SPRING 09

NATURAL RESOURCES AND ENVIRONMENT
UNIVERSITY OF MICHIGAN

Stewards

A magazine for alumni and friends of the School of Natural Resources and Environment

SUSTAINABILITY

SPECIAL REPORT » SNRE FUELS U-M RESEARCH, EDUCATION AND OUTREACH

UNIVERSITY OF MICHIGAN

DANA BUILDING STARS IN NEW STEWARDSHIP PROGRAM

SUSTAINABILITY: A CORE SNRE VALUE

SNRE's history reflects our concern with sustainability, and our evolution shows a continued expansion of the elements of the coupled natural and human systems that need to be understood, managed and influenced to achieve a sustainable society.

The school was created more than 100 years ago as a program emphasizing wise management of forested lands, largely to sustain their function as sources of clean water and wood products for the long term. The renaming of the school as a School of Natural Resources in 1950 emphasized the interconnected nature of terrestrial and aquatic systems.

Expansion of the school's expertise in social science and landscape architecture in the 1970s reflected the importance of planned social change and intentional design as ways to achieve effective management of natural resources. The addition of the term "Environment" to our name in the 1990s, intentionally inclusive of the human as well as the natural environment, reflected a need to further integrate urban and industrial systems into our teaching and research programs.

The creation of our dual-degree program with the Ross School of Business emphasized expanding our social change strategies from the individual and public sector behaviors that impact sustainability to corporate behaviors as well. Most recently, creation of a dual degree with the College of Engineering and the development of curricula in sustainable industrial systems highlight the need to influence technology and industry.

As others have said, sustainability is more of a journey than a destination. I cannot foresee a time when we can say the work is done, sustainability has been achieved, now let's find another problem to solve. Rather, I think we will make progress on some fronts and face new challenges on others.

So SNRE must continue to grow and adapt to a changing world. We are fortunate that today, the challenges of achieving a sustainable society are being embraced across a broad spectrum of academic disciplines, by business and government, and by ordinary citizens. In this issue of *Stewards*, we provide a snapshot of five major areas in which SNRE faculty, staff and students are contributing to the generation and application of knowledge about sustainability: Climate, Carbon and Energy; Sustainable Resource Use; Changing Course from "Business as Usual"; Sustainable Enterprise; and Ecosystem Services. These specific areas will change over time, but SNRE's core mission will remain constant: the need to meet the full range of human needs on a sustainable basis.

I am confident that SNRE will remain at the forefront of meeting those challenges. I hope you enjoy this special issue of *Stewards*, and please share your ideas and experiences back with us.

Dave

David Allan (dallan@umich.edu)
Professor and Acting Dean
www-personal.umich.edu/~dallan/

NATURAL RESOURCES AND ENVIRONMENT
UNIVERSITY OF MICHIGAN

Stewards

A magazine for alumni and friends of the School of Natural Resources and Environment

SUSTAINABILITY

Achieving a sustainable society is the core focus of the School of Natural Resources and Environment. A special report provides an overview of our research, education and outreach in the area of sustainability—a growing topic of interest today across the U-M campus.

MILE HIGH SPOTLIGHT

When President Obama signed the 2009 stimulus bill, he chose Denver for the occasion because of the city's commitment to new energy models, "green" jobs and environmentalism. It's the job of Michele Moss Weingarden (M.S. '98) to keep Denver's name synonymous with green leadership.

ONLINE

VISIT WWW.SNRE.UMICH.EDU FOR MORE INFORMATION ABOUT SOME OF THE ARTICLES IN THIS MAGAZINE. NEW CONTENT IS ADDED CONSTANTLY TO KEEP YOU UP TO DATE WITH EVENTS AND NEWS ABOUT SNRE.

Stewards
Dean Rosina M. Bierbaum
Acting Dean (2008-09) J. David Allan
Associate Deans Dan Brown, Michael Moore
Director of Communications/Editor Kevin Merrill
Contributors Jim Erickson, Colleen McClain
Photographer David Brenner
Design David Brenner
Printer University Litho, Inc. (Ann Arbor, Mich.)
Printed using soy-based inks on paper that contains 100 percent post-consumer waste fiber.

Contact Information
School of Natural Resources and Environment
University of Michigan
440 Church Street
Ann Arbor, MI 48109
734.764.2550
www.snre.umich.edu

UNIVERSITY OF MICHIGAN

seeing the FOREST *and the* TREES

For more than 100 years, Saginaw Forest has been a constant in the lives of SNRE students, whether for the serious work of research (classes and field work) or as a place to relax and enjoy nature (fall campfires). Now, a forest management plan is asking the question: What should the next 100 years hold for this treasured school icon?

SNRE is seeking a long-term vision that emphasizes the site's use for graduate education and research as well as K-12 environmental education programs. In addition, the 80-acre site west of campus is a valued resource by many area citizens for nature-based recreational activity. The management plan will address these diverse uses within a framework of long-term stewardship and sustainability.

Gathering the data and drafting the plan is a joint effort between Ann Arbor-based Johnson Hill Land Ethics Studio and Bill Lawrence (B.S. '72, M.S. '83). Lawrence is a former longtime City of Ann Arbor forester and current owner of Lawrence Arbor Care. Chet Hill (M.L.A. '89), a principal at Johnson Hill, is also an adjunct professor of Landscape Architecture at SNRE. The Johnson Hill project manager is Ben Oxender (B.S. '00, M.L.A. '06). A draft report is due this spring.

"Our task is to provide a tool that allows decisions to be made as to the best use of the property for the various purposes of interest to the University," Hill said.

Saginaw Forest consists roughly of 55 acres of plantations, an 11-acre lake (Third Sister Lake) and six acres of wetland surrounding the lake. The property, a gift to the University of Michigan in 1904 by timberman and U-M Regent Arthur Hill and his wife, Louise, both hailing from Saginaw, Mich., is used for forestry operations, research and instruction. Forestry students and faculty of the school commenced plantings the same year, a process that continued through 1937.

Several University of Michigan classes are regularly conducted on the site, including "Soil Properties and Processes," "Woody Plants," "Forest Ecology" and "Freshwater Ecology." Funding for the management plan's development came from Debby McMullen, a longtime supporter of SNRE and Saginaw Forest restoration efforts.

"Saginaw Forest is a wonderful treasure for the University, the School of Natural Resources and Environment and the Ann Arbor community. I'm glad to be a part in preserving its future," said McMullen.

SAGINAW FOREST CONSISTS ROUGHLY OF 55 ACRES OF PLANTATIONS, AN 11-ACRE LAKE (THIRD SISTER LAKE, ABOVE) AND SIX ACRES OF WETLAND SURROUNDING THE LAKE. THE PROPERTY, A GIFT TO U-M IN 1904 BY TIMBERMAN AND U-M REGENT ARTHUR HILL AND HIS WIFE, LOUISE, BOTH HAILING FROM SAGINAW, MICH., IS USED FOR FORESTRY OPERATIONS, RESEARCH AND INSTRUCTION.

FACULTY NEWS & AWARDS

Don Scavia, an aquatic ecologist and internationally recognized expert on coastal "dead zones," was named the Graham Family Professor of Environmental Sustainability and director of U-M's Graham Environmental Sustainability Institute (GESI). Scavia joined SNRE's faculty in 2004 after serving as chief scientist for the U.S. National Ocean Service. He also previously headed the Michigan Sea Grant program. GESI is funded jointly by U-M and The Graham Foundation and supports multidisciplinary research and education related to environmental sustainability.

Jim Diana, a fisheries biologist and member of SNRE's faculty since 1979, was named director of Michigan Sea Grant, a joint program of U-M and Michigan State University. Sea Grant is part of the National Oceanic and Atmospheric Administration's National Sea Grant network of 30 university-based programs that conduct research, education and outreach to enhance the practical use and conservation of coastal, marine and Great Lakes' resources. Diana retains a 50 percent SNRE faculty appointment. His research interests include a focus on aquaculture.

Jonathan Bulkley, an SNRE faculty member since 1968, gave the keynote address at SNRE's Spring Commencement May 2. The school selected Bulkley because of his decades-long dedication to teaching and service. In 2000, Bulkley was named the Peter M. Wege Chair of Sustainable Systems. He holds a joint appointment with the College of Engineering and is co-director of the school's Center for Sustainable Systems. His teaching is focused on water policy, risk-benefit analysis and natural resources case studies.

a TAIL *to* TELL

BY JIM ERICKSON

University of Michigan ecologists and their colleagues have answered a question that has puzzled biologists for more than a century: What is the main factor that determines a lizard's ability to shed its tail when predators attack?

The answer, in a word: Venom.

Tail-shedding, known to scientists as caudal autotomy, is a common anti-predator defense among lizards. When attacked, many lizards jettison the wriggling appendage and flee. The predator often feasts on the tail while the lucky lizard scurries to safety. Later, the lizard simply grows a new tail.

The ease with which lizards shed their tails varies by species and place. For more than a century, biologists have suspected that this variation is controlled mainly by predator pressure: As the number of local lizard-eaters rises, so does the need for this effective defense mechanism. When lizards live alongside lots of creatures eager to devour them, they are more likely to evolve the ability to shed their tails easily, because this trait enables them to survive long enough to reproduce and pass their genes to the next generation.

However, tail loss carries long-term costs, including impaired mobility, lower social status and slower growth rates. So from an evolutionary perspective, it only makes sense to maintain tail-shedding ability if there are predators around.

The University of Michigan-led team decided to test the long-held predator-pressure idea using a clever combination of laboratory experiments and field measurements made in mainland Greece and multiple offshore Aegean Sea islands inhabited by different combinations of predators. Their conclusion? The predator-pressure hypothesis, while generally true, comes with an unexpected twist: Not all predators are created equal.

"The only predators that truly matter are vipers," said U-M vertebrate ecologist Johannes Foufopoulos, co-author of a study published in the journal *Evolution*.

"In the Aegean, vipers are specialized lizard predators," said Foufopoulos, an assistant professor at SNRE and the College of Literature, Science, and the Arts' Department of Ecology and Evolutionary Biology. "So it makes sense, in retrospect, that the lizards' primary defense would be aimed against their main enemy, the viper. But no one had made this connection, until now."

Though the study was conducted in the Mediterranean region, Foufopoulos said he suspects the results apply to other parts of the world, such as the American Southwest or Australia, where lizards coexist with venomous snakes.

THE U-M-LED TEAM, INCLUDING JOHANNES FOUFOPOULOS (ABOVE), LOOKED FOR CORRELATIONS BETWEEN RATES OF TAIL-SHEDDING, KNOWN TO SCIENTISTS AS CAUDAL AUTOTOMY, AND THE PRESENCE OR ABSENCE OF VARIOUS TYPES OF LIZARD PREDATORS AT 10 COLLECTING SITES. THE AUTOTOMY RATE IS A MEASURE OF THE EASE WITH WHICH LIZARDS SHED THEIR TAILS. THE HIGHER THE RATE, THE EASIER THE TAIL SEPARATES FROM THE BODY.

THE CENTERPIECE OF THE TIES PROGRAM IS A TWO-HOUR FIELD TRIP, LINKING THE IDEAS OF SUSTAINABILITY TO YOUNG VISITORS' OWN LIVES. INTERACTIVE PANELS (ABOVE) LET STUDENTS EXPERIMENT WITH THE PRINCIPLES ON DISPLAY THROUGH THE BUILDING'S CONSTRUCTION.

THE TIES THAT BIND

BY COLLEEN MCCLAIN

PROGRAM BRINGS SUSTAINABILITY, DANA TO LIFE

With the launch of Teaching and Inspiring Environmental Stewardship (TIES), a new SNRE program dedicated to educating the community about sustainability, the Dana Building has become a dynamic classroom ideal for teaching environmental principles.

TIES brings the story—and results—of "The Greening of Dana" to community members ranging from school-aged students to local business owners with varying levels of knowledge about sustainable building practices.

Kat Superfisky, the program's coordinator and a 2007 graduate of U-M's undergraduate Program in the Environment, was hired by SNRE in November 2007 to develop a formalized Dana Building tour after the school received ad hoc tour requests from school and community groups. The program that she and a team of program developers produced goes well beyond a simple tour of the building; it offers a full range of sustainability concepts and themes.

After the conclusion of pilot tests—with groups from South Lyon (Mich.) High School, Dexter (Mich.) Intermediate School, Western Michigan University and Zingerman's Delicatessen—TIES hosted its kick-off event April 1. SNRE is looking forward to increasing the program's offerings across southeast Michigan. The program's goal is to educate the community about sustainability "by using the Dana Building as a laboratory and living example of green design," said Superfisky, who becomes an SNRE graduate student this fall.

SCHEDULE A TOUR:
snre.umich.edu/ties

Teaching environmental sustainability was indeed one of the main goals of the Dana renovation. "The Greening of Dana" was completed in 2004 and was the final phase of a two-phase renovation of the 100-year-old building that began in 1998. The first phase consisted of filling "in" and building "up", which entailed using vacant land (in SNRE's case, a former internal courtyard) and adding another floor on top of the existing four-floor structure to add more usable building space—without expanding the building's footprint. The second phase, "The Greening of Dana," included the complete overhaul of the building's mechanical systems, installation of water- and energy-saving features and complete outfitting of the building's finishes with environmentally-sensitive features. For this second phase of renovations, SNRE earned a Gold LEED (Leadership in Energy and Environmental Design) rating from the U.S. Green Building Council, making it the only Gold LEED-certified building on campus. The renovation resulted in a 31 percent reduction in water use and a 30 percent reduction in energy use in the building.

Through guided tours and interactive activities, "The Greening of Dana" now comes to life through the TIES program.

"The TIES program is the first of its kind in the state of Michigan," said David Allan, acting dean of the School of Natural Resources and Environment and a professor of Aquatic Sciences. "By incorporating

lessons on sustainability, the environment and green construction into one educational experience, we are educating and transforming the behavior of future generations."

The student program is a two-hour field trip that emphasizes the concepts of sustainability, ecological footprints and green design. It begins with a brief history of the Dana Building and SNRE, then moves to an interactive activity called "Trash to Treasure" that helps students think about their own impact on the environment. After asking students for examples of what they throw away each day, docents work with students to "think outside of the trash can" by sorting garbage into receptacles for recycling, reusing and composting, minimizing the amount of waste sent to a landfill. Participants are then divided into smaller groups and led through the "Great Green Adventure," a 45-minute building tour showcasing its green features through docent interpretation and educational displays.

IN THE FORD COMMONS, STUDENTS TAKE PART IN "SUSTAINABILITY STATIONS," BREAKING INTO SMALLER GROUPS TO CONFRONT SOME EVERYDAY CHOICES AND HOW TO MAKE DECISIONS THAT ARE ENVIRONMENTALLY SUSTAINABLE.

"It doesn't matter what age they are," Superfisky said. "Visitors are always excited when we arrive on the second floor to learn about the bathrooms. The composting toilets are especially intriguing."

Later, in the Ford Commons, students interact with "Sustainability Stations" that address everyday choices and present alternative "greener" options. The focus of this activity is to relate "sustainability" to the "real world" and students' own lives. The program ends with the "Green Futures" presentation, which explores "green" college course tracks and careers, sending the students home with inspiration and ideas of how to act on their interests.

Dexter Intermediate School teacher Christie Newsome found her students enthralled by the options presented to them. "For a lot of kids, even sixth graders, getting to see a multitude of career paths that have to do with the environment and conservation was great," Newsome said. "I overheard a lot of conversations on the bus home about 'what cool jobs those people have' and 'wouldn't it be cool to study that.'"

An environmental studies class of juniors and seniors from South Lyon High School, located northeast of Ann Arbor, was one of the first groups to participate. Science teacher Eric Kennedy said the tour's hands-on approach is an invaluable educational tool.

"You can look at pictures, you can research the topic and you can have people talk with you about being 'green' until you are blue in the face," Kennedy said. "But until you actually see it and feel it, you really can't get a handle on what sustainable building practices look like."

TIES is also being promoted to organizations and local businesses who want to learn more about sustainability and green building. The newly-launched TIES Web site reaches out to educators and interested individuals alike. Visitors can sign up for a tour and find additional information about components of the program.

Bringing these environmental principles to the local community is crucial, Superfisky said. "SNRE has this unique opportunity to teach about sustainability in the context of the built environment," she said. "The TIES program presents the public with real solutions rather than just the gloom-and-doom issues, sending people home with the inspiration and knowledge needed to change the world."

100 LANDSCAPE ARCHITECTURE

UNIVERSITY OF MICHIGAN SCHOOL OF NATURAL RESOURCES AND ENVIRONMENT

As the Landscape Architecture program finalizes plans for its 100th anniversary this fall, it has more reason to celebrate. After a lengthy review process, the Landscape Architecture Accreditation Board has re-accredited the program.

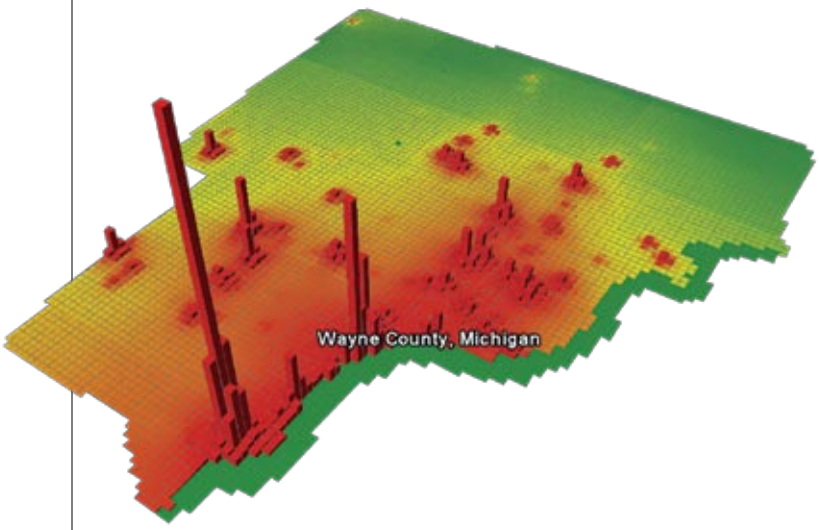
SNRE's master's degree in Landscape Architecture has been accredited since 1929. The accreditation process is time and energy intensive and involved a collaborative effort during the last year among SNRE administration, staff, faculty and LA students.

The accreditation gives the program added momentum heading into the Oct 9-11 celebration weekend. A Web site has been created to share information with alumni regarding events and ways to get involved. As part of the activities, an exhibition of alumni work is planned. Alumni may submit up to three individual projects. All work received will be displayed in streaming digital format at different times during the centennial celebration. For more on the anniversary, visit snre.umich.edu/la/100years/.

LANDSCAPE ARCHITECTURE STUDENTS SHARED THEIR WORK WITH THE SNRE COMMUNITY JAN. 27 AT THE PROGRAM'S FIRST STUDIO OPEN HOUSE, ORGANIZED BY THE LA STUDENT SOCIAL COMMITTEE.

Google honors student GIS work

Project uses toxicity data to create interactive map of Detroit, surrounding county



ARD OVERLAID DATA WITH MAPS OF WAYNE COUNTY, MICH., AND CONVERTED IT TO KML USING GEOGRAPHIC INFORMATION SYSTEM SOFTWARE, UPLOADED IT TO GOOGLE EARTH AND USED GOOGLE'S PROGRAM TO ANIMATE AND MAKE IT MORE USER-FRIENDLY. THE PROJECT SHOWS CHANGES IN CHEMICALS FOR EVERY 1 KM-SQUARE MILE IN WAYNE COUNTY FROM 1988-2004.

Kerry Ard, an SNRE doctoral student, received a research prize from Google Inc. for her work in displaying geographic data as part of her dissertation project. Google selected Ard as one of two student winners; students from 20 countries were eligible.

It was Google's first KML In Research Competition, which it unveiled at a conference last fall at the University of Michigan. Keyhole Markup Language (KML) is a coding-language schema for expressing geographic annotation and visualization. For her research example, Ard used Google Earth to visualize pollution changes over time in the Detroit area. That research stems from a Kresge Foundation-funded grant to study pollution near schools in Michigan. SNRE

KERRY ARD

Professor Paul Mohai and Research Investigator Byoung-Suk Kweon received the Kresge funding last year. Entries were judged based on overall functionality; visual appeal; ease of use and understanding; and educational value.

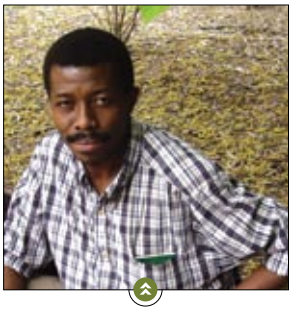
Google announced the contest last fall at the Scientific Applications for Google Earth Conference; U-M co-hosted the two-day event.

Duke, Wyss honor SNRE students

The Doris Duke Charitable Foundation has awarded fellowships to eight SNRE students who show outstanding promise as future leaders in nonprofit or governmental conservation. The newest Michigan Doris Duke Conservation Fellows (listed with their field of study) are: Sidney Brown (Environmental Justice/dual degree with Ford School of Public Policy); Evan Childress (Aquatic Sciences: Research and Management); Catherine Game (Behavior, Education and Communication); Matt Griffis (Environmental Policy and Planning); Colin Hume (Conservation Biology); Russell Martin (Terrestrial Ecosystems); Nerissa Rujanavech (Conservation Biology and Environmental Policy and Planning); and Amy Samples (Conservation Biology).

The Doris Duke Conservation Fellowship Program supports master's students at eight leading U.S. environmental schools.

The Wyss Foundation has awarded fellowships to two SNRE students as future leaders in Western land conservation issues. The 2009 Wyss Scholars are Nicholas Deyo (Landscape Architecture) and Clayton Elliott (Environmental Policy and Planning), both first-year master's students. The Wyss Scholars Program for the Conservation of the American West was designed to identify and nurture a generation of leaders on Western land conservation issues.



MENAN JANGU

Top student instructor

Menan Jangu, a fourth-year doctoral candidate, received a 2009 Outstanding Student Instructor Award from U-M. Jangu was selected based on exceptional ability and creativity as a teacher; service as an outstanding mentor and adviser; and growth as a scholar. In addition to teaching and his own SNRE studies, he is enrolled in a graduate certificate program through U-M's Center for Afroamerican and African Studies.

TODD BRYAN

Rackham award winner

Todd Bryan (Ph.D. '08) is one of eight recipients of the Horace H. Rackham Distinguished Dissertation Awards. He was recognized for his dissertation titled, "Aligning Identity: Social Identity and Changing Context in Community-Based Environmental Conflict." The award includes an honorarium of $1,000 and recognizes the most exceptional scholarly work produced by doctoral students who completed dissertations in 2008.

NATURAL RESOURCES
PROFESSIONAL

Spring 2009

Connecting students, faculty and staff from the 1930s through the present | www.snre.umich.edu/nrp

ABOUT THIS NEWSLETTER

The *Natural Resources Professional* is designed to highlight alumni whose careers took them in many different directions. Given the myriad changes at SNRE over the years, the time was right to strengthen connections among the people who made the school an unforgettable and premier professional institution.

The years 1930-1990 were a particularly rich time in our profession's development. This period witnessed significant resource management challenges for graduates in fisheries, forestry, wildlife and conservation. Many trends and key events from this period were chronicled by Samuel T. Dana in a comprehensive history of activities at the University of Michigan in the field of natural resources covering 1881-1953. Later, Dean Stanley Fontana and Professor John Carow followed with supplements of school history for 1951-62 and 1962-87, respectively.

However, no historical record exists by graduates *themselves* that captures the lives and careers of the people who created and maintained the professional eminence of the school during this time. Through the *Natural Resources Professional*, both print and online, that history of alumni will be documented.

We want to hear your stories, display your photographs and share news about your career. For more on how to help, please turn to page 12 or visit www.snre.umich.edu/nrp.

Thanks for your help.

Burt Barnes (B.S.F. '52, M.F. '53, Ph.D. '59)
John Bassett (A.B. '49, '51, B.S.F. '52, M.F. '52, Ph.D. '61)

WELCOME

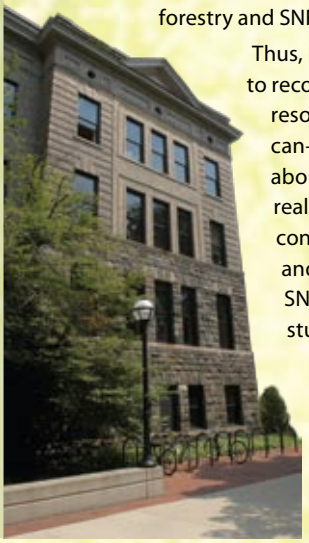
CELEBRATING OUR HISTORY ... AND CHANGE

Welcome to the initial issue of *Natural Resources Professional*. I look forward to the ideas, scientific information, memories and humor that have always been part of the SNRE experience. One of the common themes we will see in this newsletter is the reality of constant change.

Healthy professions evolve through advances in science or they cease to be relevant. The same can be said of institutions of higher learning. Both forestry and the School of Natural Resources and Environment (SNRE) have responded to change in order to maintain their credibility and relevance. In the last 25 years, forestry has moved from a focus on wood and fiber production to a much broader set of benefits reflecting our increased understanding of ecosystem function. SNRE has been a significant force in the development of scientific and professional leaders in natural resource sciences since its founding in 1903.

The University of Michigan has always taken a slightly different approach to natural resource education. There are a number of strong programs at universities around the United States, but SNRE is one that looks at forestry and other resource professions through the complex and multi-faceted lens of *sustainability*. Forestry today is not the same profession I pursued in the 1960s (yes, I am old). SNRE is also not the same school at which I studied in those days. Similarly, my education was very different than that of my father when he graduated from the University of Michigan School of Forestry in 1922.

In 1922, my father studied forest management under Filibert Roth. As a graduate in the mid-1960s, I had the opportunity to learn about forest ecology from Steve Spurr and Burt Barnes. Today, the school offers a master's program in Terrestrial Ecosystems. The common thread between now and then is the continued need for field studies to ensure that graduates from all areas of emphasis, including Environmental Policy and Planning, have the ability to apply the intellectual and scientific understanding of natural systems to problems found on the ground. I am excited about the continued evolution of both forestry and SNRE as they meet the changing needs of society at large.



Thus, I am pleased to see the school initiating this newsletter to reconnect with the many alumni working in various natural resources capacities. I invite you to participate in this effort as you can—send in stories, photos and comments as well as suggestions about articles you'd like to see in coming issues. This feature is really about highlighting the breadth of our alumni's professional contributions. We need your help to make it as interesting, fun and engaging as possible. By doing so, we enhance the entire SNRE community as well as the legacy we leave for current students.

William H. Banzhaf (B.S.F. '67) was executive vice president of the Society of American Foresters from 1988 to 2002. In 2003, he was selected to be the first president of the Sustainable Forestry Initiative, a forest certification system used on more than 130 million acres in the United States and Canada. He is retired and lives in Michigan's Upper Peninsula.

Student profile: Kate Ennis

When Kate Ennis enrolled at the University of Michigan to study Terrestrial Ecosystems, you could say she was carrying on a family tradition. Sixty years earlier, her grandfather Arthur enrolled at what was then known as the U-M School of Forestry to pursue a graduate degree. Today, his granddaughter is walking the same hallways, pursuing research interests as a second-year master's student.

Her work focuses on uplands (compared with lowlands or wetlands) in the Neotropics, and specifically on agroecosystems. Working with her adviser, SNRE Professor Ivette Perfecto, Ennis is examining seed-dispersal practices among certain types of ground-foraging ant species. She studied last summer in Mexico and will return again this summer.

AN ENVIRONMENTAL SCIENCE MAJOR AT COLBY COLLEGE, ENNIS CHOSE THE SCHOOL OF NATURAL RESOURCES AND ENVIRONMENT BECAUSE IT TAUGHT NATURAL AND SOCIAL SYSTEMS THROUGH AN INTEGRATED APPROACH.

READ MORE ABOUT KATE ONLINE:
www.snre.umich.edu/nrp

Alumni reflection: Connie Ruth (B.S. '76, M.S. '83)

I remember how excited I was when I first heard about SNR (as it was then called.) I'd left a small co-ed college in Illinois a few years earlier and had been waiting on tables for over two years in Ann Arbor. When I read about SNR, I was riveted. I hadn't been a part of Earth Day but the concept of addressing environmental problems in college really appealed to me.

My first semester I took "Woody Plants" with Burt Barnes and Herb Wagner, and "Environmental Field Studies" with the late Bill Stapp. I was in heaven! I couldn't BELIEVE what was expected of us in Woody Plants. Long afternoons in the field—sun, rain, sleet or hail—and we had them all. And long hours in the indoor lab memorizing soggy leaves and twigs in light-green lab trays. There were compelling lectures, too. I had to write furiously to keep up with Burt and was amazed at Herb's ability to entertain. I just loved it.

In Environmental Field Studies, the class would pile into a bus and take off with Bill at the front talking nonstop into his microphone so everyone in the back could hear. I began to see the landscape with new eyes by looking at the impact of glacial history. Bill pointed out kames, kettles and floodplains. We also went to the Ann Arbor Wastewater Treatment Plant. As a result, I vowed never to put nasty, unnecessary things down the toilet again! And then we went to Detroit to see where the 1967 riot took place. My world view was transformed.

That was 1973. It took me 10 years to complete my undergrad and grad coursework and finally get my master's thesis in Forest Ecology completed. By that time I had been a teaching assistant for Natural Resource and Environmental Policy with Pete Andrews and both Woody Plants and Forest Ecology.

I remember fondly the trips to the Smokies: swimming in the mountain stream ... trying to keep up with Burt "The Silver Bullet" Barnes along winding and steep mountain roads ... and trying to convince students that it made sense we were getting the DBH of trees (Diameter at Breast Height) in their plots during a snowstorm.

From 1985-90, I worked at SNR's Office of Academic Programs promoting internships and setting up a Career Resource Center under Sandy Gregerman. For the past 18 years, I've been at the U.S. Environmental Protection Agency in Ann Arbor. We have a national laboratory that is part of EPA's Office of Air and Radiation (the National Vehicle and Fuels Emissions Laboratory EPA emissions testing). Other SNRE grads here are Mark Simons (B.S. '79), Lucie Audette (B.S. '79), Mary Walsh (M.S. '88), Erik Herzog (M.S. '89) and Rob French (M.S. '90).

During my first five years at EPA, I worked on a trip-reduction requirement in the 1990 Clean Air Act. For the next five, I was involved with environmental education by creating a pilot called "Let Kids Lead" and reviewing a national 4-H Council curriculum titled, "Going Places and Making Choices" that addressed climate change, energy use, transportation and land use.

From 2000-06, I worked on a voluntary program called Best Workplaces for Commuters, that promoted a performance-based recognition program for employers providing transportation benefits to employees. Since 2007, I have been working on another voluntary program called EPA's National Clean Diesel Campaign. My focus at present includes promoting clean-diesel activities, including putting diesel retrofit devices on the legacy of diesel construction equipment.

My husband Pete and I still live in Ann Arbor. We have a 17-year old daughter, Mollie, at Community High School who is in the throes of college applications. She took a course as a sophomore titled "Engineering, Design and the Environment." As a result, she is seriously interested in pursuing sustainable design in college. Next year, we will be empty nesters.

Speaking of my husband, (also known as Madcat), he continues to play harmonica in a wide range of settings. To see where he is playing, visit www.madcatmusic.net.

My biggest passion is the mediation path that Peter and I have been on since 1977. There is a sweet Siddha Yoga Mediation Center at the Arbor Atrium near Huron and First. Over the years, I have been very active there. In addition, for the last several years have been volunteering for the SYDA Foundation in a regional capacity.

Life is definitely good.

Faculty Q & A: Professor Bobbi Low

Each issue of Natural Resources Professional will include an interview with a current SNRE faculty member. This issue, we talk to Professor Bobbi Low, who teaches in the Conservation Biology field of study and joined U-M in 1972.

Please discuss one of your current research projects and why the question is of interest to you?

I'm actually doing two interesting things with students that are great fun. One involves putting together field data on primates (including humans) to look at how maternal strategies change with various costs and benefits of reproduction. For example, does a pregnancy take up a lot, or a little, of the mother's reproductive lifetime? Is the energy cost of an offspring very high, or relatively low? We're putting ecological variables in, and seeking what is phylogenetic versus ecological. In another project, we are taking a very general phenomenon across all mammals and looking to see how it plays out in humans across the world: If life is nasty, brutish and short (low life expectancy at birth), you should reproduce early (otherwise you might die first). Biologist have that as a dictum—but the human data are complex and very interesting.

What has changed the most for you as a teacher since coming to the University of Michigan?

I hope I have gotten better at helping students first, learn how to learn, and second, reduce complex principles to intelligible pieces.

What has been one constant during this time?

A colleague once said to me, "You'll never be a popular teacher because students want answers, and you teach questions." I thought he was wrong—that students are more capable and interested than that—and I still think so.

What has changed the most about your students?

I think students today write better than when I first started teaching (though they still split infinitives!); other changes come and go—for example, as the economy improves or worsens, students' interest in theory versus salable skills changes.

If you were given unlimited time and budget, what research project would you undertake?

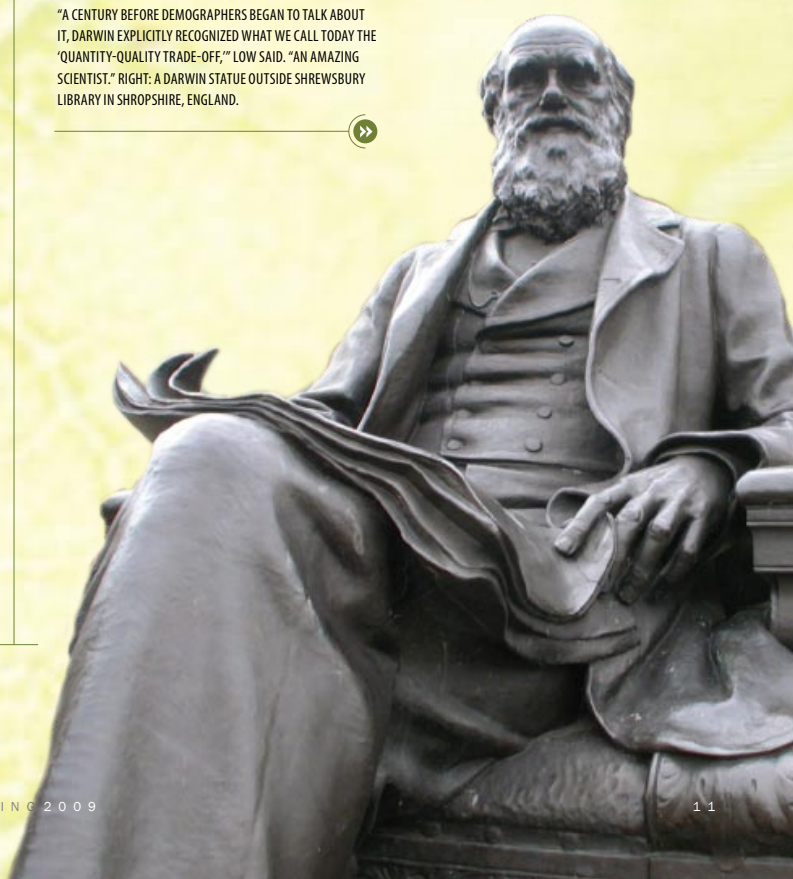
I have two unfinished book manuscripts. One, "Tomorrow's Ghosts," concerns how our evolved predispositions get in the way of changing our habits to be greener (this makes a difference in the strategies we might propose). The second, "Dingoes and Dugongs," explores how life history (the pacing of lifetime events) and behavior affect the vulnerability of species—things we need to know to be wise in how we attempt to manage, protect or exterminate species. Had I world enough and time (and money), I'd get these finished!

In 2001, you published "Why Sex Matters: A Darwinian Look at Human Behavior." This year marks the 150th anniversary of the publication of "The Origin of the Species." Is Darwin's stock rising or falling?

The response to this anniversary year really shows that more people, in more fields, are learning why Darwin was (and is) such a powerful force! He was brilliant in really amazing ways. For example, we typically credit the philosopher Karl Popper with the concept of falsifiability (the importance of specifying what observation would prove you wrong) but Darwin used that concept in the *Origin*. Darwin identified the centrality of both kin selection and sexual selection—but the necessary information wasn't all in existence yet—so he wisely and openly said he would leave these to future workers. And, a century before demographers began to talk about it, Darwin explicitly recognized what we call today the "quantity-quality trade-off." An amazing scientist. The interest is growing not just in the U.S. I was in Guatemala for Darwin's birthday giving a university-wide Darwin talk.

MORE ON PROFESSOR LOW:
www.snre.umich.edu/profile/bobbilow

"A CENTURY BEFORE DEMOGRAPHERS BEGAN TO TALK ABOUT IT, DARWIN EXPLICITLY RECOGNIZED WHAT WE CALL TODAY THE 'QUANTITY-QUALITY TRADE-OFF,'" LOW SAID. "AN AMAZING SCIENTIST." RIGHT: A DARWIN STATUE OUTSIDE SHREWSBURY LIBRARY IN SHROPSHIRE, ENGLAND.



Remembering Grant & Bob

Grant William Sharpe (1925-2006) grew up in Silverton, Wash., where his deep interest in plants and animals began. He joined the U.S. Navy in 1943 after graduating from high school. With help of the G.I. Bill, Grant enrolled in the College of Forestry at the University of Washington and eventually chose Outdoor Recreation as his major. After earning his Ph.D. in 1955, Grant was offered a position as assistant professor at the University of Michigan and joined the faculty of the Forestry Department of the School of Natural Resources.

He soon developed a very strong graduate program in Natural History Interpretation and Forest-Outdoor Recreation. He taught courses in these disciplines as well as Fire Management and Dendrology. Together with the late Everett Ellis, Grant initiated the Upsilon Chapter of Xi Sigma Pi, the National Honorary Society for Forestry and Natural Resources.

Robert "Bob" Zahner (1923-2007) joined the Forestry Department faculty of SNR in 1959. He left U-M in 1973 and returned to Highlands, N.C., and the Southern Appalachian Mountains where he continued his distinguished career in forest ecology and conservation of 54 years. Bob was an innovator and a leader in every aspect of his long career as a scientist, teacher and activist in such areas as tree physiology and plant-water relations, forest ecology and silviculture, soils and conservation biology, and ecology. Bob was an outstanding teacher of undergraduate and graduate students in the field, lab and lecture settings. His engaging personality and talent for seeing common ground enabled him to work closely with a range of constituents, from the local forest ranger district to The Wilderness Society.

MORE ABOUT GRANT & BOB ONLINE:
www.snre.umich.edu/nrp

Share your memories about Grant & Bob ...

We're asking students, friends, colleagues and the families of Grant and Bob to send us recollections, stories and photographs honoring these stimulating and productive faculty. On the SNRE Web site, we will "publish" the contributions we receive. In the next issue of the newsletter, we will feature excerpts of these remembrances. Send your contributions regarding Grant or Bob to: Erin Longchari, School of Natural Resources and Environment, University of Michigan, 440 Church Street, Ann Arbor, MI 48109-1041. (e-mail: SNREprofessional@umich.edu)

Field Assignments

Here's how to share news, get involved

Professional Activities

We want to collect reflections about notable aspects of your professional career. Of particular interest would be:

- The setting and challenges of your first job: the physical landscape and resource situation of the forests, lands and waters where you worked; and the life and people of that workplace.
- How you and/or your career changed over the years: your expectations vs. real world, be it time spent in the forest industry, Forest Service administration and research (USA and abroad), higher education, NGOs, etc.
- How your education at the University of Michigan and SNRE influenced your life and career.
- Stories of danger and intrigue from the workplace, especially the ones too good to be true.
- Insights for aspiring professionals in today's world.

Please include as much contact information as you are comfortable sharing. In this way, we can facilitate connections among your classmates and the school family in general.

Personal Reflections

Submit recollections, insights and stories about the people, places and activities characterizing the SNRE family over the years, such as:

- What stands out in student life from your college years at U-M: inside and outside of academics, the classmates and faculty, Ann Arbor, Camp Filibert Roth (CFR), forest properties or summer jobs?
- How and in what ways did your experience at U-M and academic training affect your career development and life in general?
- Looking back, what instructors and events were most significant? What places stand out? Which professors and TAs did you love?

Snappy Answers

Above all, we encourage your questions about the school, past and present, to make this an interactive newsletter. And we'll respond with snappy answers! For example, what's happening with the forest properties? Does CFR still exist? Will the winter Olympics of 2014 actually be held at Gibbs City? What is the Ford Commons? How "green" is Dana? Do students still ride in benches in the back of trucks? What ever happened to (insert name of your friend here)? We'll find out and let you know!

CONTACT US

E-mail: SNREprofessional@umich.edu
Office of Development and Alumni Relations
School of Natural Resources and Environment
University of Michigan
2038 Dana Building
Ann Arbor, MI 49109-1041




SUSTAINABILITY

SPECIAL REPORT »

SNRE Fueling Research, Education and Outreach at U-M

Achieving a sustainable society is the core focus of the School of Natural Resources and Environment. The need for SNRE's contributions can be seen everywhere, from rising U.S. and worldwide demands on water, land, food and energy resources, to unsustainable land-use and consumption patterns and ineffective decision-making processes. Exacerbating these fundamental problems is climate change, globalization, demographic change and economic insecurity. The result of these unsolved problems is further loss of biodiversity, degradation of ecosystems and diminished health and quality of human life.

SNRE's 106-year history reflects its concern with sustainability. At each stage of its evolution, the school has appropriately expanded its focus to include the systems that needed to be understood, managed and influenced in order to achieve a sustainable society. Today, its activities are guided by a pursuit of *greater knowledge generation* (primarily around coupled natural and social systems); of *social adaptation* (a focus on ways to adapt and change in a sustainable direction through knowledge application); and an emphasis on *interdisciplinarity and innovation.*

This special report provides a snapshot of the school's research, education and outreach initiatives in the area of sustainability—a growing topic of interest today across the University of Michigan campus. Because of the topic's breadth, this report sorts SNRE's efforts into five categories:

CLIMATE, CARBON AND ENERGY:

Renewable energy development, furthering institutional change in businesses with respect to enhancing energy sustainability, and understanding the important contributions that living ecosystems offer through carbon sequestration and carbon-neutral biofuels

SUSTAINABLE USE OF RESOURCES:

Studying land use, sprawl and the interaction of the built and natural environments. Collecting and interpreting scientific information about the coupling between natural and human systems as well as new policy, design and planning strategies

CHANGING COURSE FROM 'BUSINESS AS USUAL':

Studying and encouraging broad and durable change in human expectations and activities in part through measuring change in individual knowledge and behavior, through policies supporting collective action and in regulations and guidelines that constitute governance

SUSTAINABLE ENTERPRISE:

Studying the transition to a sustainable society and the changing relationships between business and the natural environment

ECOSYSTEM SERVICES:

A look at the management of natural resources, conservation of biodiversity and restoration of ecosystems. Topics include Great Lakes science and management, land-use change, watershed science and the processes that control forest ecosystem response to anthropogenic global increases in carbon and nitrogen

STUDENTS LEARN ABOUT THE TYPES OF BIOFUELS, BIOENERGY FEEDSTOCKS AND PRODUCTION TECHNOLOGIES.

CLIMATE, CARBON AND ENERGY

CARBONIZED CLASSROOM

Students at SNRE are getting an up-close view of the rapidly changing field of bio-based carbon mitigation through a new experimental course from Associate Professor Bill Currie. The course—"Biofuels and Bio-Based Carbon Mitigation"—is one of a growing number from SNRE faculty that tackle the subject of climate, carbon and energy from an interdisciplinary approach.

Carbon mitigation involves a range of strategies designed to reduce the net emissions of carbon into the atmosphere. Through the course, students learn that biologically-based carbon mitigation strategies fall into three general areas: carbon management (for example, through the altered management of agricultural soils, crop residues or forest harvests); carbon sequestration through land-use change (for example, through the conversion of marginal agricultural land to forests or wetlands); and the use of biofuels.

The ability to analyze and understand this type of analysis in the context of greenhouse gas mitigation is a key skill taught; providing the tools and understanding needed to conduct such an analysis is one of the primary course goals. The students' work is being presented on a blog at snrecmitigation.wordpress.com.

CYCLING UP

SNRE is hosting a workshop June 8-9 titled "Land Use and the Carbon Cycle." The two-day event is sponsored by U.S. Geological Survey and U.S. Department of Agriculture's Forest Service under the auspices of the U.S. Climate Change Science Program. The workshop brings together scientists in the land use/land cover change and carbon-cycle sciences to share research results, identify uncertainties, caucus on approaches to reduce those uncertainties, and foster collaboration in land use/land cover change and carbon studies across traditional disciplinary lines. The symposium features oral presentations, poster presentations, panel discussions and breakout sessions.

SETTING THE AGENDA

SNRE faculty are among the leading voices helping to set the direction of U.S. climate policy. Recently, four of 90 national experts named to National Academies panels were from SNRE: Dean Rosina M. Bierbaum, serving on the "Informing Effective Decisions and Actions Related to Climate Change" panel; Associate Professor Andy Hoffman, serving on the "Limiting the Magnitude of Future Climate Change" panel; and professors Maria Lemos and Ted Parson, serving on the "Adapting the Impacts of Climate Change" panel.

In November, the National Academies launched a congressionally requested study titled "America's Climate Choices." The research under way is expected to provide policy-relevant advice, based on scientific evidence, to guide the country's response to climate change.

In addition, Professor Lemos served on a committee that evaluated the U.S. Climate Change Science Program over a three-year period under the direction of the National Research Council. In its report, the committee said the government's climate change research program should broaden its focus to include research that supports actions needed to cope with climate change-related problems that impact society. The report is titled *Restructuring Federal Climate Research to Meet the Challenges of Climate Change*, and is published by the National Academies Press.

The work of these SNRE faculty and others at the school is further documented in *Coping with Climate Change: National Summit Proceedings*, published last summer by the University of Michigan. The book presents the discussions, papers and presentations from the 2007 National Summit on Coping with Climate Change, hosted by SNRE. The book contains keynote speeches, transcripts of breakout sessions and panel discussions, and the candid and valuable insights from sector syntheses and scenario summaries. Dean Bierbaum co-edited the book with Dan Brown, professor and associate dean for research, and Jan McAlpine, a visiting scholar from the U.S. Department of State.

MORE ON THE CLIMATE BOOK:
snre.umich.edu/books

CAP AND TRADE

Does cap and trade work? Michael Moore, an SNRE professor and associate dean, examines the issue in a National Bureau of Economic Research paper with Stephen Holland, a colleague at the University of North Carolina at Greensboro. Their research examines the Los Angeles Regional Clean Air Incentives Market, also known as RECLAIM. The research is covered by a grant from the U.S. Environmental Protection Agency's Market Mechanisms and Incentives competition. Since pollution markets—or cap-and-trade programs—are now the presumptive approach to implementing environmental regulations, including those addressing global warming, the authors decided to study one of the country's longest-running pollution markets. RECLAIM defined steadily decreasing caps for nitrogen oxide emissions in a program to reduce smog in Los Angeles. Holland and Moore developed a theoretical model of the market; through it, they found that the market design is cost effective and can lead to intertemporal trading as a way to reduce compliance costs. Empirically, they found that the regulated facilities undertook considerable intertemporal trading, yet not as much as predicted by the model. Based on their findings, Holland and Moore argue that certain features of RECLAIM should be used in future pollution markets.

SNRE LAUNCHED A WEB SITE THIS YEAR THAT PULLS TOGETHER THE RESEARCH WORK, EVENTS AND NEWS ACROSS THE SCHOOL RELATED TO CLIMATE CHANGE. THE SITE CAN BE FOUND AT **WWW.SNRE.UMICH.EDU/CLIMATE_CHANGE**.

SUSTAINABLE RESOURCE USE

The course introduces students to the issues that must be integrated for sustainable brownfield redevelopment to occur.

BROWN: THE NEW GREEN

Perhaps no issue is more representative of sustainable resource-use challenges than the redevelopment of brownfields. With support from the Graham Environmental Sustainability Institute, SNRE recently launched an interdisciplinary brownfields course taught by Joan Nassauer, a Landscape Architecture professor. The course—"Applying Landscape Ecological Design to Brownfield Redevelopment"— draws on practicing experts to introduce students to the wide-ranging issues that must be integrated for sustainable brownfield redevelopment, including: law and public policy, public health, public perception, environmental justice, environmental health, risk assessment, remediation, land planning, real estate finance and construction. Readings, lectures, a field trip, a charette and a workshop critique of student work by visiting experts allow students to gain a breadth of knowledge of the factors that interact to affect the success of brownfield redevelopment. The course uses case studies to illustrate the challenges and design opportunities. One such study involved the Harbor Point Redevelopment Project in Stamford, Conn. The work of a five-member student team from the class received top honors for "Best In-Class Student Paper or Project on Environmental Issues and Climate Change" at the U-M Climate Change Student Forum last year.

THE BROWNFIELD COURSE DRAWS ON PRACTICING EXPERTS AND USES CASE STUDIES TO ILLUSTRATE BOTH THE CHALLENGES AND DESIGN OPPORTUNITIES.

UNGULATES

Migratory ungulates have shaped the American landscape for thousands of years. But increased human development, particularly in the West, has stopped or shorted many of these traditional migratory routes. As part of a 2009 master's project, SNRE students examined the current conservation efforts aimed at long-distance ungulate migration corridors in the Western United States by focusing on three case studies: Pronghorn in Grand Teton National Park, located in the Upper Green River Basin, Wyoming; Clarks Fork and Cody Elk, located in the Absaroka Divide, also in Wyoming; and Round Valley Mule Deer in Sierra Nevada, Calif.

The students assessed the management, policy and communication strategies used in these case studies to inform the decision-making and conservation efforts of individuals, organizations and land managers working on over-land migration corridors. The team produced a comprehensive project report as well as condensed scientific and policy pieces targeted to specific audience needs. Student project members were: Diane Sherman, Erika Hasle, Josè Gonzalez, Andrew Fotinos, Elizabeth Nysson and Greg Sampson. Faculty advisers were SNRE professors Steve Yaffee and Julia Wondolleck.

PRONGHORN ANTELOPE

IN THE CONGO

As part of a $1.5 million National Science Foundation grant, SNRE Professor Arun Agrawal is analyzing how changing environmental governance mechanisms have affected logging and forest-cover change in two countries in the Congo Basin: Cameroon and the Republic of Congo. The Congo Basin possesses some of the most valuable and threatened rainforests outside of the Amazon Basin. The project is an interdisciplinary collaboration across the school; contributing SNRE faculty include professors Dan Brown and Tom Lyon, and assistant professor Rebecca Hardin. The research will explain how changes in forms of governance affect logging and forest-cover outcomes in a region important in relation to biodiversity conservation, tropical forest cover and carbon sequestration. The project supports the training of more than 20 U.S. and African students to conduct field research, analyze data and deploy advanced computational and modeling techniques and thereby build greater capacity for scientific research in the Congo Basin.

EXURBAN FRONTIER

Through a detailed analysis of the science, policy and design of land use, SNRE professors are helping to lead an effort to examine how "exurban" areas outside of American's urban and suburban areas can absorb more carbon from the atmosphere. The research could lead to changes in how developers, residents and even local planning boards think about land-cover management, the value of land and land-use policies. Ultimately, those discussions could lead to local decisions and rules, zoning policies, educational initiatives and design innovations that promote patterns of development and landscape design that increase absorption of carbon, which could slow climate change.

The National Science Foundation is funding the research with a $1.5 million award. The project's research goals are to investigate the process of carbon absorption in the vegetation of exurban residential areas; the preferences of residents for land-cover types and patterns in those areas; and land-management activities of residents and developers. Dan Brown, an SNRE professor and associate dean, is the project's lead researcher.

Other SNRE researchers involved are Joan Nassauer, a professor of Landscape Architecture, and Bill Currie, an associate professor of Terrestrial Ecosystems. Also involved are researchers from U-M's Center for the Study of Complex Systems and George Mason University's Department of Computational Social Science. The research examines data collected in southeast Michigan, but the findings will be applicable to similar exurban regions across the country, Brown said. Southeast Michigan will be used as a model system to study processes controlling carbon storage over much larger regions.

CHANGING COURSE

FROM 'BUSINESS AS USUAL'

CLIMATE FOR CHANGE

As a member of the Michigan Climate Action Council (MCAC), Dean Rosina M. Bierbaum contributed to a report that is helping to set the climate agenda for the state. In its final report issued earlier this year, the council proposed a 20 percent reduction of greenhouse gases (GHG) below 2005 levels by 2020, and an 80 percent reduction below 2005 levels by 2050. The goals are consistent with those being considered by the Midwestern Governors Regional Greenhouse Gas Reduction Accord process. The council further recommended that Michigan conduct additional analyses of its vulnerability to the impacts of climate change and develop specific adaptation plans for key sectors. The council previously created an inventory and forecast of GHG sources and emissions for the period 1990-2020.

RENEWABLE ENDORSEMENT

How far Michigan residents might go in supporting the Michigan Climate Action Council recommendations can be found in a survey released last year by Barry Rabe, a professor in the School of Natural Resources and Environment and the Gerald R. Ford School of Public Policy. His survey found that three out of four residents in the auto industry-dominated state would be willing to pay for ways to increase the role of renewable energy sources. Many states have enacted policies that mandate increased use of renewable energy as well as other policies that could reduce greenhouse gas emissions. Michigan, however, has been among the least active states, which makes these findings surprising, Rabe said. Other findings: Residents strongly support government requirements for vehicle manufacturers to increase fuel efficiency; and a substantial majority support increased use of nuclear power to reduce greenhouse gas emissions. Rabe co-authored the survey of 1,001 adults with Christopher Borick, a professor of political science at Muhlenberg College. It was the first known survey to ask Michigan residents about global warming issues and climate policy options.

GREEN EMPLOYMENT

The Multicultural Environmental Leadership Development Initiative (MELDI) is studying the supply-and-demand dynamics of the environmental labor force. The study is looking at the demand for green jobs, where they be created and which companies will create them. The study also examines the supply of minority workers by looking at how environmental justice groups identify, train and supply that segment of the overall workforce. When complete, the results and MELDI's analysis will be available through its recently retooled Web site. The site makes it easier to distribute information about the job market, environmental leadership issues and recruiting and hiring, which will be helpful to companies and nonprofit organizations. The project is funded by a $195,000 grant from the Ford Foundation and directed by Dorceta E. Taylor, an associate professor at SNRE and director of MELDI. For more information, visit meldi.snre.umich.edu.

ARTS AND ENVIRONMENT

SNRE PLAYED A ROLE, THROUGH SUPPORT AND THE CONTRIBUTIONS OF ITS STUDENTS AND AFFILIATED FACULTY, IN THE FALL ARTS & THE ENVIRONMENT PROGRAM ON CAMPUS. THE PROGRAM STARTED AS A WAY TO UNITE GROUPS OF ARTISTS, SCIENTISTS, SCHOLARS AND POLICYMAKERS IN CREATING WORKS THAT SPOKE TO PEOPLE IN DIFFERENT WAYS ABOUT "CHANGING COURSE" AND THINKING OF THE SPACE WHERE ARTS AND THE ENVIRONMENT INTERSECT. ONE SUCH RESULT WAS "MAPPING THE RIVER," A 45-MINUTE PERFORMANCE WORK ABOUT THE HURON RIVER, WHICH FEATURED SNRE RESEARCH SCIENTIST SARA ADLERSTEIN GONZALEZ. SNRE ALSO HELPED SPONSOR THE EVENT'S KEYNOTE ADDRESS. FOR MORE INFORMATION, VISIT WWW.ARTSONEARTH.ORG.

ON A MISSION

SNRE students are embarking on a mission: to help an order of monks at a Virginia abbey make its operations more sustainable. The client for the master's project is the Holy Cross Abbey, a monastery of the Cistercian Order of the Strict Observance (Trappists) located in the Blue Ridge Mountains in the Shenandoah Valley of Virginia. As part of their service, the monks run a food-preparation business that makes and sells such products as fruitcakes, honeys, fraters and truffles. The project will investigate the types of energy used in the abbey's buildings, the ways monks make money and their methods of management for the 1,200-acre property. The goal is to find procedures to make abbey life even "greener," said Andy Hoffman, an SNRE associate professor and adviser to the team conducting the review. The Monastery Sustainability Project will extend beyond environmentalism. It will help the abbey evaluate its financial health, industries, marketing, facilities, labor force, land use and worship space. This project is expected to lead to a book that offers guidance to other monasteries and religious communities seeking to transition their operations in an environmentally responsible and cost-effective way.

THE MONKS SUPPORT THEMSELVES THROUGH THE SALE OF TRUFFLES AND OTHER GOODS, AS WELL AS THROUGH SALES FROM A CATHOLIC BOOKSHOP ON THE PROPERTY. BROTHER EFRAIN (RIGHT) OPERATES A MACHINE MEASURING CREAMED HONEY INTO CONTAINERS.

SUSTAINABLE ENTERPRISE

HITTING THE BRAKES

If a transition to a sustainable society cannot be accomplished without major changes in the relationship between business and the environment, then the U.S. automobile will need to be at the center of the discussion. And for U.S. automakers, that means achieving an eight-fold reduction in automobile-related carbon emissions to help stabilize the amount of heat-trapping carbon dioxide gas in the atmosphere by 2050, according to SNRE researchers.

That conclusion comes from a research team at the Center for Sustainable Systems (CSS), which looked at what it would take for U.S. automakers to reduce passenger car-related carbon emissions to help stabilize carbon dioxide levels at a concentration of 450 parts per million by 2050, thereby averting many of the most serious consequences of human-caused climate change.

Currently, U.S. passenger vehicles emit about 160 grams of carbon for every mile driven, when tailpipe emissions and emissions associated with fuel production are included. To help stabilize emissions by 2050, that number must be reduced eight-fold, to 20 grams per mile, according to Greg Keoleian, an SNRE associate professor and CSS co-director.

The study appeared in the journal *Environmental Science & Technology*, an American Chemical Society publication. It is the first to define specific targets needed to achieve sustainable U.S. passenger-vehicle transportation, Keoleian said. Reaching those carbon-reduction targets will require an aggressive combination of strategies, according to Keoleian and his co-authors, Hilary Grimes-Casey and Blair Willcox.

Improving vehicle fuel efficiency, widespread use of low-carbon fuel and changes in U.S. driving habits have all been suggested as ways to reduce carbon emissions. But no single approach will suffice, Keoleian said.

Attempting to reach the emissions-reduction targets by adopting just one of these approaches would require either automobiles with an average fuel economy of 136 miles per gallon; an 83 percent market share for low-carbon ethanol; or a reduction in U.S. travel demand by 53 percent by 2050, according to the team's computer-model simulations.

"Any individual vehicle carbon-reduction strategy is not likely to be successful in the long term," Keoleian said. "To meet these targets, we need a combination approach that tackles all these factors simultaneously."

Reaching the carbon-reduction targets will require an aggressive combination of strategies.

ONE 'EASY' WAY TO HIT THE CARBON EMISSION TARGETS: PRODUCING CARS THAT GET 138 MILES TO THE GALLON.

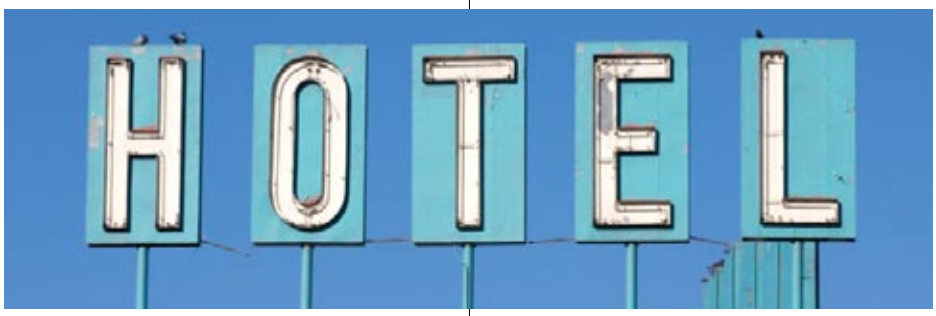
ROOMS WITH A VIEW

SNRE students turned a master's project on "greening" hotels into a book, published this year by the American Hotel & Lodging Educational Institute. *High Performance Hospitality: Sustainable Hotel Case Studies*, was written by Michele L. Diener, Amisha Parekh and Jaclyn Pitera—all of whom were dually enrolled at SNRE and the Ross School of Business. Partial funding came from the Erb Institute, SNRE and the Graham Environmental Sustainability Institute.

The book offers a well-reasoned case for the hotel industry to embrace sustainability. It presents an analysis of sustainable hospitality development through eight detailed case studies of successful, sustainable hotel projects representing a cross-section of hotel types: mid-size, conference center and luxury; small and large; and branded and independent.

The book also addresses best practices of high-performance hotels; presents a business case for sustainability, including a discussion of drivers for constructing and operating sustainable hotels, market response and stakeholder advantages; and opportunities for improvement.

Since graduating, Diener has become the director of sustainability strategies at MGM Mirage, and Parekh is a strategy consultant for Deloitte, where she is part of the firm's sustainability team. Pitera graduated this year. Their project adviser was Associate Professor Andy Hoffman.



MAKING THE CASE

The Center for Sustainable Systems provided expertise and some of the statistical modeling used to produce the second annual Environmental Report of the University of Michigan. The 45-page report tracks the University's efforts to minimize environmental impacts at the Ann Arbor campuses, which cover 3,070 acres and 380 buildings. The campus population includes more than 78,000 students, faculty and staff. One of the report's conclusions: The amount of energy used to heat, cool and power U-M buildings remained unchanged in 2008, even though new construction added nearly 500,000 square feet of space to the Ann Arbor campuses. The annual report is an outgrowth of the Environmental Task Force established by President Mary Sue Coleman in 2003, which was co-chaired by SNRE Dean Rosina M. Bierbaum. The task force recommended that an annual report be written to track the University's progress toward key environmental sustainability goals.

INAUGURAL ALLIANCE

With SNRE's support, the Erb Institute for Global Sustainable Enterprise is among the founding members of the new Alliance for Research on Corporate Sustainability. The Erb Institute hosted the Alliance's inaugural conference May 8-9 at the new Ross School of Business. The Alliance was created to help accelerate the development of a body of knowledge related to corporate sustainability. A group of leading institutions housed within top universities and sharing a strong commitment to research on business and sustainability formed the Alliance. The initial conference brought together scholars interested in corporate sustainability strategy and management. The event came as the Erb Institute celebrates its 15th graduating class in 2009. For more on the Alliance, visit www.erb.umich.edu/arcs/aarcs-home.htm.

GREEN ADVOCATES

Students from SNRE are playing a key role in the launch of the Student Sustainability Initiative (SSI) at U-M. SSI provides a forum to share ideas and create collaborative sustainability projects. The larger goal is to help U-M become a campus sustainability leader nationally. One of the more active students is Aaron James, a dual-enrolled student at SNRE and the Ross School of Business. He helped with a presentation in April to the U-M Board of Regents that called for creating a campus sustainability office. For more on SSI, visit sitemaker.umich.edu/ssi/.

ECOSYSTEM SERVICES

FORESTS AND THE FUTURE

Researchers led by SNRE Professor Don Zak have turned the hands of time forward about 40 years in the northern woods of Michigan. In one of the longest-running studies funded by the National Science Foundation, Zak and his colleagues, Kurt S. Pregitzer (University of Nevada, Reno) and Andy Burton (Michigan Technological University), have found that northern hardwood forests absorb more heat-trapping carbon dioxide when they are exposed to rates of atmospheric nitrogen deposition expected to occur by 2050 across the upper Great Lakes region.

The purpose of the field experiment, started in 1994 and spanning the Upper Peninsula and lower Michigan, is to understand the mechanisms controlling carbon and nitrogen cycling in the face of chronic atmospheric nitrogen deposition and the long-term consequences of nitrogen saturation. As the extra introduced nitrogen accelerated tree growth, the decomposition of twigs and other tree litter on the forest floor slowed, resulting in an overall increase in ecosystem carbon storage. Lignin—a chemical compound essential to the forming of plant cell walls and a good storer of carbon—proved more resistant to microbial decay under future rates of atmospheric nitrogen deposition.

Next up for researchers is further study of the long-term impact of this change. With a recent National Science Foundation award, this experiment will continue until 2018, and will encompass molecular analyses of microbial community composition and function as well as measurements of the ecosystem-level fluxes of carbon and nitrogen in northern hardwood ecosystems.

THE STUDY IS ONE OF FEW EXPERIMENTS WORLDWIDE WHERE PREDICTIONS REGARDING LONG-TERM RESPONSES TO ATMOSPHERIC NITROGEN DEPOSITION, AND THE MECHANISMS CONTROLLING THEM, CAN BE TESTED IN THE FIELD, STRENGTHENING THE SCIENTIFIC COMMUNITY'S ABILITY TO PREDICT REAL-WORLD ECOSYSTEM RESPONSES TO GLOBAL CHANGE.

NOW, WITH COLLEAGUE NATHAN BOSCH, HAN AND ALLAN ARE EXTENDING THEIR RESEARCH TO LAKE ERIE, AND INCLUDING PHOSPHORUS, WHICH IS OF PARTICULAR IMPORTANCE TO FRESHWATER EUTROPHICATION.

GREAT LAKES NUTRIENT RUNOFF

SNRE post-doctoral researcher Haejin "Jinny" Han, working with Professor David Allan, has chronicled a remarkable 120-year history of nitrogen inputs to the watersheds of Lake Michigan and the resulting impact on its ecosystem. Using a variety of agricultural statistics, air-quality measurements and human population data, they document a six-fold increase in reactive nitrogen from all sources of inputs from 1880-2002. Using a model that predicts how much nitrogen entering a watershed is lost by river export, they find that nitrogen export from watersheds into Lake Michigan have also increased, by a factor of three.

Han and Allan, along with Professor Don Scavia, summarized the research in a February article in *Environmental Science & Technology*. Their study projected that heavier rainfall due to climate change will increase the effects of fertilizer used for corn-based ethanol production, causing a significant increase in nitrogen levels in rivers.

Now, with colleague Nathan Bosch, Han and Allan are extending their research to Lake Erie, and including phosphorus, which is of particular importance as a cause of eutrophication of freshwater ecosystems. This work is funded by the Coastal Ocean Program of the National Oceanic and Atmospheric Administration.

VACANT AND VITAL

How can economically hard-hit Genesee County—once the heart of Michigan's auto industry—deal with growing numbers of vacant property? SNRE researchers have outlined how county leaders can use sound environmental planning—managing ecosystem services on a watershed scale—to make that section of the state a more attractive place to live and do business. The research was headed by Joan Nassauer, a professor of Landscape Architecture. Graduate students Rebekah VanWieren, Zhifang Wang and Danielle Kahn assisted. Using computerized maps of vacant county properties, the team analyzed vacancies in relationship to environmental flows through hydrologic systems, habitats and transportation as well as sewer and water infrastructure. Vacant properties were further analyzed to recognize community expectations for maintenance regarding different types of landscapes.

AQUACULTURE

Aquaculture is the most rapidly increasing food production system in the world, with significant growth rates projected through 2025. Jim Diana, a national expert on the topic and an SNRE Aquatic Sciences professor who recently became director of Michigan Sea Grant, has studied the issue through funded projects from Central America to Southeast Asia. His research covers topics from the effects of aquaculture in introducing new species and effluents' effects on water quality to changes in land use. He summarized the issues in an article in the January 2009 issue of *BioScience*. In it, he noted aquaculture's positive impacts on biodiversity; for example, cultured seafood can reduce pressure on overexploited wild stocks.

MILE HIGH SPOTLIGHT

WEINGARDEN ('98) DRIVES SUSTAINABILITY AGENDA IN DENVER

BY KEVIN MERRILL

When President Barack Obama signed the American Recovery and Reinvestment Act of 2009, he chose Denver for the occasion because of the city's commitment to new energy models, "green" jobs and environmentalism. And it's the job of Michele Moss Weingarden (M.S. '98) to keep Denver's name synonymous with green leadership.

Weingarden became director of Greenprint Denver in September 2007, the latest move in a 10-year environmental career that has taken her from Chicago sewage-treatment plants to the shores of San Francisco Bay, and advocacy campaigns ranging from saving Illinois prairies to California bays.

> "It was a boon to our program and the mayor that the President wanted to come here to tie the stimulus to green jobs."

She arrived at Greenprint Denver—a name shared by the city office for sustainability as well as its action plan—just as plans were taking shape for another event that would spotlight the Mile High City's environmentalism: the 2008 Democratic National Convention. That event was organized to be one of the most sustainably produced events of its kind. For example, delegates were able to offset their carbon use from air and ground travel to Denver; the carbon offsets benefitted several community-based clean-energy projects across the country.

"It was a boon to our program and the mayor that the President wanted to come here to tie the stimulus to green jobs," Weingarden said. "And the convention was a great opportunity to showcase Denver's environmental commitment to an international audience. We hosted journalists from around the world."

A bike-sharing program launched during the convention proved so successful that it will be rolled out permanently this summer. "It fits the Denver lifestyle so well," Weingarden said of the project. Convention organizers set out 1,000 bikes at eight stations, expecting about 25,000 miles to be logged between Denver and Minneapolis—the sites of the Democratic and Republican national conventions. By the end of the Denver convention alone, odometers already had recorded more than 26,000 miles.

As a political appointee of Mayor John Hickenlooper, Weingarden is charged with developing and implementing programs to support Denver's sustainability goals and climate action plan, which seeks to reduce carbon emissions, conserve resources and promote economic stability. "Our office serves both internal and external audiences. We come up with programs that city departments can bring to the people, and programs for those same departments to deploy internally," she said. In her first year, she initiated four successful sustainability programs and the office secured $500,000 in funding and technical assistance from the federal government.

Weingarden most recently served in the San Francisco office of U.S. Sen. Barbara Boxer (D-Calif.) as her adviser on environmental issues statewide and liaison to local governments, businesses and the public in nine northern California counties. Weingarden worked with federal agencies and local governments to advance environmental goals and implement legislative priorities on Sen. Boxer's behalf.

AMONG THE PROJECTS AT GREENPRINT DENVER: A CONTINUATION OF THE SUCCESSFUL BIKE-SHARING PROGRAM SHOWCASED DURING THE 2008 DEMOCRATIC NATIONAL CONVENTION (FAR LEFT) AND AN INITIATIVE TO IMPROVE WATER QUALITY AND CONSERVATION WITH COMMUNITY PARTNERS SUCH AS DENVER WATER.

It was while working for Sen. Boxer, particularly after 2007 when she took over chairmanship of the Senate Environment and Public Works Committee, that Weingarden realized where climate change advocacy could have its greatest impact. "I became very interested in going back to the local level to help a community address climate change and be part of the solution. Cities cover just 2 percent of the world but use 75 percent of the world's resources. It was exactly what I wanted to do—working for a city addressing climate change," Weingarden said. "At the federal level, things were moving slowly."

Prior to working for Sen. Boxer, Weingarden served as a coalition builder and community organizer for political campaigns and environmental nonprofit organizations. In particular, she developed and implemented strategic plans and led campaigns to advance environmental policies in the city and county of San Francisco. One such extensive campaign, Save the Bay, defeated an airport expansion plan.

After graduating from the School of Natural Resources and Environment with her master's degree in January 1998, she went to work for the Sierra Club in Chicago, which brought her back to the site of her master's project. The project focused on the U.S. Environmental Protection Agency's Clean Water Pre-Treatment Program and was sponsored by Friends of the Chicago River. The project analyzed the common characteristics of award-winning clean-water districts.

"During my time in Illinois, one of the campaigns I'm most proud of is fighting the governor's office on plans to construct a new prison on a rare sand prairie ecosystem," she said. "The site was a former Army base, but it contained endangered species. This was pre-email, so we fought it the old-fashioned way—through writing op-eds, mailing out 'action alerts' and conducting radio interviews. The governor's office eventually withdrew the plan."

Weingarden, 37, was born and raised in Michigan but chose to get away from home and enrolled at the University of Wisconsin-Madison, where she majored in journalism. After graduation, she sought to develop a niche bridging journalism and environmental science and policy, which led her to apply to SNRE.

SNRE's program appealed to her because of its breadth of curriculum and multidisciplinary approach. "We learned everything from how to organize an advocacy campaign to environmental law itself. The program provided a breadth of knowledge about individual subject areas and a deep understanding of how those components fit together," she said.

The program also gave her the flexibility to remain connected to her journalism passion. As a graduate student, she wrote for *The Michigan Daily* and served as a reporter-intern with the Great Lakes Radio Consortium—now known as The Environment Report—at Michigan Radio, the University of Michigan's public radio station.

As much as she wanted to apply her broadened science and policy knowledge to environmental reporting, she had become more interested in advocacy. Through her SNRE experiences and coursework, "I realized there was so much to fight for. I wanted the degree because I love the environment," she said. "But as I saw what was needed to win the environmental protections that were needed, I got excited about the fight, about being part of the hands-on effort to make change for the vitality of the planet."

Class Notes

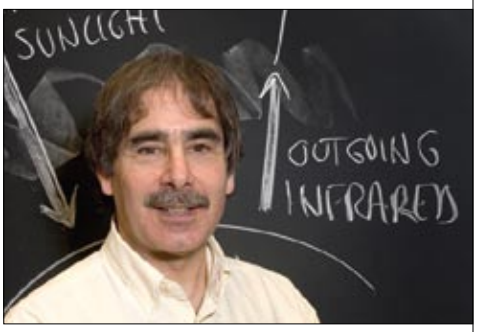
SNRE

Robert D. Wray (B.S.F. '46, M.F. '47) marked five decades of publishing success this year, with the fourth edition of *Christmas Trees for Pleasure and Profit*. The book, first published more than 50 years ago, is for anyone who enjoys being and working outdoors and is seeking a profitable hobby or small business. Wray is retired from the U.S. Forest Service's North Central Forest Experiment Station in St. Paul, Minn. He has written for various conservation and professional publications and continues to do contract editing for the Forest Service.

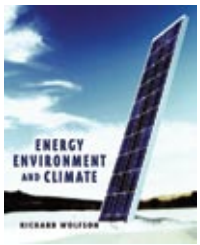
John Alden Bentley (M.L.A. '64), ASLA, a principal with Bentley Koepke Inc. in Cincinnati, Ohio, was recently inducted as a Fellow by the American Society of Landscape Architects. He was nominated in recognition of his accomplishments throughout his 44-year career. For 32 years, he has provided landscape architecture expertise to the Village of Indian Hill, a planned rural community in Ohio, including producing its far-reaching green areas study. His other contributions to significant design projects include: work on La Ronde, the amusement area for the 1967 World Exposition in Montreal, Canada; the formal garden for the Procter & Gamble world headquarters; the green roof of the Zimmer Auditorium for the University of Cincinnati; the master plan to transform a retired gravel pit near Indian Hill into the Grand Valley Nature Preserve; and more than eight blocks of downtown Cincinnati. He continues his practice in landscape architecture and urban design from his headquarters in a historic firehouse in Cincinnati. For more information, visit www.BentleyKoepke.com.

Clare A. Gunn (Ph.D. '65) recently completed his memoirs titled, *A Maverick's Story*. Gunn, an emeritus professor at Texas A&M University, previously authored numerous books on the tourism-related applications of landscape architecture. His career included research, teaching and public service at two schools of landscape architecture, two schools of hotel management and two departments of recreation and parks. "As I worked with and studied tourism, I saw landscape architectural principles as best able to solve the many land-use abuses from the phenomenal growth of travel and tourism," Gunn recently wrote. He was one of the first students in U-M's Landscape Architecture doctoral program. "Although at first my tourism-planning concepts were not well accepted, maverick that I am, it is a pleasure at the age of 92 to reflect on how finally they have been introduced in university education and tourism leadership around the world."

THE 2009 GREEN INAUGURAL BALL, WHICH CELEBRATED THE NEW 'GREEN ECONOMY' AS PART OF PRESIDENT OBAMA'S INAUGURATION, WAS ALSO A MAIZE AND BLUE AFFAIR. ATTENDING THE WASHINGTON, D.C., EVENT WERE (FROM LEFT): U-M ALUMNA **LISA WOZNIAK**, EXECUTIVE DIRECTOR OF THE MICHIGAN LEAGUE OF CONSERVATION VOTERS; U-M ALUMNA **LANA POLLACK**, FORMER PRESIDENT OF THE MICHIGAN ENVIRONMENTAL COUNCIL; **KERRY DUGGAN (M.S. '06)**, CAMPAIGNS PROJECT MANAGER FOR THE LEAGUE OF CONSERVATION VOTERS IN WASHINGTON; AND SNRE DEAN **ROSINA M. BIERBAUM**. *PHOTO BY CHRIS KLEPONIS/NATIONAL WILDLIFE FEDERATION*



Richard Wolfson (B.S. '71), the Benjamin F. Wissler Professor of Physics at Middlebury College, recently authored *Energy, Environment and Climate*, published by W.W. Norton & Company, Inc. In this new study of energy use and global climate change, Wolfson outlines basic\science concepts as well as specific contemporary applications in energy production and their environmental consequences. The book is structured on the premise that climate change is the dominant energy-related environmental issue of the 21st century. About one-third of the content is devoted to climate and an understanding of the energy-climate link.

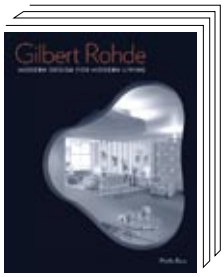


(Wolfson photo: Tad Merrick)

Carol Macht (M.L.A. '75), ASLA, is a founding partner in the award-winning multidisciplinary design firm Hord Coplan Macht, based in Baltimore, Md. From a very young team of three, the firm has grown to more than 90 design professionals in landscape architecture, architecture, planning, interiors and graphic design. Through more than 30 years of practice, Macht and her team have worked on a continually interesting range of project types, from contemporary urban parks and plazas,

educational and health care campuses, historic landscape preservation and private gardens. The recently completed design for a $9 million renovation of the historic South Park of the Pennsylvania State Capitol in Harrisburg is under construction this spring. For the last 12 years, she has worked on the campus of Loyola College in Maryland, which completed a $10 million renovation of landscape architectural improvements under her guidance. She serves on the Architectural Review Board for the State of Maryland.

Phyllis Ross (M.L.A. '75) has written the first comprehensive appraisal of the achievements of Gilbert Rohde, an innovative designer of furniture and interiors who attained near-celebrity status across the United States in the 1930s and early 1940s. In *Gilbert Rohde: Modern Design for Modern Living*, Ross provides a detailed account of Rohde's work and life in the context of the social, economic and cultural circumstances of the first half of the 20th century. Rohde was an innovative designer of furniture and interiors. Ross recently spoke about the book at The Henry Ford museum in Dearborn, Mich., which has more Rohde pieces than any other museum. She is an independent researcher and scholar based in New York. A graduate of the Parsons School of Design, she has helped develop exhibitions at the Detroit Institute of Arts, Cooper-Hewitt National Design Museum, Library of Congress, National Building Museum and the Museum of the City of New York. Prior to her decorative arts studies, Ross was a landscape architect.



Kenneth H. Rogers, Jr. (B.S.F. '78) has relocated to St. Petersburg, Fla., and is a broker associate with Prudential Tropical Realty in the Tampa Bay area after a 21-year career in Ann Arbor, most recently with Edward Surovell REALTORS specializing in land development and sales, residential and commercial real estate. Contact him at krogers@prutropical.com.

Chris Kolb (B.S. '82), the 2007 SNRE Spring Commencement speaker, was recently named president of the Michigan Environmental Council (MEC). Kolb succeeds Lana Pollack (the 2008 SNRE Commencement speaker), who retired as MEC president after 12 years.

The transition took effect Jan. 1. As a former Michigan state representative, Kolb was one of the legislature's most consistent defenders of clean water, clear air and public health. He served three terms (six years) representing Ann Arbor's 53rd District. He was instrumental in the passing of important environmental legislation, including open-space ordinances, lead-poisoning prevention for children, regulation of dangerous polybrominated biphenyl ethers (PBDEs), establishment of a fund to help clean leaking underground storage tanks and numerous land-use initiatives.

Timothy Rienks (B.S. '87) is an environmental engineer for General Motors Corp., at its Bedford, Ind., Powertrain plant. There, he is responsible for regulatory compliance for waste activities and maintaining the plant's certification to the ISO 14001:2004 standard. He also assists with several community outreach and public education programs. Previously, he worked for several environmental consulting companies in Michigan. He lives in Bloomington, Ind., with his wife and two children. "We like the college atmosphere but miss football Saturdays at the Big House," Rienks said.

Todd Votteler (M.S. '89) is executive manager of intergovernmental relations and policy for the Guadalupe-Blanco River Authority. He is also the executive director for the Guadalupe-Blanco River Trust. He writes on a range of Texas water issues in academic journals and magazines such as *Texas Parks & Wildlife*, and is the editor in chief for *The Texas Water Journal*. Votteler lives in Austin, Texas, with his wife Sharmon and two young daughters.

Wendy (Silverman) Gordon (M.S. '90) is program leader for Nongame and Rare Species for the Texas Parks & Wildlife Department. Her program is responsible for conducting scientific research on terrestrial nongame species and implementing management objectives to promote their conservation. She spearheads the agency's climate change initiatives. In her spare time, she serves as an associate editor of *Eos*, the weekly journal of the American Geophysical Union.

David S. Jones (M.S. '91) is an ecologist at Colorado State University, where he has worked for the past 15 years. His campus unit supports Department of Defense land managers; his specialty is monitoring disturbance, vegetation and soil stability.

Michael Dorsey (B.S. '93, Ph.D. '05), an assistant professor in Dartmouth College's Environmental Studies Program, was recently awarded $300,000 by the Ford Foundation to launch the Climate Justice Research Project to study racial and social inequities in addressing climate change. Prior to joining the faculty, he held the Thurgood Marshall Fellowship in Environmental Studies and Geography at Dartmouth. "We are working to develop the tools and means of analysis to ensure that climate change mitigation will occur in an equitable and just manner, inclusive of marginalized, low-income communities and communities of color," Dorsey said. (Dorsey photo: Joseph Mehling, Dartmouth College)

ELISE JONES (M.S. '93), EXECUTIVE DIRECTOR OF THE COLORADO ENVIRONMENTAL COALITION, AND **JOE SHORT (M.S. '03)**, PROJECT DIRECTOR FOR THE NORTHERN FOREST CENTER, RETURNED TO CAMPUS IN MARCH TO GIVE THE DORIS DUKE CONSERVATION/WYSS FELLOWS LECTURE. THEIR PRESENTATION WAS TITLED, "NEW ALLIANCES, NEW STRATEGIES: ENERGY, THE ECONOMY AND THE CHANGING FACE OF THE CONSERVATION MOVEMENT." JONES JOINED THE COALITION AS EXECUTIVE DIRECTOR IN 1999. SHORT FIRST WORKED WITH THE NORTHERN FOREST CENTER IN 2003 AS A DORIS DUKE CONSERVATION FELLOW, AND JOINED THE STAFF FULL TIME IN 2004.

In Memoriam

CARL LATTA

Carl Latta (M.S. '52, Ph.D. '57), an adjunct SNRE professor and former director of the Institute for Fisheries Research (IFR), died Nov. 20. He was 83. In 1956, he began work as a fishery biologist at IFR within the Michigan Department of Conservation. He became director in 1966, and chief of fisheries research of the Fisheries Division of the Michigan Department of Natural Resources in 1976, a position he held until his retirement in 1992. He was appointed adjunct research scientist and professor at SNRE in 1966, teaching occasional courses and advising many fisheries students. He served as a member on many master's and doctoral committees, where he not only reviewed students' work but helped them define questions and find funding.

FRANK HOOPER

Frank Hooper, a former SNRE professor and employee at the Institute for Fisheries Research/ Michigan Department of Natural Resources, died March 6. He was 91. Mr. Hooper moved to Ann Arbor in 1950, after earning a Ph.D. from the University of Minnesota. He began working for IFR in 1952 and joined SNRE in 1966 as a professor of fisheries and zoology. He was president of the American Society of Limnology and Oceanography from 1966-67. He conducted seminal research on the nutrient dynamics of freshwater streams, lakes and bogs in northern Michigan and Wisconsin. He also chaired SNRE's program in Resource Ecology until retiring in 1987. Family and friends can send donations in memory of Frank Hooper to the Aquatic Ecology Scholarship at SNRE, School of Natural Resources and Environment, Office of Development and Alumni Relations, University of Michigan, 440 Church St., Ann Arbor, MI, 48109-1041.

BOB GREGORY

The family of **G. Robinson (Bob) Gregory (B.S.F., M.S.F. '40)**, a longtime professor and respected natural resource economist who died in August at age 92, has established the Bob and Ann Gregory Award in Forestry endowment to honor their late parents. The award provides financial assistance to outstanding students or professionals from outside the United States and Canada to attend the annual conference of the Society of American Foresters (SAF). An SAF committee will oversee administration of the endowment, as well as solicit and review applicants and select appropriate recipients on an annual basis.

ROBERT GIBBS (M.L.A. '84) RETURNED TO CAMPUS IN APRIL AS A GUEST LECTURER TO DISCUSS THE NEW URBANISM. HE AND HIS COMPANY WERE PIONEERS IN THE IMPLEMENTATION OF NEW URBANISM'S ENVIRONMENTALLY SUSTAINABLE PRINCIPLES OF TRADITIONAL TOWN PLANNING AND SMART GROWTH AS AN ANTIDOTE TO THE FORMLESS, WASTEFUL SPRAWL OF SUBURBIA. GIBBS IS FOUNDER AND PRESIDENT OF GIBBS PLANNING GROUP IN BIRMINGHAM, MICH. FOR THE PAST 25 YEARS, HE HAS DEVELOPED INNOVATIVE YET PRACTICAL METHODS FOR APPLYING MODERN TRENDS IN COMMERCIAL DEVELOPMENT TO MORE THAN 300 TOWN CENTERS AND HISTORIC CITIES IN THE UNITED STATES AND ABROAD.

Hiroko Mosko (B.S. '93) is serving in a United Nations' peacekeeping mission in Darfur, Sudan, where she is providing assistance to the government in the area of natural resources management and environmental protection. She previously was serving as an environment and natural resources adviser on a peacekeeping mission in Liberia. "Working in peacekeeping missions as an environmental specialist is a challenging but unique experience, as you observe every day that stability in such countries is depending heavily on how well they manages natural resources," Mosko says.

James A. Kitts (M.S. '95) is an assistant professor at Columbia University's Graduate School of Business. He focuses on organizational ecology and demography, with interests in social movement organizations, nonprofit management and business ethics. He can be reached at jak2190@columbia.edu.

Jonathan Koch (M.S. '96, M.B.A. '96), an Erb Institute graduate, provided current SNRE students in February with insights into the world of renewable energy-project financing as part of a half-day workshop conducted at the Dana Building. Koch is a managing director and co-founder of New York-based US Renewables Group. Prior to joining USRG, Koch was chief operating officer for Visible Path, a Kleiner Perkins Caufield & Byers-funded application service provider.

Meghan Chapple-Brown (M.S. '02, M.B.A. '02) has been named the first director of The George Washington University's recently established Office of Sustainability. The Office of Sustainability was launched in the fall at the recommendation of a yearlong task force. Chapple-Brown coordinates operational activities university-wide. Chapple-Brown draws upon nearly 15 years of experience in sustainable development in corporate and nonprofit organizations. Previously, she served as the director of client services at SustainAbility, advising companies such as Ford Motor Co., Nike, Wal-Mart and Eli Lilly. She specializes in the relationship among sustainable futures, organizational strategy and market innovation. She currently serves on the Advisory Board of the Erb Institute for Global Sustainable Enterprise. (Chapple-Brown photo: The George Washington University/Jessica McConnell)

Amy Gilboy Meide (M.S. '03) was one of only 40 people selected nationwide for the TogetherGreen Conservation Leadership Program, part of a new conservation initiative of the National Audubon Society with support from Toyota. Fellows receive specialized training in conservation planning and execution, the chance to work and share best practices with conservation professionals, and assistance with project outreach and evaluation. Each Fellow received $10,000 toward a community-focused project to engage local residents in conserving land, water and energy and contributing to greater environmental health. For her fellowship, Meide is focused on improving and restoring habitat on the publicly-owned St. Johns County (Florida) Golf Club. Meide is the land management coordinator for St. Johns County.

Kyle Meister (B.S. '03) recently graduated with a master of forestry degree from the Yale School of Forestry & Environmental Studies. After a brief stint with Mercy Corps in Bogota, Colombia, he relocated to the Bay Area to work at Scientific Certification Systems, where he conducts Forest Stewardship Council forest management certifications and forest carbon verifications under various voluntary standards. He can be reached at kmeister@scscertified.com.

Amber Simco (B.S. '03) is an environmental consultant at PRIZIM Inc., in Gaithersburg, Md. She previously worked in a research role at the U.S. Government Accountability Office. She recently was married in a little slice of paradise on the South Island of New Zealand to Avi Mandell. The couple resides in Bethesda, Md., with daughter, Hannah.

Katherine Foo (M.L.A. '08) is working at Carol R. Johnson Associates, a landscape architecture design firm in Boston. She has worked on an open-space master plan for an Abu Dhabi district; master-plan scenarios for a new equestrian-based district west of Cairo; and a planting design for Mohegan Sun construction documents. Foo reports that in the Mohegan Sun project, since she could experiment with 16-foot site walls and 8-foot earthen mounds in her planting design, it felt like a rare example in which her professional work proved *even more outlandish* than her studio work at SNRE!

Gabriel Thoumi (M.S. '08, M.B.A. '08), an Erb Institute graduate, published his master's thesis as a Web book through Aadvark Publishers. The book, *Emeralds on the Equator: An Avoided Deforestation Carbon Markets Strategy Manual*, is being simultaneously published in English, French, Indonesian, Portuguese and Spanish. Thoumi is forestry director at MGM International, a project development, investment and commercialization firm whose objectives are the identification, design, negotiation, execution and support of projects that contribute to reducing anthropogenic greenhouse gas emissions. Previously, he consulted for project developers and NGOs in Southeast Asia, Central America and Sub-Saharan Africa.

Jumana Z. Vasi (M.S. '08) joined the Charles Stewart Mott Foundation as an associate program officer on its Environment Team. She is focused on grantmaking in the Conservation of Freshwater Ecosystems program area, as well as cross-program grantmaking in support of growth management and urban revitalization in Michigan. Before joining Mott, Vasi was the development and marketing manager for Enlace Chicago (formerly the Little Village Community Development Corporation), a Latino community-based organization in Chicago. She brings almost a decade of project management experience in for-profit, nonprofit, government and academic settings and is conversant in French, Gujarati (an Indo-Aryan language) and Wolof, a language spoken in Senegal, The Gambia and Mauritania.

CATHERINE (SIMMONS) BENSON (B.S. '96) IS PURSUING HER LOVE OF DOG SLEDDING AND SLED DOGS. SHE RECENTLY STARTED HER OWN DOG SLEDDING AND DRYLAND (WHEELED) DOG SLEDDING BUSINESS CALLED MARYLAND SLED DOG ADVENTURES LLC. ITS WEB SITE IS WWW.MARYLANDDOGSLEDDING.COM. PRIOR TO STARTING THE BUSINESS, BENSON WAS A COMMERCIAL LITIGATION ATTORNEY FOR SEVEN YEARS WITH DLA PIPER. SHE AND HER HUSBAND, ERIC. R. BENSON, ALONG WITH THEIR SLED DOGS, RESIDE IN BALTIMORE, MD. SHE CAN BE REACHED AT CATHERINE@MARYLANDDOGSLEDDING.COM.

Tao Zhang (M.L.A. '08) is working at Sasaki Associates Inc., a multidisciplinary landscape architecture firm in Boston. He is a member of many team-based international projects, and is currently working on a 600-acre park in a new urban district in Shanghai called Jiading Newtown. In this project, he is exploring paving patterns through fractal geometry for a waterfront path. At one point during the design, the segments of forms and patterns made him mistake himself for a fashion designer.

SHARE YOUR NEWS

Please keep us in mind when it's time to share news about your new job or personal achievements with fellow alumni. We also welcome photos (preferably color). Send your information to Erin Longchari, assistant director of development and alumni relations, either via e-mail (erinla@umich.edu) or through regular mail. The address is School of Natural Resources and Environment, Office of Development and Alumni Relations, University of Michigan, 440 Church St., Ann Arbor, MI, 48109-1041. We're looking forward to hearing from you and spreading your good news.

HAIL TO THE VICTORS

ALUMNI, FRIENDS HELP SNRE EXCEED CAMPAIGN GOALS

With the "greenest" University of Michigan building as a backdrop, the School of Natural Resources and Environment this fall honored those who made investments in students and faculty as part of the historic "Michigan Difference" campaign.

The celebration in the Dana Building recognized nearly a dozen individuals and couples whose contributions are helping SNRE create a sustainable future for the planet. Those individuals and hundreds more helped the school exceed its fund-raising goals during the campaign, which ended Dec. 31.

Those contributions overwhelmingly went to expand scholarship and financial aid support to students and research support for faculty. In all, individuals, corporations and foundations donated or pledged more than $32.5 million to SNRE during the campaign.

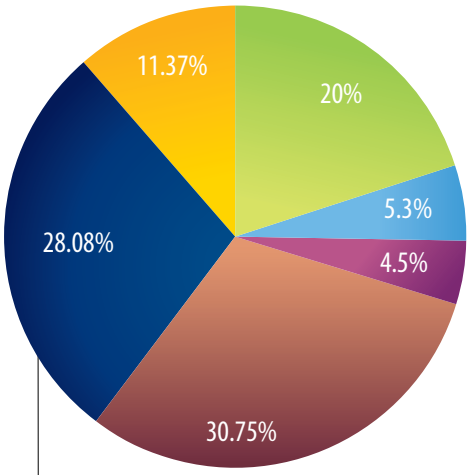
"It is our great honor to recognize those who believe in the mission of SNRE, which is achieving a sustainable future for our planet," said Rosina M. Bierbaum, dean of the school. "We celebrate those who have done so much to make sure our students are the 'Leaders and Best' when it comes to tackling the interconnected suite of environmental issues facing our planet."

The SNRE celebration came only hours after the University-wide community celebrated the campaign milestone. At an event inside Hill Auditorium, the university thanked the more than 364,000 donors who enabled U-M to greatly increase student financial aid, create new student programs, hire and retain outstanding faculty, support groundbreaking research and provide new buildings for health care, teaching, arts and entertainment.

The broader U-M campaign raised more than $3.1 billion, Campaign Chair Rich Rogel announced. The sum is believed to be the largest amount ever raised by a public university, and substantially exceeded the goal of $2.5 billion announced in 2004.

"The people we recognize tonight represent business, engineering, science, social science and health—exactly the disciplines required to tackle sustainability and the issues facing all of us today," Dean Bierbaum said.

Acting SNRE Dean J. David Allan assisted Dean Bierbaum, who is on a yearlong sabbatical, in acknowledging the supporters. Those honored by SNRE were: Ronald and Nancy Bauer; SNRE Professor Bunyan Bryant and his wife, Jean Carlberg; Sally Churchill, vice president and secretary of the University of Michigan; Phelps "Flip" and Jean Connell; Jean Fairfax; Donald and Ingrid Graham; Gene and Emily Grant and family; U-M Regent Libby Maynard; Dr. Timothy Wallington; and Marshall Weinberg.



- Programmatic Support 11.37%
- Research Support 28.08%
- Student Support 30.75%
- Discretionary Support 4.50%
- Facilities Support 5.30%
- Faculty Support 20%

THE MICHIGAN DIFFERENCE CAMPAIGN: GIVING SUMMARIES BY INTIATIVE TO THE SCHOOL OF NATURAL RESOURCES AND ENVIRONMENT.

FOR THE FUND OF IT

The Annual Fund Campaign of the School of Natural Resources and Environment is under way. Each fall, the school begins a yearlong drive to seek support from alumni and other SNRE friends. The support helps SNRE maintain its national leadership role in the fields of environmental education and research. This year's campaign goals are:

- Provide scholarship support at the time of admission to 30 percent of the incoming class. Goal: $780,000.
- Raise $150,000 for master's projects, which focus the substantial capabilities of students and faculty on problems faced by real clients.
- Increase doctoral funding. SNRE wants to provide these students an additional $4,000 for research pursuits pre- and post-candidacy.

If you have a question about matching gifts, planned giving or other giving-related issues, contact the SNRE Office of Development and Alumni Relations at 734.763.1577.

MORE INFORMATION:
snre.umich.edu/giving

SCORING *for* DANA

Greg Goldring grew up a big football fan in the northern New Jersey town of Short Hills. And once he arrived in Ann Arbor and walked inside the "Big House"—the football stadium that holds nine times the population of his hometown"—he knew immediately which college admissions letter to accept.

However, when the young philanthropist went searching for a University of Michigan initiative to support, he punted—and decided to invest in something smaller than Michigan football. On the receiving end was SNRE's new Training and Inspiring Environmental Stewardship (TIES) program.

"When I was looking at possible programs to support, TIES jumped off the page," said Goldring, 23, a 2008 graduate of the U-M College of Literature, Science, and the Arts. "What came to mind were the field trips I took as a kid to see green-friendly buildings. I became hooked on the idea of helping today's young students get a chance to see the same innovations that I did."

His financial support is helping with many aspects of the TIES program, including start-up expenses such as creation and installation of interactive displays. His gift is also intended to help cash-strapped school districts in southeast Michigan afford buses and drivers to bring students to the Dana Building for field trips.

"The best part about TIES is that it covers so many issues: conservation, green construction, students involved in outreach," Goldring said. "I was looking for a specific project that would allow me as a young philanthropist to have a greater and immediate impact. And with this program, it all came together."

The inspiring work of students involved in developing the TIES program helped, too. "Seeing other students get involved in giving back to the community is great," he said.

Philanthropy runs in the Goldring family. The Goldring Family Foundation of New Jersey—the organization from which the $10,000 gift is coming—is a supporter of the arts and sciences. "Philanthropy has always been a part of my life and I'm proud to be able to pass that spirit on and encourage others to do the same," said Goldring, who lives in Manhattan and works as a marketing manager for Platinum Rye Entertainment, an entertainment and marketing company.

As a member of the Sigma Alpha Epsilon fraternity, Goldring joined others in raising money for C.S. Mott Children's Hospital, which is part of the University of Michigan Health System.

U-M FACULTY AND STAFF WERE JOINED BY COMMUNITY MEMBERS YOUNG AND OLD FOR THE APRIL 1 GREEN TIES OPEN HOUSE, WHICH MARKED THE OFFICIAL LAUNCH OF THE EDUCATION AND OUTREACH PROGRAM. GUESTS WERE ABLE TO TAKE A GUIDED TOUR OF THE DANA BUILDING AND INTERACT WITH SUSTAINABILITY STATIONS AND INTERACTIVE DISPLAYS THROUGHOUT THE BUILDING. (SEE RELATED STORY, PAGE 6)

GIVING BRIEFS

Family honors fallen son

In memory of her son Peter, Joan Wolfe of Frankfurt, Mich., has established a trust fund to support students pursuing dual degrees in Natural Resources and Law. Peter Wolfe (B.S. '83) was 27 when he was killed while on assignment for the U.S. Peace Corps in Guatemala. The cause of his October 1984 death was ruled a homicide. After graduating from SNRE, he joined the Peace Corps and later was assigned to Guatemala. His role was to educate the fisheries-dependent community about conserving its dwindling resources. The Wolfes recently established the irrevocable bequest to assist in funding the Joseph L. Sax Fund for a dual-degree student of SNRE and the Law School. Mrs. Wolfe gave the gift in part because she worked tirelessly with Professor Sax (then at U-M Law) to pass the Michigan Environmental Protection Act (often referred to as the Sax Act) in 1970. For more on Peter Wolfe, visit www.fpcv.org/peter_wolfe.htm.

Enriching the student global experience

Through U-M President Mary Sue Coleman's "Challenge for The Student Global Experience," donors can help SNRE students thrive in the global environment. More than 1,800 Michigan undergraduates and roughly 670 graduate students already study abroad each year. The Challenge offers a $1 match for every $2 in endowment gifts. With $5 million in matching funds, the challenge aims to leverage supporters' generosity and generate $15 million for overseas study opportunities. For further information, call 734.647.6076 or e-mail globalexperience@umich.edu.

NATURAL RESOURCES AND ENVIRONMENT
UNIVERSITY OF MICHIGAN

440 Church Street
Ann Arbor, MI 48109-1041

Nonprofit Org.
U.S. Postage Paid
Ann Arbor, MI
Permit No. 144

Stewards NETWORK

STAY CONNECTED

SNRE.UMICH.EDU/SOCIAL-NETWORKING

LinkedIn
Connect with SNRE colleagues and alumni on this network of professionals sharing profiles and connections on an invitation-only basis

Facebook
Become a member of the SNRE group, follow event and news updates and talk to others on this popular social network

Flickr
View and comment on SNRE's Photostream using this photo management and sharing Web site

RSS Feeds
View events, school-generated headlines and "SNRE in the News" items by subscribing to content feeds using Really Simple Syndication (RSS)

ITunes
Find audio and video from SNRE events on this section of the iTunes Store, featuring free content to download to your computer or iPod

Mail
Receive HTML and text emails about new developments and events from the school and its programs in your e-mail inbox

You Tube
View and comment on videos about SNRE on our upcoming channel with this free online video-sharing service

Twitter
Follow SNRE's updates on this real-time short messaging service that allows you to access information as it happens

ON PRESS

Printed on 100 percent post-consumer recycled waste fiber

Printed using soy-based inks

Printed by University Litho, Inc., a Forest Stewardship Council-certified printer

Please recycle this magazine when finished

FSC Recycled
Supporting responsible use of forest resources
Cert no. SGS-COC-004916
www.fsc.org
© 1996 Forest Stewardship Council