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Newsletter of the Urban Resources Initiative at the Yale School of Forestry & Environmental Studies

### MUTUAL PATHWAYS OF LEARNING



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### **Fostering a Sense of Place**

by "If we want children to flourish, to Mary become truly empowered, then let us Alice allow them to love the Earth before we Lamb ask them to save it. Perhaps this is what Thoreau had in mind when he said, 'the more slowly trees grow at first, the sounder they are at the core, and I think the same is true of human beings.'"

David Sobel, from *Beyond Ecophobia* 

On a cool October day in the fall of 2004, students from Ms. Maser's fifth grade classroom poured out of the school's front door and ambled along the sidewalk on their way to the Nash Street Greenspace site. Just that morn-

ing students had come to school in buses or on foot as usual, unaware of the change of perspective that was about to occur in them. Today's lesson, an ecological scavenger hunt and history of the neighbors' work on the former vacant lot, was sure to offer some surprises.

On the short walk over to Nash Street, students stop to notice some small details that they had never paid much attention to before. "What's a storm drain?" one student asked, "Is that one?" She pointed to a gutter lying close to the ground and inquis-



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#### www.yale.edu/uri

If you would like to be removed from our mailing list, please email uri@yale.edu. Please include your name and address in your email. Because URI is a non-profit-university partnership, it is not surprising that our organization emphasizes learning. An interesting aspect of our work is that we cut across a wide range of the learning continuum–from elementary school to graduate school; from community-based learning to professional-based learning. Our founder, Dr. William Burch, has given our organization doctrines to live and work by, including 'earning the right to learn' and 'mutual pathways of learning'. This issue explores those tenets and our range of learning activities.

Our Environmental Education Coordinator, Mary Alice Lamb, explores our teaching philosophy in our cover article, "Fostering a Sense of Place". While our staff and interns teach science through our *Open Spaces as Learning Places* program to fifth grade public school children, they are also in many ways introducing them to the nature of our city and connecting them to the New Haven ecosystem that they inhabit. The learning opportunity extends beyond the schoolchildren to the interns who are afforded an opportunity to learn how to teach. In this issue, former intern Laura Wooley describes the impact of her intern experiences on her professional development. She has a unique story to share, as she took advantage of internship opportunities available through both of our two primary program vehicles–*Open Spaces as Learning Places* and *Community Greenspace*–as well as through an internship with Yale's Hixon Center of Urban Ecology.

The Hixon Center has a broad mission to understand and enhance the urban environment. The Hixon Center, (which URI is a part of at the Yale School of Forestry & Environmental Studies), achieves this objective in part by providing funding support to students to pursue internship and research opportunities. The student applicants have a great range of interests in urban related research topics, and the funds allow the students the freedom to follow their educational pursuits. In "Interns Working Around the World", Amy Shatzkin details the range and outcomes of projects that she and fellow Hixon-supported interns pursued.

Our staff, as well, embraces the daily learning that occurs as we work in the community. Christopher Ozyck, URI's Greenspace Manager, has worked in concert with our city and local foundation partners to capture new technological advances. In his article, he describes the recent development of a second iteration of a Green Map for New Haven that now includes and displays community-managed open space.

It is this spirit of professional development that propels our organization to participate in the six-city coalition known as the Urban Ecology Collaborative (see article by editor Michelle Lichtenfels). Our partners in these northeastern cities seek to cultivate healthy, safe, and vibrant cities. URI and our collaborative partners believe this will be best achieved through collective learning and united action. I hope you'll share our excitement as we "earn the right to learn."

### **Fostering a Sense of Place**

### (continued from page 1)

itively looked up. I gathered students together so I could explain the physical and ecological functions of a storm drain, including how it allows a safe avenue of passage for neighborhood animals. Students immediately found the grates lying close to the sidewalk and began to understand. "Animals live under there? That's amazing!" one student exclaimed.

Throughout the course of the last year I have had a chance to see firsthand the extraordinary opportunity that URI's *Open Spaces as Learning Places* program affords New Haven's youth. The essence of this environmental education program and what sets it apart from other programs is URI's philosophical belief that action follows inspiration. If children are given the chance to learn about the city's ecology and their place in it, they are more likely to be stewards of it in the future.

### A Philosophy of Learning

The Open Spaces program teaches students through a local, experiential curriculum that incorporates age-appropriate, engaging activities. URI targets fifth graders because research and experience have shown that children at this age are old enough to understand and appreciate the complex nature of local ecological systems, and young enough to retain the sense of wonder that comes from investigating the world around them. This is an important aspect in the effectiveness of the program. For example, students are able to comprehend the water cycle and understand that what happens upstream affects their own quality of life and health downstream.

The *Open Spaces* program provides young people with the opportunity to have intimate, personal contact with the local environment around them in the city. Rather than focus on the far off and exotic, the program focuses on the immediate and local surroundings of their neighborhoods and the larger City of New Haven. URI recognizes that a significant part of feeling ownership and empathy for a place involves getting one's hands dirty by touching the salamanders, newts, and tadpoles that live under the logs in the park, and generally using one's senses to explore surrounding places. This focus on immediate and local contact helps students develop the core values necessary to conserve and restore New Haven's environment as they grow to become adults. Through the program, URI seeks to capitalize on and inspire the innate sense of wonder and curiosity that children already possess.

#### **Inspiring Curiosity**

In cities where there is an excessive burden of dangerous, vacant lots, barren schoolyards and brown space, it is often difficult to find the treasured green spaces, parks, rivers, and ponds that exist. The Open Spaces program seeks to bring students to these spaces, which students inevitably find to be eve-opening experiences. In New Haven, for example, many students never realize that a river flows right across the street from their school until they canoe on it during the Open Spaces program. This knowledge and experience is always a source of conversation and marvel for the rest of the school year. And the notion of a cemetery being valuable open

"I remember when we went canoeing. If you weren't here to teach us then we wouldn't know about all this great stuff you've been doing with us. I also remember you teaching me about ocean water and open green space. I think one day I could be a teacher just like you." Talitha McKinney

space is also very new for teachers and students. When Ms. Dixon and Mr. Wolkovitz's class returned from their visit to the Grove Street Cemetery, students told me that visiting this historic New Haven



### Headstones at the Grove Street Cemetery allow for geologic and historical discoveries.

landmark was their favorite part of the program; they had never before thought about how many beautiful trees, how much wildlife, and what kinds of important geological features they pass each day. Fifth grader Cory Ray noted, "When I first got there I was scared. But when I got used to it I wasn't so scared anymore."

When students see nature right in their backyards, this tends to inspire even more curiosity of the outdoors over time. "If a frog lives in a pond, where does it go when it snows and the water freezes?" student Wesley Lennon asked one day. Wesley is a student that I taught last summer during a series of camping trips where URI offered education programming to LEAP (Leadership Education and Athletics in Partnership). Wesley is tall for his age and towers over the other students lined up along the bank of the pond with their nets, ready to catch some whirligig beetles and caddis fly larva. Because Wesley took part

### The Green Map of New Haven

**by** The creation of the first Green Map was Christopher initiated in 1992 in New York City in an **Ozyck** attempt to capture and visually represent the environmental soul of the city. Since its establishment as a way to map out locally significant environmental resources, dozens of other cities have joined in the Green Map System (GMS). Today, New Haven counts itself among other Green Mapped cities across the globe such as Athens, Georgia, Parat, Brazil, and Kawagoe, Japan.

> The genius of a Green Map lies in its high potential to effectively tie together cultural resources, eco-friendly institutions, land use patterns, restoration activities, transportation, and lifestyle choices to shape an environmental perspective of the city. Each Green Map that is developed relies on a common and defined framework of prescribed symbols and categories, making the system readily adaptable to any city. However, the important aspect of each map is that it must be shaped and informed by locally collected information. The quality and depth of collected data directly relates to the richness and meaning of the map.

> As a communication tool, a Green Map helps to raise awareness of urban environmentalism and "green" living. The Green Map functions as another way to examine and articulate various aspects of sustainable living, including the relationship between energy and resource needs, transportation, healthier environments, and natural resources such as air, water, and open space. The map invites the casual observer to explore these ideas in the context of the map; Where are the open spaces? How can I help my city become greener?

The concept of a Green Map for New Haven was initiated out of forward-thinking by New Haven City Plan director Karyn Gilvarg, AIA. Subsequently developed in the summer of 2002 by a Yale college student, Linda Laniado, this original map was seen as complimenting and adding depth to the city's Comprehensive Plan of Development and Conservation. It is City Plan's vision that in the future, the Comprehensive Plan and the Green Map together will help inform city and community decision-making efforts that have the potential to affect the environment and greening of the city. Already, city staff and environmental organizations use the Green Map. "The Green Map helps us to think about the whole environmental system, such as relationships between neighborhoods and land use," stated Mike Piscitelli, City Plan deputy director.

About the Green Map System The Green Map System (GMS) is a locally adaptable program for environmental mapmaking that has been instituted in dozens of cities around the globe. Green Maps are locally made using common symbols (icons) of a shared map-making language, and chart local ecologically and socially significant sites. For more information on the Green Map System please visit: www.greenmap.org.

Developing a second and more comprehensive map was originally stymied by budgetary constraints, but interest reemerged when the Green Map was viewed as a potential tool for communicating the relative value of community managed land. In the beginning of 2004, the Community Foundation for Greater New Haven agreed to fund staff that would complete the Green Map prior to the Community Open Space Convention held at City Hall in the Fall of 2004. URI staff, with the assistance of student Brian Marcaurelle (MEM '04), conducted outreach to New Haven's environmental community and flushed out the map. City Plan's GIS analyst, Alec Vicentorio, followed through with additional collection of information and developed the map more fully to have a product ready for broad distribution. With the securing of additional funds from the Hixon Center at Yale, the final Green Map was printed and is being distributed this spring.

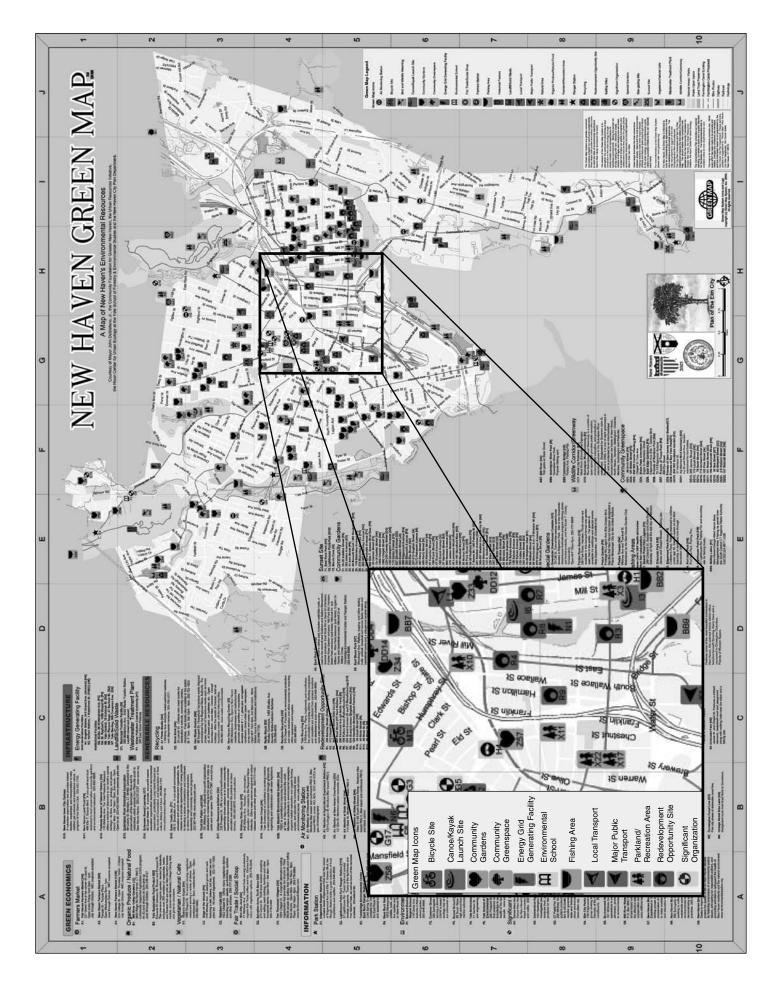
The use of the map during the Open Space Convention of Fall 2004 complemented the goal of the convention to enumerate the many benefits of community managed lands (such as Community Greenspaces and Gardens), and move toward the drafting of an ordinance and resolution that promotes and protects these spaces. During the Convention, the Green Map was a helpful tool that assisted community members and gardeners to identify the value and location of community managed lands, especially in relation to dense, underserved neighborhoods such as the Hill, Newhallville, and Fair Haven.

The Green Map development process has been a tremendous example of partnership, cooperation, mutual learning drawn from city officials, Yale resources, citizen engagement, and the many environmental organizations in this burgeoning green city. The wide distribution of the map will help the community to continue to reflect on the environmental potential of New Haven, while helping to facilitate the dialogue between community members and organizations about land management decisions across the city.

The Green Map of New Haven, though intended to capture a point in time in the environmental history of a city, is also intended to be a dynamic map that reveals the city's path toward greater sustainability over time. URI and City Plan look forward to transforming the Green Map as the environmental history of New Haven evolves.

Free Green Maps of New Haven are available by calling Chris Marchand at URI: (203) 432-6189.

Christopher Ozyck is the Greenspace Manager at URI.



## Fostering a Sense of Place

### (continued from page 3)

in the same activity with me over the summer, he is now an expert, proudly showing the other students how to properly skim the water's edge. Like Wesley, many students build confidence in themselves and their ability to tackle environmental science after participation in *Open Spaces*.

### What Teachers Say

Teachers in the schools where the Open Spaces program works recognize how the program provides excellent professional development through hands-on learning of environmental education. They also notice the effects of experiential learning on their students to be significant. For example, last spring Mrs. Vazquez began the daunting task of preparing students in her fifth grade class for state-administered standardized practice science tests. I can still remember walking into her class to see twenty-five whispering faces staring back at me. Composed entirely of 10- and 11-year old Spanish-speaking children who had recently arrived in the United States. these students had little or no English skills or formal schooling. But after

weeks of watching URI Education Intern Olivia Metzger and I haul tanks of box turtles, stuffed animals, models of the food chain and cassette players with bird call tapes in and out of her classroom, Mrs. Vazquez began to detect a change in her students' comprehension of material. The concepts of decomposition and nutrient cycling made sense to her kids—they were getting it!

Later, after the students had completed the state-administered practice test, Mrs. Vazquez pulled me aside to show me the number of questions that students had been able to answer correctly because of the hands-on work we had done in the *Open Spaces* program. She recognized the added value of experiential science in her bilingual students' learning.

But just as students learn the benefits of environmental education gradually, so do classroom teachers. Starting first in their schoolyards, outdoor classes progress to larger spaces farther from their usual comfort zone. Ms. Patton, a teacher who herself admitted, "I am not a bugs, crawly type person," later commented that "It is quite likely we will do outdoor activities during the winter and spring for other lessons in open spaces." Ms. Patton also benefited from the program and grew to feel more comfortable outside as a result of the same exposure that helped her students.

#### What We Are Learning

The same principles that make learning mutually beneficial for classroom teachers and their students makes the Open Spaces program an integral learning opportunity for URI interns and URI as an organization. Interns thrive from having a hands-on, local opportunity to improve the communication and teaching skills they will use in their future professional work. Additionally, the shared teaching and learning that URI experiences in New Haven allows URI to share in the conversation on urban ecology education through the Urban Ecology Collaborative (UEC). Participation in the Education Working Group allows URI to share educational programming information and environmental education trends that transcend city and state boundaries. Collaborations such as this make it possible for URI interns, staff, and the larger organization to learn more about educational programming in a way that serves the New Haven community first.

As URI begins its fifth year of teaching the *Open Spaces as Learning Places* program, we continue to try to earn the right to learn from the members of our great community here in New Haven. And at the end of the school day, when youth like Wesley and his classmates get back on the bus, it is our hope that they go home a little more hopeful about their place in the world and better prepared to take on their roles as New Haven's future environmental stewards.

Mary Alice Lamb is the Environmental Education Coordinator for URI.



Photo by Mary Alice Lamb

Canoeing on a sunny fall day left all the 5th graders smiling!

### **Facilitating Professional Development**

The Urban Resources Initiative (URI) people I talked to did and the Hixon Center for Urban Ecology offer up a suite of opportunities for students to become involved in locallybased community stewardship activities: a Hixon Center fellowship, a New Haven Community Greenspace internship or an Open Spaces as Learning Places teaching assistantship in local New Haven schools. Few F&ES students take advantage of all three opportunities, but by the time I graduated in 2004, I was one of those few students. I quickly found that all three programs fit together in very complementary ways that have helped me to grasp many different truths and skills that I hope I will come to master during my career as a community forestry professional.

Following my first year at F&ES, the Hixon Center fellowship took me to New Orleans to conduct participant observation in a coastal community built precariously outside New Orleans' massive hurricane levee situated within the city limits. During the time I spent in New Orleans, I gathered the raw data for my master's thesis, which examined this community's relationship to their immediate environment, as well as to the rest of the New Orleans area. Not only did I learn a great deal about the biophysical environment of coastal Louisiana, I gained a great deal of knowledge about social ecology and social science methods from the community. Ultimately, my research yielded a number of hypotheses worthy of further investigation. Further insights regarding community functioning could be helpful from a natural resource management perspective, especially as environmental professionals see more and more clearly that the success of ecological interventions depends on truly participatory decision making processes.

During my research, I was quite frank with community members as to the environmental concern behind my inquiries, but I quickly discovered that most of the not regard the community's most important concerns as "environmental" issues. Not to discount their other concerns, but I would like to think that my brief presence in the community might have shifted or stretched their awareness of their area's social, political, and biophysical systems within their environmentally threatened region.

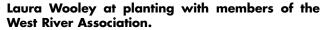
Interacting with community members during the summer of 2003 energized me so much that by the beginning of the next summer, I knew that the URI Greenspace internship would match well with my professional goals. As was the case when I started my research project the prior summer, the Greenspace

internship's learning curve appeared at first very steep. For example, I had to learn how to teach skills within hours of learning them myself; I did not and could not hide the fact that I depended on community members' expertise as much as on my own new knowledge. I had to accept that it was difficult and that I still had a lot to learn. The high expectations that Chris Ozyck and the rest of URI had for us interns really compelled us to perform at our best, and to collaborate both efficiently and sincerely.

I had many valuable opportunities during the Greenspace internship to apply methods and principles from my own field experience and coursework in forest ecology, plant biology, urban ecology, and social ecology. I cannot overstate the



Photo by Joshua Schachter



challenge that Greenspace posed, daily, to my communication and teamwork skills, whether with respect to community members or to other interns. Though having worked in the professional world several years before attending graduate school, I must admit that this was the first time in my life I truly learned the value of following up and following through. A tree planting requires a team that is ready to get their hands dirty, and I had the responsibility to make sure that someone was waiting for me on the other end.

In exchange for this sturdy bundle of life skills and horticultural know-how. I think my most important offering to community members was simply my perspective.

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### **The Urban Ecology Collaborative: Sharing Information Across Scales**

**by** The Urban Ecology Collaborative (UEC), Michelle founded in 2002, is a coalition of organi-Lichtenfels zations located in six cities across the Northeast whose purpose is to cultivate healthy, safe, and vibrant cities through collective learning and united action. URI, as one of the UEC New Haven partners, is continuing to have an active presence within the Collaborative. URI has been able to contribute to the UEC and benefit, amongst other things, from the sharing of knowledge on the development of an effective and relevant urban forestry movement in this region.

> One unique aspect of the UEC is its ability to capture data across disciplines, institutions and cities of different scales. As Colleen Murphy-Dunning, Director of URI, points out, this is possible in part because cities across the Northeast have shared similar histories over time that have uniquely shaped their industrial development, institutions, and landscapes. As a result. New Haven, even as the smallest city in the Collaborative, has a strong capacity to share information and datasets with larger cities in the east such as Washington, DC, New York, Baltimore, Pittsburgh, and Boston.



The Urban Ecology Collaborative is a coalition of organizations in six cities that works to share community forestry

information and tools. It is made up of organizations and agencies in Baltimore, Boston, New Haven, New York, Pittsburgh, and Washington, D.C. More information can be found at www.urbanecologycollaborative.org.

Over the past year, one of the UEC working groups has been jointly working to capture datasets across all member cities. In preparation for the Spring 2004 Grassroots Forum on the Urban Environment (See article in the Fall 2004 Urban Issues), the Restoration Tools working group developed a survey instrument designed to gain insight into the motivating question "What makes people want to become stewards of the urban forest?" Since the Grassroots Forum, all UEC member cities have conducted this survey through conducting personal interviews throughout their communities. The interviews, though limited in scale to small portions of each community's population, are intended to help cities identify better urban forestry outreach strategies that take into account community concerns. It is important to note that in the surveys, respondents were not asked to rank issues relative to each other; rather, each issue was treated as a different question. With the data now compiled, some trends across cities have begun to emerge.

In the survey, individuals were asked what, in their opinion, were the major issues of concern in their neighborhoods. Across all of the 6 cities, over fifty percent of the respondents cited unemployment issues as the greatest major concern. Such information reveals important realities about the social context in which UEC member organizations are working. How can urban forestry organizations better respond to their community taking into account unemployment as a priority?

Relative to data across other cities, New Haven's second leading major concern involved the quality and availability of parks and open spaces, with 33% of respondents concerned about this issue. For all other cities, the second leading major concern was safety and security. An interesting next step for the UEC cities will be to reconcile whether crime statistics and open space per capita bear out the perceived concerns of the survey respondents. If there is a community demand and concern for urban parks and green space, as there seems to be in New Haven, URI may be in a better position to capitalize on these interests in ways that get the community engaged in park and open spaces programs.

In another interview question, when people were asked how willing they would be to participate in various activities to help improve the neighborhoods of their city, respondents across all cities showed the most participation and willingness to participate in making a phone call or participating in a one day activity. New Haven varied in that a higher percentage of respondents were already participating or very willing to participate in all of



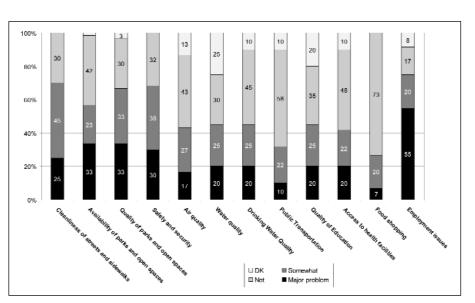
Photo by Christopher Ozyck

UEC members at a strategic planning meeting in New Haven.

these activities. Knowing this, how cancommunity groups in New Haven continue to build a greater sense of community service amongst residents?

Sharing information across cities is an important way for UEC cities to better understand how to reach out to their communities across the borders of their boroughs, neighborhoods, cities, and regions. For URI, the continued collaboration with the UEC strengthens our work towards the goal of renewing the social and physical fabric of New Haven's environment.

Michelle Lichtenfels is a 2005 candidate in the Master of Forestry program at Yale F&ES.



New Haven neighborhood issues of concern.

### **Facilitating Professional Development**

#### (continued from page 7)

The mere presence of an outsider is enough to alter the appearance of a block in the eyes of its residents. Their perceptions of their neighbors may change, or of their own important role in the neighborhood; most importantly, their community's assets may come into sharper focus and inspire unprecedented levels of engagement. I had first learned this truth on a more cerebral level while working on my Hixon summer research project, but saw concrete results pop up all over New Haven in the course of one summer. I like to know that I helped people to love (or love more) the places where they live, and to show that love. I also like to know that I helped catalyze the formation of new friendships among neighbors who would not have had an excuse to talk to one another if they were not gathered around a new tree being planted into the ground.

In the fall after my Greenspace internship, and having become acquainted with so many New Haven neighborhoods, it was delightful to meet the youngsters of East Rock Magnet School on the corner of Nash and Willow Streets just a few blocks from East Rock Park, URI's Open Space as Learning Places (Open Spaces) program set me up twice a week to experience the wonder of teaching to a roomful of curious individuals. The sound of excitement in my students' voices as they caught pond critters or made their own watersheds was a reward so great I scarcely believed I had earned it. The Open Spaces curriculum offers so many well-conceived ways to help children connect to the world around them. and it was wonderful for me to be reminded at the end of my time at F&ES of all of the science knowledge I had once taken for granted.

For all the experiences that URI has afforded me, I am so fortunate now to have a veritable "toolkit" for explaining important principles in exciting ways to just about anyone. I did not know such opportunities and tools existed before coming to F&ES, and I would not have found out about them unless I had taken advantage of URI's offerings to Yale, New Haven and many others who care about the urban environment. I may not be planning to be a professional schoolteacher, but teaching through this program has reminded me that I will be teaching all my life and learning from those same individuals I teach.

Laura Wooley received her Master of Environmental Management in 2004 from Yale F&ES.

### **Hixon Fellows Update: Interns Working Around the World**

#### by Amy Shatzkin

The Hixon Center for Urban Ecology was created in 1998 by an endowment from the Hixon family to encourage local Yale-New Haven environmental initiatives, as well as global public-private partnerships to better the urban environment. The Hixon Center sponsors summer internships to enable students from the Yale School of Forestry and Environmental Studies forward its mission to increase understanding of urban ecosystems and the health of our urban communities. In 2004, the Hixon Summer Internship program made it possible for five students to pursue projects from India to California on subjects ranging from rainwater harvesting to inner-city redevelopment and greenhouse gas emissions.

Emily Levin (MEM '05) traveled to New Delhi. India to work with the Centre for Science and Environment. Her research addressed community-based water management in India's urban and rural regions. Emily assisted with the design of rainwater harvesting systems for sites across New Delhi, a city that faces a crisis due to plummeting groundwater levels and an unreliable municipal water supply. She also documented case studies of decentralized wastewater treatment and recycling systems, which may help to reduce the discharge of untreated sewage to Delhi's Yamuna River. Lastly, she investigated the effectiveness of rural watershed programs in three arid states. This fall, Emily authored an article about using local water harvesting as an alternative to the development of large dams in the western Indian state of Gujarat.

Amy Kimball (MF '05) worked with the Trust for Public Land in Washington. D.C. to conduct nationwide research on the user profile of urban park visitors. After speaking with park managers from around the country, she compiled a list of best practices for enumerating and understanding park users. Her findings

concluded that surprisingly few urban park systems have a reliable and consistent method for assessing how many people frequent these public amenities. However, in the case of parks that count and communicate with their users, the data indicate the importance of these public spaces to cities. Amy's findings will be incorporated into a larger Trust for Public Land project to assess the economic value of urban parks.

Daniel Stonington (MEM '05) conducted projects with the Growth Management Leadership Alliance (GMLA) in Washington, DC. The group is a network of leaders from state, provincial and regional organizations in the United States and Canada that carry out programs to directly shape and implement smart growth policies and actions. Dan researched current federal policies that directly effect land use decision-makers at state, regional, and local levels. He also worked to develop preliminary findings and conclusions for changing federal land use policies. Drawing on his research. Dan drafted an executive summary of findings to explain how the federal government should focus on strategies for communication and implementation of smart growth policies.

Jonathan Strunin (MEM '05) created a variety of reports and online articles for InfoOakland, a small NGO based in Oakland, CA. The organization is dedicated to informing low-income groups and communities of color about resources and information available to them. Jonathan worked on the organization's Oaktown Datahouse to facilitate citizen access to a variety of information about the city, to provide information about housing and redevelopment and to train residents about using these resources for advocacy campaigns.

Amy Shatzkin (MEM '05) worked with Master of Environmental Management the International Council of Local Environmental Initiatives in New Haven

to research the connection between smart growth measures and domestic greenhouse gas emissions. Under the auspices of the organization's Cities for Climate Protection program, Amy developed a resource guide on sprawl and climate change for city government officials and drafted the template for a municipal greenhouse gas protocol. In assessing the greenhouse gas inventory reports of 26 municipalities, she also found that green building design measures were the most frequently adopted and evaluated, while land use planning measures were the least frequently implemented and enumerated. Conducting greenhouse gas inventories allows planning officials to evaluate work towards reducing their community's impact on global climate change while also assessing the efficacy of smart growth measures.

Elena Traister (MESc '05) spent the summer and fall of 2004 collecting and analyzing water samples from eleven sites throughout the Hoosic River Watershed in northwestern Massachusetts. Her research was undertaken to better understand the temporal and spatial patterns of bacterial fluctuation to better understand how riparian systems are impacted by bacterial pollution. Her preliminary findings indicate that diurnal and storm-related patterns of E. coli concentration exist in the watershed. Elena's work will enhance the effectiveness of the methodologies used by water quality monitoring programs in the watershed, and improve the ability of these programs to deal with water quality issues in the future. Finally, her research will contribute to a broader understanding of the behavior of pollutants and their ecological effects on rivers over time.

Amy Shatzkin is a 2005 candidate in the program at Yale F&ES

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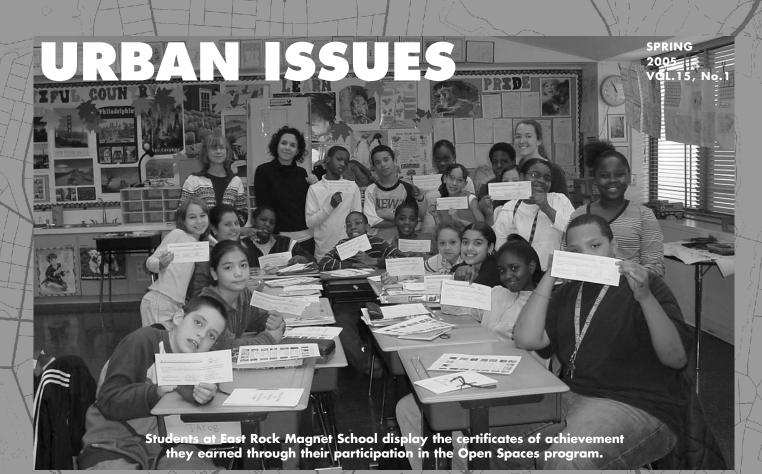
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