawl and landscape change in northern New England. This fall I have a Mellon fellowship at Bates College, teaching a seminar in environmental documentary. I'm having those panicky dreams again about going to the final exam completely unprepared. I wonder if any of our esteemed professors suffered such self-doubt? I had the good fortune to attend nuptials of **Holly Welles '88** this summer at her family's place in Christmas Cove, Maine; it was a grand affair and a great chance to catch up with **Ed Vaughn** and **Betsy Carlson '88**.

Mike O'Connell left The Nature Conservancy after almost 13 years to head up a new land trust founded by Donald Bren, chair of the Irvine Company. He will be steward of the 50,000 acres of the Irvine Ranch that have been permanently set aside."

Joel Seton wrote: "Enjoyed backpacking and climbing with friends recently in the High Sierras. I am director of Health of People and the Environment (HOPE) at the Resource Renewal Institute in San Francisco. I would enjoy seeing any F&ES alums passing through San Francisco."

1988

CLASS SECRETARIES:

DIANE STARK dsstark@comcast.net

PHILIP VOORHEES pvoorhees@ncpa.org

Heidi McAllister and Carlos Rodriguez announced the birth of Benjamin Daniel Rodriguez on July 28. Benjamin weighed in at 7 pounds, 8.8 ounces, and measured 19 and three-quarter inches.

Holly Welles directs the environmental justice program at Pacific Gas & Electric. She just got married this summer, and she and her husband live in Mill Valley. She has recently been in touch with **Rene Askins**, **Melissa Paly '87**, **Betsy Carlson '89**, **Bruce Goldstein '90** and **Vicki Nichols '90** (who moved from Santa Cruz to West Virginia).

Randall Downer reports from China, Maine: “**Judy Stone's '87** and my children are James, 12, and Phoebe, 8. We live inland in Maine between two halves of a lake and I work along the coast, so water is always near. Judy is an assistant professor in the biology department at Colby College (www.colby.edu/profile/jstone/BIOL). My research is going well at Bowdoin College, on the Maine coast, developing virtual reality interactive software, which allows students and researchers to visualize databases of either spatial data (e.g., gene expression of developing limbs) or numerical space (e.g., numbers that describe where an organism might be found).”

Martin Christ lives near Morgantown, W.Va. He works part time for a watershed organization, Friends of Deckers Creek, and part time doing consulting work around water quality science and policy. He is serving on a committee on nutrient standards in surface water with F&ES alum **Roger Sherman '74**.

Diane Stark is living in the San Francisco Bay area. She has two daughters, Allyson, 13, and Phoebe, 10. She salsa dances, plays keyboard in a band called “Tuesday’s Alibi” and is a transportation planner in the East Bay. She has been in contact with **Helena Brykarz '89** and **Rohit Salve '89** and their two daughters, who live in the Bay Area; **Lily Whiteman**, who just wrote a book; **Phil Voorhees**, who is working with the National Parks and Conservation Association, and his wife and son; **Julie Bournes '89** and **Manuel Ramirez**, who are working with Conservation International; and **Heidi McAllister** and **Carlos Rodriguez**, who just had a baby.

1989

CLASS SECRETARIES:

SUSAN CAMPBELL
susan.campbell@comcast.net

JANE FREEMAN jane@ewalden.com

Jane Freeman wrote in late August about her upcoming sabbatical: “My husband and I are traveling in Europe (he also will be working part time), starting out on a sailboat for two weeks in the Greek Islands and then flying to Geneva, where we hope to catch up with a classmate, **Stephen Kelleher**. After that, we will probably spend much of our time in France and Spain.”

Claudia Martinez: “I’m currently in Caracas, Venezuela, with my husband, Marko Ehrlich, and my two boys, Pietro and Antonio. As vice president for social and environmental development at the Andean Development Bank (Corporación Andina de

Fomento-CAF), I have three interesting units: the environmental division, the medium small and micro enterprise division, and the social development division, where we can provide financing in four sectors (education, health, water and sanitation, and agriculture and rural development) in 16 countries of Latin America and the Caribbean. We are settling down happily in Chavez Land.”

Laura Simon: Scott Kealey and I have a wonderful baby boy named Jack Simon Kealey, born April 14, 2003. Already, he’s gone on two skunk rescues, been buzzed by a red-tailed hawk and had a chimney swift land on his head. So he’s well on his way to becoming a wildlifer. In March, I appeared on the Ellen Degeneres talk show! Apparently Ellen was having a problem with skunks on her property, and so NBC flew me out to California to appear as her skunk consultant. When I arrived, there was a live domestic skunk waiting in my dressing room to go on the show with me. I went on right after actress Angelina Jolie. It was a lot of fun. I am still working for The Fund for Animals in New Haven.

1990 15th Year Reunion May 6-8, 2005

CLASS SECRETARIES:

JUDY OLSON HICKS

CAROLYN ANNE PILLING

1991

CLASS SECRETARIES:

DOROTHY BEARDSLEY DEBPDC@aol.com

KRISTIN RAMSTAD
kramstad@odf.state.or.us

Anne Southworth Marsh recently moved from the Smithsonian Environmental Research Center, where she was doing elevated CO₂ research, to The H. John Heinz III Center for Science, Economics and the Environment. There she is helping develop national environmental indicators as part of The State of the Nation’s Ecosystems Project, and enjoys working with **Laura Meyerson '95, Ph.D. '00**. Anne and her husband, David, live in Bethesda, Md., with their two children, Thomas, 6, and Elizabeth, 4.

Kris Ramstad, Alan Kanaskie and Leo, 5, welcomed Henry Owen at high noon on February 17. He weighed in at 8 pounds, 5 ounces, and measured 20 inches long. Kris is transitioning back to regular part-time hours as an urban forester with the Oregon Department of Forestry in Salem. Leo is starting kindergarten, and Alan, as the state forest pathologist, continues to work on Sudden Oak Death and Swiss Needle Cast.

1992

CLASS SECRETARY:

KATHERINE KEARSE FARHADIAN
farhadian@aya.yale.edu

1993

CLASS SECRETARIES:

DEAN GIBSON deang@duke.edu

MOLLY GOODYEAR
mandm4@mindspring.com

HEATHER MERBS hmerbs@aol.com

Sally Loomis and **Paul Jahnige** and their two girls are planning to take a few months off next year and live abroad. In particular, they will spend about two months in a Latin American destination (Costa Rica, Panama, etc.), ideally living and volunteering at some site or project. Paul is the community action forester for the Massachusetts Department of Conservation and Recreation’s Urban Community Forestry Program.

Jon Garen and his wife, Nieves, welcomed their first child, Tomas Jamart Garen, on July 11.

Chip Darmstadt works for the Vermont Institute of Natural Sciences as the director of the North Branch Nature Center. He and his wife, Alisa, and sons, Brandon, 7, Sam, 5, and Charlie, 2, moved last year to a house on 10 acres in Middlesex (right next to Montpelier) with a drop-dead view of Camel’s Hump.

1994

CLASS SECRETARIES:

JANE WHITEHILL
janewhitehill@hotmail.com

CYNTHIA WOOD
chenshaw@newenglandforestry.org

Sarah Wade started her own business in January, consulting on energy and the environment. You can reach her at swade@keystone.org.

Tad Gallion is a staff member of the House Appropriations Committee. He does EPA’s appropriation along with some smaller agencies.

Felton Jenkins: “I got married to Karen Black on February 28, 2004. We live in Savannah, Ga., where I am a portfolio manager for Minis & Co., an investment management firm. I am on the Coastal Advisory Council of the local Nature Conservancy chapter, and Karen and I both are on the board of Clean Coast, a local nonprofit that organizes beach cleanups on the barrier islands of the Georgia coast. I also have been a sponsoring angler on two expeditions to Kamchatka, Russia, with the Wild Salmon Center (WSC) in 2000 and 2003—**Guido Rahr** is the president of WSC. I see **Jessica Eskow** from time to time, and recently Karen and I visited **Buzzie** and **Robin McGraw** at their great place in the Berkshires.” feltonj@minisinc.com

Donna Stauffer: “I am now working in Mozambique as deputy mission director for USAID since December 2003. Before coming to Mozambique, I was working in Nepal for USAID as director of a multisectoral technical office that managed activities in community forestry and energy, among other areas. I had the pleasure of interacting with a number of F&ES alums in Nepal, and hosted a lunch when Professor Bill Burch came to evaluate a biodiversity conservation project directed by **Bhishma Subedi '93**.”

Thomas Brendler and Lucinda Hitchcock welcomed their daughter, Phoebe Lee Hitchcock Brendler, on April 25th. They live with their dog Ruby in Providence, R.I., where Thomas is executive director of the National Network of Forest Practitioners, a grass-roots alliance of rural people dedicated to forest conservation, community development and social justice.

Jane Whitehill joined the New York contingent for a picnic with the visiting **Joaquin Leguia** in the

ClassNotes

J.J. Jiler '95 community garden on the Lower East Side. She also got to see **Erik Kulleseid's** terrific movie, *Paternal Instinct*. And she just got a new science-writing job.

Nicky Robins is practicing as a Sangoma (traditional African healer) in Cape Town, South Africa. She is looking for research funding to explore how teachings of African spiritual traditions may contribute to achieving deeper levels of environmental awareness and commitment in the community. Any suggestions, please contact her at ntsu@sn.apc.org.

Dave Moffat: "Carol and I try to spend as much time as possible swimming in nearby lakes. I was in Bangladesh for work in July, and in Canada and Guyana for most of August. In Guyana, I enjoyed meeting F&ES folks (Janette Forte, current doctoral student, and **Simone Mangal '99**) associated with Iwokrama, which is taking exciting approaches to managing and conserving its million-acre rain forest." dmoffat@post.harvard.edu

Andrea Gaut: "I got married to Jared Eigerman on April 23, 2004. I met Jared through work. I still work at a state agency that protects the San Francisco Bay, and I find it quite satisfying. I wish that I could have attended the reunion this spring, but I was on my honeymoon."

Carolyn Mayer: "In May, I accepted a position as senior environmental planner with Perteet in Everett, Wash. Perteet is a local-area transportation design firm, and recently started an environmental services group. I am now responsible for managing projects such as SEPA/NEPA environmental reviews and permitting, and updating comprehensive plans, shoreline master programs and critical areas ordinances, as well as continuing to work on environmental regulatory compliance and strategy. In other news, I have been downhill mountain bike racing and finished first in my age group on the local circuit and third nationwide. I am now starting an all-female downhill team for the 2005 season, and we already have a handful of committed sponsors."

Liza Cleveland reports that she competed in the Hobie 16 World Championship recently in Mexico. She and her teammate Bob Merrick finished 34th out of 199 teams from all over the world. The only American team to beat them was Jeff Alter, son of Hobie catamaran designer, Hobie Alter. She is still working at the Peabody Museum and living in Branford. Her kids, Gusty and Tommy, are in college.

1995 10th Year Reunion May 6-8, 2005

CLASS SECRETARIES:

MARIE GUNNING mjgunning@aol.com

CIARA O'CONNELL
ciaramoconnell@aol.com

Michelle Gottlieb writes that she and her husband, Dan, are living in Marblehead, Mass., with son Sam, 5, and daughter Talia, 3. She has been consulting with Physicians for Social Responsibility on a range of

issues, but largely on pediatric environmental health, for the past four years or so. She also just started a new company, EcoSpace, with a colleague (michelle@eco-space.com). They are consulting for individuals and institutions on environmental health.

Joanna Grand just finished her Ph.D. in conservation biology from UMASS, Amherst, which she earned while simultaneously caring for 1-year-old Eli.

Liz Galli-Noble recently completed her work with the Governor's Upper Yellowstone River Task Force, and has been named the assistant director for research at the Montana Water Center on the campus of Montana State University. In this new job, Liz is the director of two research initiatives—the Whirling Disease Initiative and Wild Fish Habitat Initiative, both Congressional earmarks, with the USFWS as the sponsoring agency. Summaries of the research work conducted through these initiatives can be viewed on the Montana Water Center website (www.water.montana.edu).

1996

CLASS SECRETARIES:

KATHRYN PIPKIN kate@goodisp.com

JULIE ROTHROCK jarothrock@juno.com

John Gunn: "I defended my Ph.D. in December 2003 at the University of New Brunswick. I'm still living in western Maine, but I've just started a postdoc with **James Gibbs, Ph.D. '95**, at SUNY-ESF, putting together an ecological monitoring strategy for the Appalachian National Scenic Trail."

Julie Rothrock: "I am leaving my job at AMEC Earth & Environmental as of April 29. I'm going to be a stay-at-home mom for my twin girls, who were born in January 2004." jarothrock@juno.com

Doug Wheat: "My wife, Amy, and I had a boy, Zachary. Talk about excitement—wow!"

Shunichi Komabayashi: "I had the pleasure of receiving **Adrian Leighton** and **Constanza von der Pahlen** in Japan."

Sharon Cooper left her position at the National Wildlife Federation to work in the Office of Education at the Smithsonian Institution.

Erik Wohlgemuth got married on Labor Day weekend and set off on a two-month honeymoon. He works with Future 500, a no-profit organization specializing in stakeholder engagement to foster positive resolution to conflicts between corporations and their stakeholders.

Kath Schomaker joined her daughter, Claire Kendall, 21, in Portland, Ore., while attending the Ecological Society of America meetings in August. Claire, now a senior at Smith College, had just returned to the West Coast after a semester abroad in New Zealand, followed by a month on the East Coast of Australia. In addition to writing checks for Claire's college and adventures, Kath also enjoys her new board seats with the Hamden Land Trust (Conn.) and the Hamden Natural Resources and Open

Space Commission.

1997

CLASS SECRETARY:

PAUL CALZADA pcalz@metro2000.net

Jose Terrasa began graduate studies in landscape architecture and environmental design at the Harvard University Graduate School of Design on September 1.

Zander Evans wrote in early August: "Emily and I are pleased to share the news that our son, Mahko Porter Haozous, was born May 29, 2004. Mahko was 7 pounds, 10 ounces, and 20 and three-quarters inches at birth."

1998

CLASS SECRETARIES:

NADINE BLOCK

nadineblock@alumni.williams.edu

CLAIRE CORCORAN

Corcoran_Claire@hotmail.com

Jelena Mastilovic Cali left for Zambia in May to work with the United States Peace Corps on their Linking Income, Food and the Environment (LIFE) project. Her husband went along as well. The project should help preserve the reserves in Zambia by providing sustainable income and food production resources for the local population.

Chris Williams finished law school at the University of Alabama in May, and began working in the environmental section of a law firm in Birmingham. He and his wife, Amy, had a son, Noah, in the spring.

Brad Kahn spent a few days getting to know the forests in Southeast Alaska. While there, he managed to haul a few halibut aboard. brad@pyramidcommunications.com

Evan Preisser finished his Ph.D. in population biology from U.C. Davis, and is starting a postdoctoral fellowship at UMASS-Amherst on plant-insect interactions on Eastern Hemlock. He's living in Rhode Island with his fiancée, Carol Thornber, who is a professor of marine biology at the University of Rhode Island.

Kate McManus is the refuge manager at John Heinz National Wildlife Refuge in Philadelphia. The refuge is located near Philadelphia International Airport and protects Pennsylvania's largest remaining freshwater wetland. She lives with her 2-year-old son, Kole, in Phoenixville, the town she grew up in, and has a budding native plant garden. Kate writes: "Guided tours of the refuge are free of charge to former forestry students unless you snubbed me at a social event."

Anne St. John has worked for the past six years in the international affairs program of the U.S. Fish and Wildlife Service, where she really enjoys the work and the travel. She purchased a condo last summer in Arlington, Va.

Antonio del Monaco is working at the Global Environment Facility (GEF) in the Monitoring and Evaluation Unit, and living in Washington, D.C., where he has been since 1998.

Keely Maxwell, Ph.D. '04, is "enjoying life after the Ph.D., a time I thought would never come." She graduated in May and is a visiting lecturer this fall in environmental policy at Bates College in Lewiston, Maine. Keely.Maxwell.FOR.98@aya.yale.edu

Elizabeth Gardner moved to San Francisco about a year ago. She works at West Coast Life Insurance Company, and is enjoying exploring the abundance of hiking and camping spots the area has to offer. lilybelle@ekit.com

Gregory Smith lives in New York City, and works for the Wildlife Conservation Society as the supervisor of horticulture at the Bronx Zoo. "My family has grown to include a lovely Russian Blue cat named Grace." In his free time, he is writing a fictional tale called *MetroConnect*.

Jennifer Kefer gave birth to a son, Ari Rimon Kefer, on June 23, 2004. She and her husband recently purchased a home in Silver Spring, Md. She is on maternity leave from Earthjustice.

Bruce Hammond is working for Environmental Defense in Boston, focusing on collaborative work with private landowners to restore habitat for endangered species, as well as partnership projects with corporations. Bruce and his wife, **Megan Ryan Hammond**, are parents of Cailin, and doing an eco-restoration on a home in Lincoln, Mass.

Claire Corcoran and her husband, Will Murphy, are still living in Boston with their daughter, Sylvia, and had another baby in May, Richard Corcoran Murphy.

Nadine Block got married last May to Patrick Vennebush, whom she met in D.C. shortly after graduating from F&ES. Classmate **Sarah Whitney** was there to help celebrate.

1999

CLASS SECRETARIES:

JOCELYN FORBUSH jforbush@ttor.org

JENNIFER GARRISON
jennifermgarrison@yahoo.com

CHRISTIANA JONES
christiana@aya.yale.edu

Lena Brook writes: "My husband, Jonah, and I welcomed Ava Naomi into our family last April. I experienced the pleasures and challenges of being a stay-at-home mom for several months before I resumed my environmental health policy work at Clean Water Action in October."

Christiana Soares married Jamie Jones in the summer of 2003. Jamie is a farmer, and they live on one of the largest farms in southwestern Connecticut. They are expecting their first child this November. Christiana continues to work as an environmental and museum educator with the Connecticut Department of Environmental Protection.

Jennifer Heintz: "I got a job with the Farmington Valley Watershed Association in Simsbury, Conn., as their project coordinator/grant writer."

Brett Evans: "I married a Yale nurse, Deena Mallareddy. We honeymooned in Thailand and



Joyce Berry

Joyce Berry, Ph.D. '00, became dean of Colorado State University's College of Natural Resources on July 1. Berry, a faculty member in the Department of Natural Resource Recreation and Tourism, was an administrator and instructor at Yale before going to Colorado State.

"While serving as a strong administrator for Colorado State, Joyce Berry has become a national leader in the area of natural resources," said Colorado State President Larry Penley. "Her dedication and vision will lead an already prominent and well-known College of Natural Resources from distinction in the West to national prominence."

The College of Natural Resources at Colorado State comprises the departments of Fishery and Wildlife Biology, Forest Rangeland Watershed Stewardship, Geosciences, Natural Resources Recreation and Tourism and the College of Natural Resources Interdisciplinary Studies.

Since 1990, Berry has co-developed undergraduate, graduate and professional environmental leadership programs used by universities and organizations nationwide. In the last year, she has developed, with co-authors, an assessment method and model of a world-class forest resources organization within a large paper company, and completed the second 10-year integrated assessment, mandated by Congress, of forest management on Indian Trust Lands in the United States.

Berry's recent research includes microbial management in national parks. She serves on the national commission for science and sustainable forestry and the executive committees of the national council of environmental deans and directors. She holds a bachelor's degree in political science and secondary teaching credential from the University of California Berkeley, master's degree in regional resource planning from Colorado State and a doctorate in forestry and environmental studies from F&ES.

Cambodia. We are living in San Francisco. I do database programming for Wells Fargo Bank. My wife's family is from Bangalore, and we have decided to go live there for a couple of years."

2000 5th Year Reunion May 6-8, 2005

CLASS SECRETARIES:

ERICA SHAUB schaube@battelle.org
ZIKUN YU yuzikun2001@yahoo.com

Colin Apse is deputy director of the Eastern United States Freshwater Conservation Program for The Nature Conservancy. "I am still enjoying life in New Paltz, N.Y., doing volunteer work to implement local environmental policies. With **Patrick Martin '98**, **Mary Ford '01** and **Cara Lee '84** living here in town, we may rival D.C. in F&ES alums per capita."

Zikun Yu: "I traveled to China in late July and early August. For most of the time, I stayed with my parents."

Raga Sigurdardottir wrote: "After my Ph.D. graduation in 2000, I worked on a large-scale environmental impact assessment of one of the biggest hydropower plans ever proposed in Iceland.

At the end of my project in March 2002, I had serious issues with the National Power Company (Landsvirkjun) in Iceland regarding the assessment report. The power company is the richest and most powerful entity in the country, with very close ties to the government. The power company took my report and deleted most of the negative parts, leaving a fictional, glorified version on the impacts of the power plan. After a tremendous pressure on me from and on behalf of the Power Company, I ended up suing them (through an intermediate engineering firm). They countersued, but we won. The power plans by the government were canceled.

Alexis Dinno participated in a panel titled Pioneering Urban Ecology Research, sponsored by the Hixon Center for Urban Ecology. She is completing her Sc.D. at Harvard School of Public Health while residing in San Francisco.

Ji-Seok Kim is about to complete military service and preparing to get his first job in South Korea. He is using Global eRecruiting Outreach to find a job and "finally get started with my career."

Ashley Elizabeth Prout married Ken McAvey Jr. on June 26 in Essex, Conn. She is now Ashley (Prout)

ClassNotes

McAvey. Life is good in Burlington, Vt., where she lives on Lake Champlain overlooking the Adirondacks. She enjoys her development work at Saint Michael's College.

Caroline Kuebler: "I have been living in Washington, D.C., since January 2002, and have just moved to a new apartment with Peter Hill and our puppy in a dog's body, Stanley. Before that, I lived with **Laura Dunleavy** and **Peter Kostishack** for two years. I have been working at Conservation International for two and a half years in the Center for Applied Biodiversity Science. I am program manager for the Tropical Ecology, Assessment and Monitoring (TEAM) Initiative, a long-term monitoring program based at field stations.

Carlos Pineda recently returned from four intense and rewarding years in Honduras, and is savoring a delightful summer sabbatical in San Francisco. He is looking forward to returning to the world of developing alternative energy and natural gas projects in the Americas.

Christy Vollbracht, now Christy Merrick, has moved to Utah, where she helped create and is running the Sundance Nature Center. She, husband Jason and dog Abbey are happy to host any F&ESers who need lodging while visiting the Wasatch Mountains.

Alethea Abuyuan: "Upon graduating from Yale in 2000, I moved to Washington, D.C., where I worked for the World Bank and then with a consulting firm called the Institute for Public-Private Partnerships. I am now in the third year of my doctoral program at the University of Southern California's (USC) School of Policy, Planning and Development. I am working for USC's Center for Religion and Civic Culture (CRCC), where I co-manage the center's projects, grants and contracts. More important, I coordinate an interdisciplinary faculty working group on faith-based organizing and economic development. My topic is the role of faith-based organizations in environmental management projects. Research for this will take me to Romania, Africa and the Philippines.

Emily Harwell, Ph.D., is a senior research advisor and editor for the East Timor Commission for Reception, Truth and Reconciliation, and works out of the Balide Prison in Dili, East Timor. Last year she was a visiting assistant professor at George Mason University, and is planning to teach a winter term course at Middlebury College on violence and the environment. In her spare time, she is a social science advisor on a joint project of the Center for International Forestry Research and Forest Trends on the impacts of demand for wood products from China. She is contemplating a move to Vancouver, so if any of you have contacts in the social ecology world of Vancouver, she would love to hear from you. emily.harwell@aya.yale.edu

Heather Peckham, Ph.D. '04, married **Bronson Griscom, Ph.D. '03**, in May 2003. **Caroline**

Kuebler and **Erika Mark** were bridesmaids. Heather writes: "I defended my dissertation on Rehabilitation of Dry Tropical Forests in May 2004. I was officially a Ph.D. grad in December 2003, and started my first job as a visiting botany professor at Sweet Briar College, Va."

Jason Patrick: "I have been working in New York City for Environmental Defense as a Land Use Analyst, while also pursuing a master's in economics at NYU."

Terry Kellogg: "I have been running Timberland's environmental program since graduation. Living in Newburyport, Mass., with two kids, Carl, 2, and Nina, in her first year."

Mary Nguyen: "I'm working in sunny Southern California—Orange County—as an associate environmental planner for the California Department of Transportation."

Michael Murrell Stevenson has been happily married for three years, and lives in Oakland, Calif., working for the consulting firm Jones & Stokes as a project manager in water resources. He is still playing the upright bass, having recently joined the next big thing, a band call "Howdy!"

Olena Maslyukivska: "I am a senior lecturer at the National University of Kyiv-Mohyla Academy, Kyiv, Ukraine, teaching economics of natural resources, environmental and ecological economics, environmental policy and public-private partnership. I love teaching and interacting with students, and hope to defend the Ph.D. in ecological economics in the upcoming year. I live in my own two-bedroom apartment in Kyiv, and am happy with my life."

Sylvia Stone: "I am a program manager for the Wildlife Conservation Society in San Francisco."

Derek Lieberman: "In February 2003, I started a position with the U.S. Army at the former Fort Ord near Monterey, Calif., and I am still happily working here helping the Army comply with environmental laws and regulations as it disposes of property from the former military installation."

Scott Williams: "Sarah and I have a little girl named Drew. She is one and a half. We live in Guilford, Conn., and I am still working at the Connecticut Agricultural Experiment Station on nonlethal control of white-tailed deer populations. I also am two years into my Ph.D. program in wildlife ecology at the University of Connecticut in the Department of Natural Resources Management and Engineering."

Julie Stein: "I am the Conservation Fellow for the Andrus Family Fund in New York City, and have just finished a fellowship with the Virginia Natural Resources Leadership Institute. I also have joined the board of the Predator Conservation Alliance in Bozeman, Mont. I am lucky enough to be doing all of this from my farm in Loudoun County, Va."

Tony Rodolakis: "I'm living in Arlington, Mass., working for Metcalf & Eddy in Wakefield as a project

scientist doing permitting, environmental impact statements, hazardous waste investigation/cleanup and ecological risk assessment. Most of what we do is related to water and wastewater and a lot of restoration work too."

Erika Mark: I have a two-and-a-half-year-old daughter, Eloise, and an 8-month-old boy, Elijah. I have been working on contract with the Forest Service, writing up my Montana mushroom (ecology) field work, doing a little nonprofit stuff, a little teaching and gardening, soap-making, etc."

Susan Weuste: "I live in New York, just north of the city. I'm a consultant with an environmental compliance and engineering firm, Cameron-Cole."

Christie Young is living in Peru and working for The Nature Conservancy.

Erika Schaub: "In early September 2001, I moved back to New York and was involved with the recovery efforts in New York City. This was a life-changing experience, guiding me to apply for another master's. I was accepted into the Office of Domestic Preparedness program, in which civilians are trained at the Naval Postgraduate School for a master's degree in national security affairs (with a Homeland Security focus). After I graduate, I want to get a position that is more meaningful than the one I have now with Battelle Memorial Institute as a GIS analyst. I am a lieutenant with a volunteer fire department, an EMT instructor and team manager of our technical rescue team."

Joel Tilley is at the University of Vermont, studying phosphorus runoff from agricultural fields.

Silvia Benitez: "I have been conservation projects director for The Nature Conservancy, Ecuador Program, for three years. I have been quite involved in the application of TNC planning methodology in different projects in Ecuador, and some eco-regional projects that include other countries (Peru, Colombia). There are some people from Yale working on the same region: **Christie Young** in Peru, and **Robert Kenny '99** and **Steven Price** in Bolivia. I live in Quito. My daughter, Alejandra, is 9 years old, and I remarried six months ago."

Linus Chen: "I am living in Washington, D.C., working for the U.S. Fish & Wildlife Service, Division of Endangered Species."

Navis Bermudez is living in Washington, D.C., working in the legislative office of the Sierra Club.

Maureen Cunningham has been living in Washington, D.C., working for Rare (formerly RARE Center for Tropical Conservation), where she directs a four-year project in Latin America and Indonesia. The project is focused on community-based ecotourism development and conservation education, in collaboration with UNESCO and UNEP.

Marco Flores is working as governance and regional freshwater conservation officer at WWF's Latin America and the Caribbean Program based in Washington, D.C.

April Reese wrote in late August: "I'm flying solo now, working as a freelance journalist in Santa Fe, N.M. I cover environmental issues in the Southwest and Rockies for *High Country News*, *Greenwire*, *Land Letter*, the *Santa Fe Reporter*, *E Magazine* and other publications. My contact info is april_reese@earthlink.net.

Harry White is field ecologist and preserves manager for the Weantinoge Heritage Land Trust, the largest land trust in Connecticut. "I am responsible for natural and agricultural systems across 6,500-plus acres in northwestern Connecticut. I'm still in the fire department. We only do 50 calls a year, and half of those are false alarms. We did a horse rescue a while back, and it was aired on Animal Planet."

Janet Sturgeon, D.F.E.S. '00, wrote: "I've made the journey to beautiful Vancouver. I'm teaching a course on China's Society and Environment at Simon Fraser University." sturgeon@sfu.ca

Christian Kemos is living in San Francisco with his wife, Tanya Stadnick. He is in his last year of law school at University of California, Hastings. "Upon graduation, I will practice environmental or administrative law, potentially heading into the public policy arena in the future. Also, Tanya and I are continuing to backpack, having just returned from a three-week trek through the Altai Mountains in Siberia."

2001

CLASS SECRETARIES:

LEIGH CASH leigh@cultureearth.com

ADAM CHAMBERS
adam_chambers@nrel.gov

JENNIFER GRIMM
jwgrimm@earthlink.net

Diane Russell joined the World Agroforestry Centre (ICRAF) in Nairobi, and is co-leader of the trees & markets team. A joint program with the Tropical Resources Institute has hosted four F&ES master's students for fieldwork in Africa. "I will continue to work with **Rebecca Ashley '03**, who did fieldwork with us in 2002 and later a consultancy." d.russell@cgiar.org

Chris Nyce is the recreation and lands officer for the Palomar Ranger District of the Cleveland National Forest in his hometown of San Diego. He was hired by **Anne Fege '75**, retired forest supervisor, and fills a position that had **Norm Noyes '74** as its predecessor. Chris married Rukmini Read on October 16 in San Diego, and was stoked to have caught a 40-pound wahoo on a trip for his bachelor party to Cabo San Lucas.

Georgia Silvera writes: "My husband, Robert Seamans, and I began doctoral programs at UC Berkeley this fall. We spent time with the F&ES 2001 contingency in Boston, and hope to connect with F&ESers in Berkeley."

Tracey Scheffler writes: "I am a recovery biologist with the U.S. Fish and Wildlife Service in the Southwest Regional Office in Albuquerque, N.M. I am leading the gray wolf recovery planning effort for the Southwest, which has tested my F&ES education repeatedly. It is a scientifically complex, politically contentious and socially controversial issue. I have

been living in Albuquerque for three years now, and have developed a quiet-but-fierce love for the area. I live with my significant other, Eric, and our two dogs, Griffin and Bella, and we have an active, happy—wonderful—life."

Colin O'Brien is an environmental attorney at Sidley, Austin, Brown & Wood in New York City. Also in New York is **Katy Guimond**, who is working in the South Bronx, running the Crotona Park Nature Center. She says: "My job is continually frustrating and exciting, and I work hard to expose inner-city children to the environment—or at least to get them out in the park. I recently had a brief respite from the city at a conference on Bainbridge Island, Wash., where I met alums **Robert Michael Pyle, Ph.D. '76**, **Richard Haley '94** and **Tracy Kay '77**. I'm living in Astoria, Queens. I've also been working on some sculptures."

From Brooklyn, N.Y., **Pradeep Kurukulasuriya** writes that he is in his fourth year as a doctoral student at F&ES, trying to finish up next year. He is working on research on climate and agriculture in Africa. The perks include research in new areas using primary data; the downside is travel to exotic places, although he doesn't mind it terribly. He is enjoying life in Park Slope.

Matt Clark and **Abby Sarmac** are living in Portland, Ore., where they just bought a house that they share with their two kitties, Figaro and William. Matt works with the Confederated Tribes of the Umatilla Indian Reservation on salmon restoration, and Abby works with the Wildlife Conservation Society on various Pacific West conservation issues. Also in Portland, **Michael Sterner** is still working for Interforest as general manager. "This past spring I participated in testimony about the American Indian Forest Management Assessment Report to the Senate Indian Affairs Committee. As co-chair of the SAF International Forestry Working Group, I am moderating a panel at the 2004 national convention on the United States-Canada Softwood Lumber Dispute. Daughter Elinor turned 2."

Jeff Luoma wrote: "I'm playing forester in Washington State and enjoying being a parent model for an 8 year old (and a boyfriend model for her mother)." jeffluoma@earthlink.net

Calvin and **Kristin Olhson-Khein** are foresters for the Washington State Department of Natural Resources. They were married in October 2002 after returning from forestry research in Bolivia.

Jon Daly is a program manager for the Trust for Public Land in Seattle. "Joy and I spend most weekends in the Cascade or Olympic mountains, or in the electrical and flooring aisles of Home Depot. We have a great dog Baxter, whose only lapse in good behavior was biting our most recent visitor, **Abby Sarmac**."

As joint-degree alum **Ramsay Ravenel** says, "I technically graduated in 2002. After much straying from the New Haven nest as an itinerant consultant, I have now settled in South Norwalk, Conn. I'm working for a small private equity firm/family office on what we call 'issue-based investing.' The idea is to invest in solutions to environmental problems that need private equity in order to achieve scale. We hope

to apply the model that the Lyme Timber Company has developed so successfully in timberland investing: partner with nonprofits and government agencies that need private equity partners to do deals that are beyond the scale of public finance. I'm still an avid ultimate Frisbee player, and took up telemark skiing while consulting for Yellowstone N.P. in 2003."

Matt Eddy is in his third year of teaching biology and environmental science at Menlo School in Atherton, Calif. A recent highlight of his teaching was helping his students calculate a carbon budget for his school, and then raising funds for purchasing carbon emissions credits through the Clean Air Conservancy. He's enjoying urban life in San Francisco and, on his vacations, frequents forests and mountains in northern California, Washington, New Hampshire, New York and Connecticut. matteddy@aya.yale.edu

Mark Wishnie says he is doing well and sent the following message: "Estaré afuera de la oficina frecuentemente en los meses de julio y agosto. Perdoname si demoro en responder a su e-mail. Si es urgente, favor contactar a Asistente Administrativa de PRORENA. Gracias."

Adam Chambers works for the National Renewable Energy Laboratory in the D.C. office. In July, Adam joined **PJ Deschenes '02** in competing in the Ironman USA Triathlon in Lake Placid. Adam, his wife, Mary Lynne, and their daughter Rhys are building a sustainable log cabin in Kentucky.

Kerry Cesareo attended the wedding of **Jenny Grimm** and **Jon Padwe** in Maine this spring. Kerry is operations manager for the Global Forest & Trade Network at the World Wildlife Fund, and married **Jim Woodworth** in September. Jim also is director of outreach and technical assistance for Casey Trees Endowment in D.C. At a recent luau for the couple, some of the D.C. crowd were present, including **Roberta Elias**, who worked all political angles protecting oceans at the Natural Resource Defense Council; **Greg Serenbetz**, who is involved in water protection at the EPA; **Pete Hill**, who is protecting the waterways and fish habitat in D.C.; and **Matt Holomby**, who is involved in funding land conservation efforts for the Wyss Foundation. Also in attendance were **Chris Oishi**, who is working on a Ph.D. at Duke; and **Anna Vighh**, who is working at the Global Environmental Facility.

Also based in D.C., **Lisbet Kugler** will soon work with **Gary Machlis, Ph.D. '79**, to assist him in coordinating the Cooperative Ecosystem Studies Unit network. "I also will work with the Canon National Parks Science Scholars Program that he administers."

Chris Losi has been working for the Forest Service since graduation. He writes: "My master's project was accepted by *Forest Ecology and Management* in 2003, and I'm hoping to get involved in fire research. The current administration is primarily interested in using forest management to reduce fire risk, but on forests as big as we have in the West, traditional silviculture can't be more than a portion of the solution. I'd like to get more involved in 'fire use.' losi@aya.yale.edu

Mary Ford is a program leader for youth and educators at the Institute of Ecosystem Studies (IES) in Millbrook, N.Y. "I run programs for school groups,

ClassNotes

direct summer ecology camp, conduct teacher trainings and write curricula. I serve as chair of the town of New Paltz's Environmental Conservation Commission and as a member of the planning board. I'm also an EMT with the rescue squad. My most recent F&ES visitors were **Kerry Cesareo** and **Jenny Grimm**; we had a bachelorette weekend before their weddings. One of my housemates is **Patrick Martin '97**." droFyraM@yahoo.com

Jenny Grimm is a forester for the Lyme Timber Company, a private investment group based in New Hampshire. **Ben Silberfarb '99** and **Rick Weyerhaeuser '83** are colleagues at Lyme Timber. Jenny has joined her husband, **Jonathan Padwe**, in Cambodia, where he is conducting field research for a joint F&ES/anthropology doctoral degree. When stateside, Jenny and Jon live in Maine with their best friend, Kodi.

Christian Lentz has "returned from Vietnam, where I attended an intensive summer language program. If all goes well, I'll be able to return there next year to do dissertation fieldwork. In the meantime, I'm in my third year at Cornell's Department of Development Sociology. I just finished another master's, and now am embarking on the formal Ph.D. component."

Eugene Lee left the World Wildlife Fund and D.C. to head back to Malaysia, where he is working on consumer awareness of the trafficking of illegal animal products.

From Florida, **Jeff Morton** writes: "I married **Tori Derr '95, Ph.D. '01**, on July 1, 2004. We're living in Gainesville, where I have just begun a doctoral program in tropical forestry. Larry the dog is healthy, but prefers cooler mountain climates, and we have a kitten, Nacho."

Quint Newcomer spent the 2003-2004 year doing field research in Costa Rica, and is now in South Carolina spending time with his 7-year-old daughter, Ellery, while he works on the analysis and writeup. He plans to present his work for graduation in May 2005. Quint is studying incentive programs for private-land conservation within the Path of the Tapir Biological Corridor. He also has the dubious distinction of being the senior player on HELMAR, a select men's ultimate Frisbee team from the South Carolina-Georgia region.

Linc Vaughan writes: "I've been working on a Ph.D. in social anthropology at the London School of Economics. Last November, I moved to Copan Ruinas, Honduras, where I am conducting fieldwork until the fall of 2005 on a cultural revival movement and some of the troubles facing its participants."

Lianne Fisman participated in a panel titled Pioneering Urban Ecology Research, sponsored by the Hixon Center for Urban Ecology. She is working on her doctoral degree in urban studies at MIT, where her research interests include the role of urban environmental programs in shaping people's perceptions and connection to place. She is

interested in whether or not these organizations successfully promote environmental awareness and foster the growth of productive social networks.

Omari Ilambu: "I am involved in a program, Monitoring of the Killing of Elephants (MIKE), that is surveying elephants and bonobos in Central Africa. I have been in charge of coordinating the surveys in Salonga National Park, one of the largest protected blocs of tropical forest in the world. The Salonga National Park is about three times the size of Connecticut. The surveys have taken about 13 months due to the logistical burden of moving teams in the area."

Georgia Silvera is starting a doctoral program in environmental planning at UC Berkeley.

Lech Naumovich is a restoration ecologist at Colorado State University. "I am the land rehabilitation and maintenance coordinator for Fort Hunter in Liggett, Calif. I have been climbing everything, from El Capitan to Mount Elbrus to Pico d'Aneto to giant coast live oak trees." lech@aya.yale.edu

Leigh Cash has returned to Connecticut, and is temporarily working on the isolation of viruses from mosquitoes while dreaming of a Ph.D. She has officially retired her horse, Kishua, to South Carolina, where he will live out her dream of playtime with old friends and green pastures—on someone else's dime. Her husband, James, divides his time between systems administration and management of their apartment.

2002

CLASS SECRETARIES:

**CATHERINE BOTTRILL and
ROBERTO FRAU-RODRIGUEZ**
Sageboyoz@yahoo.com

Rachel Fertik was awarded the U.S. EPA Service Citation by EPA Administrator Christine Todd Whitman in recognition of her efforts on the Solid Waste Agency of Northern Cook County (SWANCC v. U.S. Army Corps of Engineers) project that involved isolated waters and wetlands for the EPA and the public. The award was presented in January 2003 to Rachel and seven other members of the SWANCC team in a special ceremony at the administrator's office. It recognized the team's work on Clean Water Act policy development following the 2001 Supreme Court SWANCC decision.

Barbara Bamberger is an applied social scientist with EDAW, an international environmental research firm working with subsistence communities on sustainable resource management issues. She was a key organizer for the June 2004 F&ES symposium, "Forest Certification in Developing and Transitioning Societies: Social, Economic and Ecological Effects." The symposium committee also included **Liz Gordon '03**, **Cecilia Blasco '04**, **Laura Bozzi '04**, doctoral student Cristina Balboa and master's student Monika Kumar. Panel participants included **Michael Jenkins '88**, founder of Forest Trends, and **Dan**

Nepstad, Ph.D. '89, who is with the Woods Hole Research Center. Attendees included **Nadine Block '98**, who works at the American Forest and Paper Association, **Christian Binggeli** of Binggeli & Partner, and **Bryan Foster '96**.

Robyn Smith married Warren Luhnning on August 21 in Middletown, Wis. She is the manager of corporate social responsibility at Colgate-Palmolive in New York. Warren is a securities trader at the Royal Bank of Canada in Toronto.

2003

CLASS SECRETARIES:

BRIAN GOLDBERG
brian@fieldoperations.net

SCOTT THREADGILL
Michael.threadgill@aya.yale.edu

James Lucas is timber sales and forestry manager with Triton Logging Co. (www.tritonlogging.com) of Saanich, B.C. "We intend to become the world's premiere underwater logging company. I am the lead on a team that is responsible for bringing Triton's log and lumber sales program to scale as our operations ramp up." james.lucas@tritonlogging.com

Niki Breznock is a resource analyst with Sher Leff, LLP, in San Francisco. "The law firm represents public water utilities that have had their groundwater supplies contaminated with different organic pollutants. I provide legal support to the litigation team by reviewing scientific articles and gathering facts, organizing client and defendant documents for discovery purposes, creating maps and other visuals to demonstrate the location and possible extent of the problem and working with scientific experts to coordinate their expert opinions."

Takeshi Okumura: "I work for an environmental consultancy, Tohmatsu Environmental Research Institute Ltd., a group company of Deloitte Touche—Tohmatsu. The company focuses on ISO14000 and environmental reporting now, but is very likely to extend to other arenas in the future."

Krithi Karanth: "I started my Ph.D. at Duke this fall."

Elizabeth Allison: "After my year in Nepal and a conference in Sri Lanka, I have begun doctoral studies at UC Berkeley, happy to know that, living on this side of the continent, I'm six hours closer to the Himalayas."

Rebecca Ashley: "After a year consulting on the African continent, I have returned to F&ES as a doctoral student. I will work with Dr. Burch on the rehabilitation ecology of cocoa farms and associated forest trees in West Africa."

Ryan Bennett: "I'm still with GE Wind Energy, but leaving California for Vancouver, B.C., where I'll be head of sales for western Canada."

Becca Brown is in her second year of an EPA fellowship on children's environmental health.

Nathaniel Carroll: “I’m moving to Portland, Ore., to join the growing ’03 class contingent of **Terry, Marni** and **Betony**. I’ll continue to work for Forest Trends on ecosystem service markets from there.”

Daniela Cusack: “I’m starting my second year in the Ph.D. program at Berkeley. I’ve been in Puerto Rico all summer, and now I have way more data than I can deal with. I’m taking my qualifying exams next semester—eek!”

Melanie Cutler: “We’re still enjoying ourselves in Andover, Mass. We just returned from an incredible trip to Spain, where we saw the plains, mountains and coast, and ate some of the best food ever. I’m looking for a science teaching job.”

Vic Edgerton: “I worked on the Connecticut Climate Change bill. I moved from New Haven, and vacationed in Moscow and Spain. I live in D.C., working for Rep. Dennis Kucinich as his legislative assistant, handling health and environmental issues, among others.”

Alison Forrestel: “I’ve switched from cartography to fire ecology (still with the National Park Service), which is most exciting. My desk is at Point Reyes National Seashore. I just returned from a wonderful, wet week of sea kayaking in the San Juan Islands. I didn’t see any orcas, but the seals and porpoises made up for it.”

Brian Goldberg: “Living in Brooklyn, I’ve been biking throughout New York City’s parks, bridges, waterfront and neighborhoods. While bike lanes weave all over the city, Manhattan’s auto traffic is too intense for commuting daily by bike. I’m a project planner, converting Fresh Kills Landfill into one of the city’s largest parks.”

Oliver Grantham: “I am living in Boston with Hillary. I work for Harvard’s endowment with timberland investments. I am traveling a lot, especially in Latin America, and loving it.”

Bishop Grewell: “I’m entering my second year of law school at Northwestern and will probably be in D.C. working for a firm next summer. That is, unless I drop out of law school to become a professional poker player. The chips are looking good.”

Kat Hall: “Maya and I did a 10-day trip on the sailboat to Glacier Bay National Park—anchored in secluded coves, kayaked, saw whales, porpoises, bears and moose, and landed a 53-pound halibut—and filled the freezer with king salmon over Fourth of July weekend. I bought a 34-foot cutter rig sailboat.”

Kate Hammond: “Che and I are mountain biking, hiking and backpacking in Colorado. I’m a project manager for the National Park Service, managing multimillion-dollar design and construction projects at parks throughout the West.”
khammond@prodigy.net

Krithi Karanth: “I am a doctoral student with Dr. John Terborgh at the Nicholas School of Environment at Duke!”

Pete Land is happy to report that Tamarack Media is still alive as it approaches its first birthday. He and Bill Finnegan are making a video for F&ES.

Cherie Lim: “I am in the Philippines for a while to work on a project. I am the Information, Education, Communication (IEC) Officer for the Developing Local, National and Regional Capacities to Sustain Climate Change Initiatives in the Philippines and East Asia project at the Manila Observatory.”
www.klima.ph

Terry Miller: “Kate and I both recently took on second jobs, and bought a house. Aside from the recent sewer backup in our basement and the whole mortgage thing, life is good.”

Fuyumi Naito: “I’m doing very well in Tokyo. I’m busy working for the Ministry of Environment, but it has been pretty fun. I’m now in charge of climate change policy in Japan, trying to introduce an emission trading system and GHG reporting system.”

Kabir Peay: “I’m studying fungi and the occasional plant. I’ve also learned that you get more visitors living in Berkeley than in New Haven. This summer I managed to have a fantastic time getting drenched like a wet rat with a bunch of F&ES alums sea kayaking off the coast of Washington. Siccama would be proud!”

Liz Roberts: “I cycle over the Golden Gate Bridge every day. I have finally finished researching wind turbines, and have moved on to devices that convert energy from ocean tides. I have been sponsored for a work permit for three years and so, after a small visa-getting hiatus in the U.K., I shall be back here ready to try standing up the next time I go surfing.”

Laura Ruiz is attending California State University-Long Beach’s single-subject credential program, with a focus on biology. She just received a National Science Foundation Robert Noyce Scholarship to attend full time and complete the program in May 2005 toward becoming a high school biology teacher next fall.”

Liz Shapiro: “I’m in my second year of the doctoral program at UC Berkeley. If I can get through that and my oral exams, it looks as if I will be heading to southern Mexico to do a year of field research for environmental service programs.”

Jay Shepherd is real estate project manager for Weston Solutions, a for-profit employee-owned company based in Washington, D.C. “We actively redevelop contaminated urban and rural properties, or brownfields, into industrial, commercial or residential uses, depending on market demands. Valerie wants to open her own design branding business, Camille is 17 months old and is starting to walk and I am being groomed for a job that travels too much.”

Scott Threadgill: “Sage is growing up very fast and would love to see all of his godparents very soon. . . . he says ‘please.’”

Nicole Vickey: “I made the move to Mobile, Ala., in June 2003 to get a coastal program started for the Alabama chapter of The Nature Conservancy. This year we’ve acquired just over 800 acres of marsh, pine savanna and maritime forest. Jesse and I bought our first house, and are expecting our first baby girl in October.”

Ellen Wells: “I moved to Baltimore, where I’m starting a Ph.D. program in the Environmental Health Science Department at the Johns Hopkins Bloomberg School of Public Health.” ellenwells@world.oberlin.edu

Andrew Winston: “I’m working on a book on corporate environmental strategy with Dan Esty. I’m traveling a lot—just went to Sweden to interview IKEA. But it’s been really fun and interesting. Other than that, I’m spending lots of time chasing my 1-year-old son, who’s now walking and saying many words.”

Jason Drebitko: “Clare and I moved from New Haven to Woodstock, Vt., last May. On July 1, I was promoted to executive director of the Vermont Institute of Natural Science, whose mission is to preserve and protect our natural heritage through education and research. I am responsible for leading the development of a \$15 million science and nature center, which will serve as the headquarters and home to the environmental education, conservation biology and avian rehabilitation departments.”

2004

CLASS SECRETARIES:

KEITH BISSON

keith.bisson@aya.yale.edu

DANIELA VIZCAINO

danielavizcaino@aya.yale.edu

JENNIFER VOGEL jenvogel@yale.edu

LAURA WOOLEY laura.wooley@yale.edu

Kris Kimball is an instructor-in-residence in the physiology and neurobiology department at the University of Connecticut. During the summer, she taught an environmental science course at Cape Cod Community College.

To mark the 50th anniversary of Brown v. Board of Education, **Alphonse (“Buddy”) Fletcher Jr.**, a leading black Wall Street money manager and philanthropist, announced in late May that he would give \$50 million to institutions and individuals working to improve race relations and to close the class divide between African-Americans who have benefited from the civil rights movement and those who have not. Buddy, who was elected president of his graduating class at Harvard in 1987, helped his parents put his two younger brothers through Harvard while working as a trader on Wall Street. His gift is one of the largest individual gifts ever made by an African-American, said Emmett Carson, the president of the Minneapolis Foundation and an expert on black charitable giving. A significant portion of the money, Buddy said, could also be used to give environmental justice scholarships to F&ES.

Obituaries

Laurence Cummings '31 (1903-2004) was from Northern California and graduated from Oregon State University in 1928. In the USFS in the Northwest until 1947, he was deputy chief of the Natural Resources Division of the occupation forces in Japan from 1947 to 1952. He then worked as an agriculture and forestry advisor for USAID until retiring in 1968. The USAID work took Cummings and his wife, Irma, to a variety of posts in Panama, Ecuador, Colombia, Liberia and Washington state. They retired to Santa Rosa, Calif., but continued their travels by Airstream trailer. In 2003 they observed their 75th wedding anniversary, and he observed his 100th birthday. He died in Chico, Calif., on April 23. His wife, three children, two grandchildren and three great-grandchildren survive him.

Sherman (Jack) Frost '33 (1909-2004) came from West Haven, Conn., and was a 1931 forestry graduate of the University of Connecticut. Early in his career he was a forester for the Civilian Conservation Corps in Connecticut and the Kisatchie National Forest in Louisiana. From 1936 to 1947 he was in the Texas Forest Service, and from 1948 to 1952 he was executive secretary of the American Forestry Association in Washington state. He spent more than 30 years in forestry and watershed management with the Ohio Forestry Association, as well as the Division of Water of the Ohio Department of Natural Resources. He died on March 11 in Columbus, Ohio, at age 94. A son, three grandchildren and two great-grandchildren survive him.

Rowland Garratt '51 (1927-2004) was a son of the late Dean George Garratt '23, Ph.D. '30. After Army service in Germany, he went to MIT and obtained an engineering degree. His professional career, which lasted more than 40 years in research and development of wood products, started in 1951 at Gamble Bros. in Louisville, Ky. In 1955, he went to the Timber Engineering Co. in Washington, D.C., and in 1959 to the Hines Lumber Co. in Chicago. He was at the Weyerhaeuser Technology Center in Tacoma and Seattle, ultimately becoming administrative director. He enjoyed an active retirement in Seattle, where he died on August 12. His survivors include Loris, his wife of 55 years, his brother Stephan, a son, a daughter and seven grandchildren.

Arthur Greeley '35 (1912-2004) grew up in Washington, D.C., and was a 1934 forestry graduate of the University of Washington. His long career in the U.S. Forest Service started in the St. Joe National Forest. Later, he was at the Coeur d'Alene National Forest, the Division of Timber Management in Washington state and the Pacific Northwest Forest Experiment Station. He was regional forester in Alaska from 1953 to 1956 and in the North Central region from 1956 to 1959. In 1962 he became

deputy chief for national forest management, and in 1970 he was named associate chief. He retired from the Forest Service in 1971, studied for the ministry and became pastor of the Chevy Chase United Methodist Church. He was a fellow of the Society of American Foresters, and the son of the late William Greeley '04. He died on June 5 in Kensington, Md.

Howard Kriebel '48, Ph.D. '56 (1921-2004), was from the Philadelphia area and graduated from Haverford College in 1946. Before he enrolled at the Yale School of Forestry in 1952 for doctoral study, he was a forester for Sable Mountain Corp. in Vermont and the Kentucky Conservation Department, and was a member of the forestry faculty of the University of New Hampshire. In 1953 he joined the Department of Forestry of Ohio State University's Agricultural Experiment Station at Wooster, where he specialized in the genetics of forest trees, especially maples and pines. He published more than 100 papers, and was a pioneer in the application of molecular genetics to trees. He was a lifelong promoter of international cooperation in forestry research, was a Fulbright senior lecturer in Croatia and had visiting appointments in Sweden, India, Romania, Bulgaria and Japan. From 1987 to 1995 he was on the executive board of the International Union of Forest Research Organizations (IUFRO), and in 1998 he received an honorary membership from IUFRO, its highest award. In 1997 he and his wife, Dorothea, retired to Medford, N.J. He was killed in an auto accident on June 11. His survivors include his wife and a son.

Arthur Pingree '47 (1917-2004) grew up in the Boston area and enrolled at the Yale School of Forestry after graduating from Amherst in 1940. During WWII he was a captain in the field artillery in Europe, earning a Bronze Star. After completing his studies at Yale, he went to Auden and Thunder Bay, in northern Ontario, to supervise logging and forest management for Abitibi Power and Paper. He was divisional woodlands manager when he retired in 1975. His retirement years were spent at Alna, near the Maine Coast, where he continued to pursue his lifelong interests in gardening, bird watching and sailing. He died on March 15. Among his survivors are Peggy, his wife of 62 years, three daughters, four grandchildren and two great-grandchildren.

Benjamin Troop '49 (1917-2004) came from Connecticut and was a 1941 forestry graduate of the University of Maine. During WWII, he served as a Navy lieutenant in the South Atlantic and Western Pacific. After 15 years of work in lumber sales in the Northeast, he went to Seattle, Wash., and became a technical writer for Boeing. He died in Seattle on February 21. His wife, Lorraine, survives him.

Obituaries

Stanley Ursic '50 (1924-2004) died in late summer in Oxford, Miss. During WWII, he served overseas as a sergeant in the Army, and was awarded the Bronze Star. In 1990 he retired from the U.S. Forest Service after 43 years of distinguished service as an expert in hydrology and erosion control in the lower Mississippi Valley. He remained in Oxford in retirement. Three sons survive him.

Leroy Watson Jr. '39 (1913-?) is reported to have died on an unknown date, presumably in Panama City, Panama. He first went to Panama in 1941 when he was on leave from the University of Georgia, doing a study of forest resources of Central America in connection with doctoral work at Yale. During WWII, he served as a Navy officer in the Canal Zone, and he and his wife, Elsie, remained for five decades. He engaged in a series of enterprises—the Panama Plywood Corp., a mahogany logging operation and a shrimp business—and for 30 years he was a manager consultant for the Overseas Management Co. He retired in 1981, and became active in conservation, especially in starting ANCON, an association for the conservation of nature in Panama, as well as Eco-Tours de Panama.

M. Carleton White Jr. '55 (1932-2003) died on September 23, 2003. His last mailing address of record was in Richardson, Texas. He had a long career as a forester for the International Paper Co. in the South, with positions of leadership at Georgetown, S.C.; Camden, Ark.; and Mobile, Ala. He got an M.S. in forest engineering at Louisiana State University in 1968.

Edgar Wyman '39 (1915-2004) died in North Sandwich, N.H., on July 13 at age 89. He came from Massachusetts, and spent summers on a family farm close to the Yale-Myers Forest. He was a 1937 graduate of the University of New Hampshire. Then he worked with Sherman Adams (later, governor of New Hampshire) at a paper company in Lincoln, N.H. After Yale and a couple of years of forestry work in Ohio and Northern California, he became a U.S. Coast Guard officer and skipper of an antisubmarine patrol boat in the Pacific. From then until 1969 he had a long career of teaching and extension work in virtually all parts of forestry at the University of Connecticut. He organized field instruction camps in Georgia, Virginia and Maine. These efforts and his forthright advocacy of worthy ideas and causes brought him a small army of admiring disciples and the 1996 Distinguished Service Award of the New England Society of American Foresters. He was active in the United World Federalists and American Red Cross blood drives. With the help of several students, he built a log cabin home for his family and cut wood to heat it. They hiked and skied in the White Mountains, and paddled innumerable Maine rivers. In 1978 he led a six-week expedition down the Albany River to James Bay in Manitoba. In retirement he was active in the Sandwich Fire Department and the local historical society, and delivered meals to the elderly. Barbara, his wife of 64 years, and three children, including Bradford Wyman '67, survive him.

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