



HARVARD COMMUNITY

# connections



# 2005

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Staff photo Jon Chase/Harvard News Office

**"We are performing an experiment on a planetary scale that hasn't been done for millions of years. Nobody knows what's going to happen and there will be surprises," says Daniel Schrag.**

## FACULTY RESEARCH

# Experts take on climate change

From confirmation that the globe is warming to new research about the effects of pollution on the Northeast, Harvard researchers are contributing new understanding to an issue that engages nations, cities, and individuals alike. Many researchers have tackled global warming and its effects, offering research that may be critical as countries, states, and cities seek to develop policies to protect the globe.

Human-caused climate change is inevitable, says Professor of Earth and Planetary Sciences Daniel Schrag, director of the Harvard University Center for the Environment — the question is what a changing climate will mean.

Scientists don't know exactly how severe the effects of climate change will be, or whether they will come in decades or tens of thousands of years, but Schrag thinks they will be dramatic and widespread. The technical challenge facing the world is formidable, particularly with increasing development in large nations like China and India, much of which will likely be fueled by coal. A coordinated effort to reduce global warming is important, and to stem the worst effects the effort must be dramatic, Schrag said, calling the recent Kyoto Protocol "a drop in the bucket."

Looking at the problem on a national scale, Loretta J. Mickley, a research associate at the Division of Engineering and Applied Sciences, and colleagues

## seeing green: *Harvard supports the environment*

At a time when ozone depletion and global warming are engaging cities and nations, Harvard's researchers are helping us understand their impacts on our environment. From Jack Spengler's research on the effects of indoor air pollution on human health to James McCarthy's participation in the United Nations' Intergovernmental Panel on Climate Change report that confirmed global warming is real and here, Harvard is addressing the problem.

But at Harvard our environmental engagement is more than academic. Through the combined efforts of faculty, students, and University administration, Harvard is putting knowledge to action on campus and in our local communities, doing our part to reduce energy consumption, to reuse and recycle. For example, a partnership between Harvard departments and students who promote energy conservation and recycling in college dormitories has reduced energy consumption by 15 percent and increased recycling rates by 50 percent in Harvard dorms. This is just one of many "green" efforts that have become a part of everyday life and operations at Harvard today.

Literally hundreds of sustainability strategies have been tested and ultimately adopted at Harvard with the help of the Harvard Green Campus Initiative. For example, soybean-based diesel now fuels Harvard's entire fleet of shuttle buses and diesel vehicles. New buildings are designed with energy-saving innovations. And, just this winter, Harvard increased its financial support of conservation efforts to \$6 million, making it easier for departments to adopt "green" measures.

Without a doubt, the Crimson is "greening." Come see for yourself. Attend a lecture with Harvard faculty to learn how you can apply environmental practices in your home (see page 4), or simply come to our campus for a stroll or visit the Arnold Arboretum to enjoy the natural beauty of our shared environment.



Staff photo Jon Chase/Harvard News Office

**Loretta J. Mickley and colleagues found that the frequency of cold fronts bringing cool, clear air out of Canada during the summer months declined by about 20 percent, resulting in worsening pollution in the Northeast and Midwest.**

examined the impact of increasing greenhouse gas concentrations on pollution events in the United States through 2050.

Using a complex computer model, Mickley and colleagues found that the frequency of cold fronts bringing cool, clear air out of Canada during the summer months declined by about 20 percent. These cold fronts,

Mickley said, are responsible for breaking up the hot, stagnant air that builds up regularly in summer, generating high levels of ground level ozone pollution.

Such research has spurred Harvard to do all it can to reduce its own impact on the environment.

To learn more about Harvard research on the environment go to [www.researchmatters.harvard.edu](http://www.researchmatters.harvard.edu).

## PARTNERSHIPS

## Beyond the blue bin

*With creative recycling programs, Harvard turns trash into treasure*

Harvard's efforts to keep its trash out of landfills extend far beyond recycling paper and soda cans. From desk chairs and computers to dorm decorations, the University recycles a myriad of items in creative ways that benefit both the environment and the community.

"In the world of wise resource use, you want to be able to recover as much of the utility and value of every resource that you can," says Robert Gogan, recycling and waste manager for Harvard University Operations Services. "At Harvard and the neighborhood beyond, we have so many people who need and can use right away the things that we're throwing away."

Gogan, a tireless cheerleader for recycling, provides administrative oversight for a variety of the University's reuse efforts. Each Thursday, from 11 a.m. to noon at the parking lot behind 175 Harvard St. in Allston, he helps office-remodelers and movers find new homes for desks, bookshelves, and other furniture at the Recycling and Surplus Center.

At the beginning of each school year, Harvard Habitat for Humanity holds its annual Stuff Sale. Habitat this year raised more than \$30,000 by selling abandoned "stuff" from University residences to students and community members.

Gogan also connects local nonprofits with renovation projects at Harvard. Kitchen equipment from Quad dorms found its way to Boston-area churches, homeless shelters, and organizations working to feed the hungry. Library renovations at the Radcliffe Institute sent carrels and bookshelves to local schools and organizations; building components like cabinetry and doors went to a nonprofit organization that provides lower-income homeowners with home repair materials. Even cosmetics are collected and donated to organizations each Valentine's Day.

Gogan calls this sort of recycling a win-win for Harvard and the community. "It's not Home Depot opening its doors for a shopping spree, but there's some pretty darned good stuff."\*



Rob Gogan is a tireless cheerleader for recycling at Harvard.



The projects financed through interest-free loans from the fund in recent years have had a high average rate of return, President Summers said, making them good investments as well as laudable environmental projects.

## CONSERVING ENERGY, MONEY

## Campus conservation loan fund doubled to \$6 million

Harvard President Lawrence H. Summers announced in December 2004 that the University will double the dollars available for campus conservation projects through the Green Campus Loan Fund — to \$6 million — with the aim of financing greater energy efficiency, water conservation, and waste reduction across Harvard.

Summers said the projects financed through interest-free loans from the fund in recent years have had a high average rate of return, making them good investments as well as laudable environmental projects.

The fund, administered by the Harvard Green Campus Initiative, was established in 2001 with \$3 million in principal. The fund offers no-interest loans that are repaid over time from the savings realized by the projects.

Some examples of projects funded by the Green Campus Loan Fund include:

- New computerized irrigation controls for Harvard Business School grounds monitor recent rainfall, humidity levels, and soil moisture before turning on sprinklers, saving an estimated 5 million gallons of water a year.
- The Computer Energy Reduction Program encourages students, faculty, and staff to shut off computers, lights, and heating. The program at the Faculty of Arts and Sciences is expected to save \$300,000 per year.
- Numerous projects to upgrade heating, ventilation, and air conditioning to energy-efficient systems have been financed through the loan fund, with aggregate annual savings exceeding \$500,000.\*

For more information on Harvard's Green Campus Initiative or to receive a newsletter, go to [www.greencampus.harvard.edu](http://www.greencampus.harvard.edu)

## WORKING TOGETHER

## Harvard adopts sustainability principles

In October 2004, Harvard University announced a set of principles designed to ensure sustainable growth and advance Harvard's record as a responsible environmental steward.

The principles were the result of a process commissioned by President Lawrence H. Summers after hearing concerns from students, alumni, and members of the community regarding the development of a sustainable future campus. "Operating our campus in an environmentally sustainable way is not only the right thing to do as a citizen and neighbor, it is also an economically sound way to conduct our business," said Summers.

The new University policy is reflected in six sustainability principles that commit Harvard to developing new green campus buildings and promoting and rigorously monitoring sustainable practices in all campus operations.

"We applaud Harvard for thinking boldly about smart growth and green building," said Boston Mayor Thomas M. Menino. "Their approach will translate into a healthier city for residents and employees alike."

Cambridge Mayor Michael A. Sullivan added, "Harvard has worked with the city on numerous fronts and we welcome their partnership on environmental matters as well, whether that be in everyday practices like recycling or long-term sustainability principles in planning and operations. With our university and corporate neighbors, we can make a difference."

To view the principles, go to [www.greencampus.harvard.edu](http://www.greencampus.harvard.edu)



At a recent discussion at Harvard on the challenges of solving global warming, former Vice President Al Gore asserted there is really little doubt that the globe is warming and that the warming is caused by human activity. But Gore struck a hopeful note as well, saying that many technological challenges that once seemed insurmountable - from the discovery of a polio vaccine to landing on the moon - have been overcome.

"We have to use our deliberative processes and our democracy to talk with each other about our crisis. And it is a crisis," Gore said.

## COMMUNITY INVOLVEMENT

## Cambridge gives Harvard GoGreen Award

Harvard University received a GoGreen business award in May 2004 from the City of Cambridge during the city's annual celebration that promotes environmental action and awareness.

Harvard's Green Campus Initiative won an Energy Award, which is given for efforts including energy conservation, energy efficient purchasing, and green power purchasing.

"The GoGreen Awards recognize Cambridge businesses for their efforts to preserve the environment and quality of life in Cambridge," said Cambridge City Manager Robert W. Healy. "Many of our businesses are active in promoting and implementing environmental programs, and we want to make sure that their efforts are appreciated and applauded."

"This award recognizes the enormous amount of effort that literally hundreds of staff and students at Harvard have made, working with the Harvard Green Campus Initiative, to drive our energy consumption down and to shift our dependence towards renewable, nonpolluting energy sources," said Leith Sharp, Director of the Harvard Green Campus Initiative, a collaborative effort between faculty, administrators, staff and students to reduce Harvard's environmental impact and to promote environmental sustainability.\*



Prof. Jack Spengler, Harvard School of Public Health faculty member & Co-Chair of Harvard Green Campus Initiative; Susanne Rasmussen, City of Cambridge Community Development Department; Richard Rossi, Deputy City Manager; Leith Sharp, Director of Harvard Green Campus Initiative; Cambridge Mayor Michael Sullivan.

## Bike to work at Harvard

Only 27 percent of Harvard University affiliates drive alone to work, compared to 73 percent of commuters state-wide. Lucy, an Australian shepherd who commutes by bicycle trailer from her home in Medford, may not be an official employee of the University, but her chauffeur, Brent Bell, is director of the Harvard First-Year Outdoor Program. In addition to hearty winter cyclists like Bell and Lucy, 32 percent of Harvard employees walk to work, according to the University's CommuterChoice program. The Environmental Protection Agency (EPA) has lauded Harvard as one of New England's Best Workplaces for Commuters.\*



## Harvard is second largest university purchaser of green energy

Through the efforts of students, departments and schools, Harvard has become the second largest university purchaser of clean, renewable energy (wind power). Now, a new three-year dedicated renewable energy fund will expand Harvard's renewable energy portfolio, effectively making Harvard the largest university purchaser of renewable energy in the USA. "Investing in renewable energy is a significant demonstration of responsible leadership. By promoting cleaner energy sources, health damaging pollutants from coal-fired power plants will be reduced," noted Jack D. Spengler, Akira Yamaguchi Professor of Environmental Health and Human Habitation in the Harvard School of Public Health.

## Research and recreation coexist at Arnold Arboretum

On any given weekend, Harvard University's Arnold Arboretum is alive with walkers, joggers, cyclists, and pups straining at leashes. Its neighbors and visitors encounter the Arboretum as a stunningly beautiful urban respite, a showcase of the genius of landscape architect Frederick Law Olmsted, a place to admire and perhaps learn more about a vast array of flora collected from around the world.

Behind the scenes, in the Arboretum's buildings and greenhouses and in Cambridge laboratories, researchers appreciate the 265 acres of 5,000-plus different kinds of plants as far more than a pretty place to pedal. From taxonomy and evolutionary biology to molecular studies of plant behavior to an assessment of the destructive impact of the hemlock woolly adelgid, the Arboretum is a lively and valuable site of academic research.

"You need the living collections to study any kind of problem in plant development," says Arboretum Director Robert Cook. "To really understand [the biology] in a comparative way, the value of that living collection is tremendous."

Founded in 1872, the Arnold Arboretum is the nation's oldest scientific arboretum and, like many

Harvard institutions, its longevity is significant to its value: The Arboretum has data records on plants that date back to its founding. Far from being a distracting tension, the Arboretum's recreation and research roles work exactly as its founders intended.

Although the Arboretum's primary mission is the study of and education about woody plants, a unique lease with the City of Boston Parks Department guarantees that the Arboretum also serves a nonacademic public as an outdoor museum, always open and free.

Between dog walkers and doctoral researchers, the Arboretum serves a hefty middle ground with its public education and horticultural initiatives. Fifth-graders from the Boston Public Schools, for example, study the impact of the woolly adelgid on the Arboretum's hemlock collection as part of their curriculum on populations and ecosystems.

Still, the majority of the Arboretum's visitors — estimated at about 250,000 per year — are unaware of the higher scientific purpose the facility serves. "Most people appreciate it as just a beautiful place to come," says Peter Del Tredici, senior research scientist.\*



A happy trio strolls through the autumn glories of the Arboretum as, behind the scenes, scientists study flora and climate.

## Cleaner, greener diesel

Since March 2004, when Harvard University's Transportation Services opened its own biodiesel filling station in Allston, Harvard's 25 diesel vehicles – shuttle buses, maintenance and mail trucks, and dining service vehicles – have run on cleaner-burning biodiesel. Harvard is the first Ivy League school to use soybean oil-based biodiesel as the primary fuel for its entire diesel fleet.

"I wouldn't recommend it, but if you were to stick your nose down the pipe of a (biodiesel burning) bus, it's discernably different. The black plume has gone away," says David E. Harris Jr., General Manager of Transportation Services.

*Head mechanic Mark Gentile fills up one of Harvard's buses at the new biodiesel fueling station in Allston.  
Staff photo Rose Lincoln/Harvard News Office*



## STUDENTS

## ReStore

*Student group aims to refurbish old computers for those who can't afford them*

While Harvard and its students have found creative ways to reuse and recycle everything from office furniture to cosmetics, the University was long stymied in its efforts to recycle one of its most prodigious by-products: computers. Harvard's Rob Gogan explains that though local schools and nonprofits clamored for the University's old computers, liability issues related to proper disposal prevented Harvard from donating them.

Now, a student group called Harvard ReStore is working with Gogan to tackle the challenge of refurbishing discarded computers, and hopes to provide them, at low or no cost, to Harvard and Cambridge community members. Launched with support from several campus business contests, the new ReStore program aims to minimize the significant negative environmental impact of computers in landfills while helping to bridge the "digital divide" that exists between those who can afford computers and those who cannot.

"The ReStore is a wonderful opportunity for students to help reduce Harvard's environmental impact while empowering needy members of the community with refurbished computers and computer literacy skills," says Esther Tian, Harvard College Class of '05, one of the organization's founders.

## happenings @HARVARD

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## science lectures

### Effective Environmentalism

Monday, March 21, 5-6:30 PM

A discussion of effective environmentalism with the Secretary for Environmental Affairs, Ellen Roy Herzfelder, with commentary by Daniel P. Schrag, faculty director of the Harvard University Center for the Environment. Co-sponsored by Harvard's Rappaport Institute for Greater Boston and the Harvard University Center for the Environment and Harvard Green Campus Initiative.

Kennedy School of Government, Harvard University  
Taubman AC, 5th Floor Taubman Building

### Longwood Science Seminars

#### Stem Cells: Hope Beyond the Hype

Wednesday, March 23, 5:30-7PM

#### Nutrition & Preventive Medicine: Facts on Food & Fitness

Wednesday, April 6, 5:30-7PM

#### Sleep Dynamics: REM, Rhythms & Recall

Wednesday, April 27, 5:30-7PM

All seminars are held at Harvard Medical School, New Research Building, 77 Avenue Louis Pasteur, Boston (across from Boston Latin Academy).

For registration and more information, go to: [http://www.hms.harvard.edu/longwood\\_seminars](http://www.hms.harvard.edu/longwood_seminars)

### Lecture & Reception with Alan Rabinowitz

Wednesday, April 6

Harvard Museum of Natural History  
24 Oxford St. Geological Lecture Hall  
671.496.0049 Free Parking Free/Open to Public

### Taking Part in Preserving Our Earth

Tuesday, April 26, 6-8PM

Lehman Hall Common Room, Second Floor  
Jack Spengler, Akira Yamaguchi Professor of Environmental Health and Human Habitation at Harvard School of Public Health, and Leith Sharp, director of the Harvard Green Campus Initiative, discuss environmental sustainability. What is it? What are the challenges before us as individuals, institutions, and as a society? What can each of us do to help alleviate these environmental problems? Lehman Hall is located in Harvard Yard near the Harvard Square T stop. For more information, call the Harvard Green Campus Initiative at 617.496.1278.

### Endless Forms Most Beautiful: The New Science of Evo Devo & the Making of the Animal Kingdom

Tuesday, April 19

Harvard Museum of Natural History  
24 Oxford St. Geological Lecture Hall  
671.496.0049 Free Parking Free/Open to Public

## arts & music



### ARTS First Festival

May 5-8

Office for the Arts  
Harvard campus - various locations  
617.495.8676 Free/Open to Public

### From Mind, Heart, & Hand: Persian, Turkish & Indian Drawings from the Stuart Cary Welch Collections

March 19-June 12

Fogg Museum  
32 Quincy Street  
617.495.2389 Museum Admission Fee

### LifeMusic Commissions: Pierre Jalbert / John Duffy Brahams Piano Quintet in F Minor, Op. 34

Friday, April 15

Music Department  
John Knowles Paine Concert Hall  
617.496.6013

## community events

### Mineral Madness Family Festival

Saturday, March 26, 9 AM-5 PM

Harvard Museum of Natural History  
24 Oxford St. Geological Lecture Hall  
617.495.3045 Museum Admission Fee

### Cambridge Family Night at the Harvard Museum of Natural History

Friday, April 8, 6-9 PM

26 Oxford Street Cambridge  
Be a scientist as you dig out a fossil and conduct mineral tests. Solve science mysteries about the natural world and examine specimens from our collections. Meet live animals up close and personal during this special presentation for the whole family.

### Exhibit: Breaking the Silence: 19th Century Indian Delegations to Washington, D.C.

Thursday, April 14-September 30

Peabody Museum 11 Divinity Ave.  
617.496.0099 Pamela Gerardi



Esther Tian '05 (right) and Marlene Archer, ReStore adviser and director of the Stone Community Computing Center, sort through a tangled maze of computer mice.

Courtesy Allison Rogers

## observatory nights

### Observatory Nights Stargazing 101

Thursday, April 21

Center for Astrophysics  
Phillips Auditorium 60 Garden St.  
617.495.7461