

Two New Institute Research Centers Get Expertise at the Top

THE UNC INSTITUTE FOR THE ENVIRONMENT IS COMPOSED OF A SERIES OF RESEARCH CENTERS THAT COORDINATE ALL RESEARCH, EDUCATION AND PUBLIC ENGAGEMENT ACTIVITIES OF THE INSTITUTE. BELOW, WE INTRODUCE THE DIRECTORS OF TWO OF THESE CENTERS, WHO SHARE THEIR VISION FOR THE IMPACT THEIR CENTERS CAN MAKE ON OUR UNDERSTANDING AND STEWARDSHIP OF THE ENVIRONMENT, PARTICULARLY IN NORTH CAROLINA.

RIVER EXPERT LEADS CENTER FOR LANDSCAPE CHANGE AND HEALTH

Geomorphologist and stream ecologist Martin Doyle directs the new Center for Landscape Change and Health, which examines how major landscape changes influence both human health and ecosystem health.

"We live on a human-dominated planet, and a lot of the planet's ecosystems have been fundamentally altered by land-use changes that drive everything from the loss of vegetation, forests and species, to the deterioration of our watersheds, to global climate change," Doyle, an associate professor of Geography at UNC, explained. "Through the Center, we are exploring how those changes affect both public health and the health of the environment."

It's actually a two-stage process. First, landscape changes like urban development, road construction or the damming of rivers cause ecosystem change; then, ecosystem change can affect human or environmental health. Center researchers are working to further our understanding of each stage. To do so, they are drawing significantly on the expertise of colleagues at the UNC School of Public Health and the Center for Environmental Medicine, Asthma and Lung Biology in the UNC School of Medicine.

With the creation of the Institute for the Environment, researchers who previously were spread across the Carolina campus are now in close proximity, dramatically expanding opportunities for discourse and collaboration. For instance, Doyle's Center is working closely with the Institute's Center for Sustainable Community Design to explore ways to minimize the environmental and human health impacts of new housing developments for North Carolina's growing population.

Another key focus of the Center for Landscape Change and Health is to find effective ways to reduce the impact of the first stage of the process – through public policy, regulations, or creative, market-based approaches – so that landscape change will not have as extensive an impact on the ecosystem.

Since coming to UNC in 2002, Doyle has pursued research related to rivers: everything from changes in water quality and quantity following development, to the impact of dam removal. "With the tremendous population growth in the Southeast, in the next decade or so, water issues will play an important role in relationships in the region," he predicted. "North Carolina is at the forefront of developing a market-based approach ("ecosystem trading") to help mitigate the impact of land use change on rivers. As part of a public university, the Center and the broader Institute can connect state agencies and policymakers to the expertise of UNC faculty, to help them navigate these waters."

It is an exciting time to be working on these issues, said Doyle. "State and federal agencies, environmental organizations and citizens are more open-minded than ever before about trying new things. They are open to hearing what the research community has to say. And UNC-Chapel Hill is excellent about giving its researchers the resources we need and the freedom to think broadly and find innovative ways to contribute to efforts to conserve North Carolina's environment." 🌱



MARTIN DOYLE

SUSTAINABLE COMMUNITY DESIGN, DISASTER RESILIENCY KEY FOR NEW CENTER HEAD

Phil Berke, UNC professor of City and Regional Planning, directs the new Center for Sustainable Community Design, which explores how communities throughout North Carolina, the nation and the world can redesign their land use patterns, buildings and transportation systems to reduce their ecological footprint, decrease inequities in access to healthy living conditions among different population groups, and sustain economic vitality.

The United States is on track to add 100 million people to our population faster than any other country on earth except India – all within the next 35 years. North Carolina will take a disproportionately large share of that growth. How will we accommodate that population boom? What will it mean for our environment? How can we create sustainable communities and cities that depend on critical natural systems, while minimizing our impact on those systems?

These are the types of questions that Berke and his colleagues seek to answer, as well as questions about the best ways to plan communities given concerns such as climate change, natural disasters, and the impact of explosive development on our water supply, biodiverse habitats, and the fragmentation of farmlands and forests. The Center brings together an interdisciplinary group of faculty, professionals and students in the social sciences, natural

sciences, urban planning and environmental policy to conduct cutting-edge research and disseminate that knowledge through outreach to communities, state agencies and policymakers, and educational programs for UNC students.

"The exciting thing about this Center is that it is problem-focused, not discipline-focused, so we can look at the big problems of urban and community impacts on the environment from every perspective," Berke noted.



PHIL BERKE

The Center draws upon expertise from across the Carolina campus, including fiscal and real estate specialists from the Kenan-Flagler Business

School, landscape ecologists and urban hydrologists from the Department of Geography, epidemiologists from the School of Public Health and researchers associated with the Carolina Population Center and the Center for Urban and Regional Studies. Collaborations with the Institute's other research centers enhance interdisciplinary solutions to questions such as: Can designing a community to be walkable contribute to the health of its citizens, and can we find ways to reduce the emission of pathogens that impact human and ecosystem health in traditional development schemes?

Another pressing issue for North Carolina is the susceptibility of our coastal areas to the sea level rise predicted as a result of global warming. One of the Center's priorities, therefore, is to help coastal communities, particularly the low-income communities most vulnerable to natural hazards, create long-range disaster resiliency plans that raise awareness and help them prepare in advance to deal with natural disasters such as hurricanes and flooding.

Berke, who has been a member of UNC's City and Regional Planning faculty for 12 years, has always been interested in land use and environmental planning, particularly in developing integrated, comprehensive solutions that guide land-use change in the face of multiple human and ecological issues. "As we launch this Center, I'm particularly excited about the opportunity to take the technical knowledge generated by social and biophysical scientists at Carolina and to translate that science into practical, real-world solutions that can be implemented at the community level." 🌱



INSTITUTE OFFERS OUTREACH, EDUCATION PROGRAMS ON CLIMATE CHANGE

Climate change is one of the biggest issues facing our world, and the Environmental Resource Program (ERP), the outreach and public service unit of the Institute for the Environment, is spearheading several projects to share the University's expertise in climate change and its impact on environmental and human health with the citizens of North Carolina.

In June, the ERP co-sponsored a two-day professional development institute for North Carolina middle and high school science and civics teachers. Twenty-one teachers from five counties participated in "Connecting Civics and Science: Inspiring N.C. Youth to Address Global Warming." The two-day workshop was funded through a grant from the Z. Smith Reynolds Foundation. It was co-sponsored by the Civic Education Consortium of the UNC School of Government, where the program was held.

The workshop was created to help science and civics teachers increase their own understanding of the science and impact of global climate change, as well as how local governments work and what they can do to



DANA HAINE

address climate change. The institute also gave these educators lesson plans, activities and support so they can teach their students about global warming and encourage them to talk with their local governments about this important issue. Participants engaged in hands-on science activities they can use with their students. They met with Dr. Jose Rial, an Institute for the Environment faculty member and professor of Geological Sciences, who shared the latest developments in climate change research. They even took part in a mock city council meeting, where they got to present different strategies to reduce carbon dioxide emissions, a major cause of global warming, to help prepare them for the real thing.

"Climate change is definitely a hot topic right

now, but there aren't many professional development opportunities for teachers yet," explained ERP Science Educator Dana Haine. "Veteran teachers – including one with 25 years of experience – called this the best workshop they'd ever taken, and were excited to incorporate what they'd learned with their students."

The ERP will provide ongoing support to workshop participants as they work to implement what they've learned in their classrooms. The teachers can join a listserv to keep abreast of the latest news or new activities, and can get help to modify lesson plans or to prepare their students to speak to local governing bodies, for instance. The ERP would like to offer this professional development institute again, Haine noted, if funding can be secured. Through these workshops, teachers and their students are becoming an integral part of the Community Carbon Reduction (CRed) program run through the Institute for the Environment, joining an international effort to get all communities to reduce their carbon dioxide emissions by at least 60 percent. ♣

THE ERP IS ALSO COORDINATING AN EXCITING NEW UNC PROJECT TO ENGAGE NORTH CAROLINA HEALTH CARE PROVIDERS IN PROMOTING HEALTH AND MINIMIZING ADVERSE HEALTH IMPACTS FROM CLIMATE CHANGE. NEW INSTITUTE STAFF MEMBER KATHERINE SHEA, MD, MPH, IS DIRECTING THE PROJECT, A COLLABORATIVE EFFORT BETWEEN THE INSTITUTE FOR THE ENVIRONMENT, SCHOOL OF PUBLIC HEALTH, CENTER FOR ENVIRONMENTAL MEDICINE, ASTHMA AND LUNG BIOLOGY IN THE SCHOOL OF MEDICINE, AND SCHOOL OF JOURNALISM AND MASS COMMUNICATION. TOGETHER, THIS TEAM IS DEVELOPING MATERIALS THAT FOCUS ON NORTH CAROLINA-SPECIFIC HEALTH EFFECTS OF CLIMATE CHANGE, EDUCATING HEALTH CARE PROVIDERS AND ASSISTING THEM IN EDUCATING THEIR PATIENTS ON THESE ISSUES, AND REACHING OUT TO MEDIA OUTLETS ACROSS THE STATE.

THE ERP STAFF HAS ALSO CREATED A FACT SHEET ON "CLIMATE CHANGE AND PUBLIC HEALTH," WHICH OUTLINES THE VARIOUS WAYS PUBLIC HEALTH MAY BE INFLUENCED BY CLIMATE CHANGE (FOR A COPY, VISIT WWW.IE.UNC.EDU/ERP/), AND IS AVAILABLE AS A RESOURCE TO HELP NORTH CAROLINA CITIZENS AND ORGANIZATIONS SEEKING ASSISTANCE IN LEARNING OR TEACHING ABOUT CLIMATE CHANGE. TO CONTACT THE ERP, EMAIL DIRECTOR KATHLEEN GRAY AT KGRAY@UNC.EDU.



Symposium focuses on NC's energy and environment issues

Spring event brings North Carolina thought leaders together to identify ways for academia to help the state address critical energy issues

For two days in March, nearly 200 leaders from the state government, the campuses of the UNC system, suppliers and users of energy, and non-governmental agencies with energy interests converged on the UNC-Chapel Hill campus to identify hot-button issues of energy provision and use in North Carolina over the next 50 years, and to identify resources UNC system campuses can bring to the table in meeting these challenges.

The 2007 UNC Institute for the Environment Symposium, Energy and Environment in North Carolina, was sponsored by the Institute's new Center for Sustainable Energy, Environment and Economic Development in collaboration with the UNC Institute for Advanced Materials, Nanoscience and Technology, the UNC Office of the Vice Chancellor for Research and Economic Development, the UNC Sustainability Office, and the N.C. State Energy Office. Its goal was to develop a road map for academic engagement in energy issues in North Carolina.

"The entire energy infrastructure, both in energy provision and use, will undergo dramatic changes in the next half-century in response to dwindling supplies of traditional fuels and problems of climate change," explained Tony Reeve, the Institute's senior associate director. "This change will require innovative technologies, policies and community designs that recognize that energy use lies at the root of both a variety of environmental problems and needed economic activity. The universities and colleges in this state can be powerful players in this process – and we hope this Symposium will be a springboard for greater collaboration."

The two-day conference included speeches by national leaders from the university, government investment, NGO, and energy supply and use sectors, followed by panel discussions for each sector. During lunch, participants heard remarks by Mike Smith,

UNC-Chapel Hill vice chancellor for Engagement and dean of the UNC School of Government. Over dinner, N.C. Department of Environment and Natural Resources Secretary Bill Ross spoke on the partnership role that universities and governments must develop to address global warming. The second day featured smaller workshops on specific roles the UNC system campuses could play in education, research, public service and engagement, and institutional sustainability.

"The Symposium was a rewarding opportunity to identify topics on which university faculty and students can contribute to energy and environmental issues facing North Carolina and the country, and to explore possibilities for collaborating and learning from each other across multiple UNC campuses as well," said Richard "Pete" Andrews, the Thomas Willis Lambeth Distinguished Professor and chair of Public Policy, and a Progress Energy Faculty Fellow. "I appreciate the time our speakers took to help educate us on issues and priorities, as well as the spirit of multi-campus collaboration that the Symposium encouraged among all the participants, and I hope we'll continue to build on this potential in the coming years."

Already, the Symposium has helped get the ball rolling. In February 2008, the Emerging Issues Forum at NC State University will focus on energy and environment in North Carolina, and the newly formed Research Triangle Energy Consortium (consisting of RTI International, UNC-Chapel Hill, North Carolina State University and Duke University) will be hosting an energy forum November 14 and 15, 2007. ♣



MIKE SMITH

GALA CELEBRATES CREATION OF INSTITUTE



UNC-Chapel Hill Chancellor James Moeser gave impassioned opening remarks, at the announcement dinner in the Carolina Inn's Chancellors' Ballroom, about the University's role in improving the environment.



Representative Lucy Allen (District 49 — Franklin, Halifax and Nash), chair of the Environment and Natural Resources Committee in the N.C. House of Representatives, gave the keynote remarks at the dinner.

The announcement dinner was preceded by a reception at the Carolina Inn's Bryan Courtyard.



Tom Lambeth (left) and Fred Stanback at the Institute announcement reception.



INTERIM DIRECTOR NAMED FOR INSTITUTE'S FIELD SITE IN MANTEO

Robert Perry, who for 11 years directed the allocation of millions of dollars in environmental grants for the Geraldine R. Dodge Foundation, has been named interim director of the Albemarle Ecological Field Site in Manteo. The program is part of a network of field sites established by the Institute for the Environment in North Carolina and abroad to advance our missions in undergraduate education, environmental research and community outreach.

In 2005, Perry and his wife, Kathy, moved from New Jersey to the Outer Banks to be closer to family. He started a consulting business to help foundations improve their planning and review processes for environmental proposals. In Manteo, he attended several public lectures by the field site's former director, William Stott, who invited Perry to join the site's Community Advisory Board. "I was looking for opportunities to get involved with activities that would take advantage of my interests in natural systems and conservation, so I jumped at the chance."

This spring, after Stott's departure, Perry was named interim director. Perry, who earned a bachelor's degree in environmental studies, a master's in environmental education, and worked for 17 years as a science educator in New York City before joining the Dodge Foundation, is excited about this new challenge. He is now leading his first semester-long program for six Carolina undergraduates.

"Because the North Carolina coast, with its barrier islands, inner banks and estuarine ecosystems, is strikingly dynamic and alive, it is nearly inconceivable to think that our students' lives wouldn't be significantly changed by their semester-long exposure to it," he said. "Their experience will go well beyond book-based information so that they come to not only understand, but also to feel, how people who live here connect to the natural world, and how they utterly depend on its healthy functioning to keep them alive."

"A number of impacts threaten fragile coastal ecosystems, and our UNC students will learn what's being done — and what they themselves can do through thoughtful long-term planning — to improve the coast's ability to sustain all of its inhabitants, human and otherwise, for years to come."

For years, the Albemarle Ecological Field site was ably led by William Stott, who filled an important niche by representing the Institute's connection to the humanities, noted Institute Director Doug Crawford-Brown. "It was therefore essential to find someone who could bring the same level of community involvement to the site. Robert does that as interim director, keeping the site connected to the tradition started by William while expanding the site to apply the social sciences, humanities and sciences to community planning. In particular, we are excited by his ability to link the field site closely to our newly created Center for Sustainable Community Design." 🌿

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Robert Perry
Interim Director of the
Albemarle Ecological Field Site in Manteo

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PEOPLE NEWS AT THE INSTITUTE

ANDREAS TESKE, who holds joint appointments with the Institute for the Environment and the Department of Marine Sciences, has been promoted to full professor of Marine Sciences. Teske's research focuses on microbial ecology and the microbiology of the bacteria that live in the mud, sand and clay at the bottom of the ocean and in hydrothermal vents, the hot volcanic deep-sea springs found mainly in the middle of oceans. He teaches undergraduate courses in biological oceanography, microbial ecology and marine microbiology.

RACHEL NOBLE, who holds joint appointments with the Institute for the Environment and the UNC Institute of Marine Sciences (IMS), has received tenure and been promoted to associate professor. "Rachel has become an innovative leader across the broad fields of microbial ecology, molecular ecology, environmental and public health microbiology, and marine and estuarine water quality," said Rick Luettich, director of the UNC Institute of Marine Sciences, where Noble is based. "She has a natural ability to initiate interdisciplinary research and teaching programs that have significant impacts on coastal science as well as societal and management issues related to the North Carolina coast. She has developed tests for the bacteria *Enterococcus* and *E. coli* that she has patented and licensed for commercial development by a biotechnology company."



RACHEL NOBLE

Noble also directs and has been the driving force behind the Institute for the Environment's Morehead City Field Site for undergraduate education, research and community engagement at the IMS. Students have consistently rated her among their favorite instructors.

TONY REEVY has taken on new responsibilities and has been named as the Institute's senior associate director. Formerly associate director for advancement, Reevy will continue to oversee the organization's development and communications activities. In addition, he is now responsible for all of the Institute's business operations and facilities, including assisting the director with planning and budgeting for the new building, and will act for the Institute director in the director's absence.



TONY REEVY

Institute Director Doug Crawford-Brown noted that "I, and the Institute, have needed someone to manage daily operations, allowing me to focus more on long-term strategic issues—a role played for many years by David McNelis. Over the years, Tony has come to know every aspect of the Institute's operations, and his strong grounding in business management ensures we maintain the organizational base on which the specialized programs can be built. The Institute is in very good hands indeed with this new position."

Two join Institute board

The UNC Institute for the Environment is pleased to welcome two new members to its Board of Visitors. We appreciate their willingness to volunteer their time to serve the Institute.

Fred Anderson is a partner in the Washington, D.C. office of the international law firm McKenna Long & Aldridge LLP. His practice involves strategic corporate counseling, regulatory affairs, litigation, enforcement, and crisis management for domestic and international clients, in particular in the areas of energy and natural resources development, science and technology, and the environment. He has worked on such high-stakes environmental issues as Alaskan offshore oil and gas development, the Clean Air Act, a range of climate change projects, hazardous waste site cleanups, and environmental and human rights aspects of international project development. Mr. Anderson is former dean of the law school at American University and was the first full-time president of the Environmental Law Institute. He is chairman of the board of the Center for International Environmental Law, former chairman of the American Bar Association's Standing Committee on Environmental Law, and a member of the executive committee of the National Academy of Science's Committee on Science, Technology, and Law. He also served on a congressional study commission created by the Superfund legislation to examine toxic tort recovery for injury from hazardous substances.

Reggie Holley is deputy state director of the Raleigh office for U.S. Senator Elizabeth H. Dole. In this role, Mr. Holley advises the Senator on policy matters, manages the Senator's North Carolina constituent offices in Raleigh, Salisbury, Greenville and Hendersonville, and serves as liaison for the Senate office to the state. He also served as deputy campaign manager for Senator Dole's 2002 Senate campaign. A native of Benson, N.C. and a Carolina graduate, Mr. Holley lives with his wife, Ola M. Lewis, a senior resident superior court judge in the North Carolina 13th judicial district, in Southport. ■

HAIL TO THE CLASS OF 2007!

The 2007 Institute for the Environment Graduation

Pictured from left to right are graduates Blake Jordon and Ryan Bailey.



Class of 2007 graduates and their families.



Pictured from left to right are Associate Director for Educational Programs Greg Gangi and graduate Jennifer Dalrymple.



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**UPCOMING
INSTITUTE EVENTS**

Speech by Michael Mann,
from Penn State University.

Thursday, November 8, 2007.
Brought to UNC by the Department
of Geological Sciences and other
campus sponsors.

Focus the Nation
events throughout campus.

Thursday, January 31, 2008.

2008 UNC Earth Day Speech:
David Orr from Oberlin College.

Tuesday, April 22, 2008.

UNC Institute for the
Environment Commencement.

Sunday, May 11, 2008, 1 p.m.

RECENT INSTITUTE EVENTS

**Environmental Defense leader gives
keynote at Earth Day**



FRED KRUPP

Environmental Defense President Fred Krupp shared his perspective on "Changing Climate, from Chapel Hill to Capitol Hill," during his keynote address to Carolina Earth Day celebrants on April 18, 2007. Krupp leads the national nonprofit organization known for linking science, economics, law and innovative business partnerships to create market-based solutions. The annual Earth Day celebration also included information provided by environmental campus and community groups and businesses and a Community Carbon Reduction Panel Discussion. The events were co-sponsored by the Institute for the Environment, Student Government, the Sustainability Office, the Carolina Environmental Student Alliance and the Center for Sustainable Enterprise.

Pioneer speaks on global warming at UNC



WALLACE BROECKER

Dr. Wallace Broecker, an expert on the role of oceans in global climate change, came to UNC-Chapel Hill last fall to give a talk on "Global Warming: What Should We Do About Fossil Fuel CO₂?" Broecker, who is the Newberry Professor at the Lamont-Doherty Earth Observatory at Columbia University, is considered the world's leading interpreter of the Earth's operation as a biological, chemical and physical system. He is a leading voice in warning of the potential danger of increased greenhouse gases in the Earth's atmosphere, and has pioneered several new approaches to studying the Earth's climate, including the use of carbon and other isotopes to date marine sediments. Broecker received the National Medal of Science in 1996 for his pioneering contributions in understanding chemical changes in the ocean and atmosphere, as well as for his research on global climate change. His visit was sponsored by the Department of Geological Sciences, and co-sponsored by the College of Arts and Sciences, the Department of Marine Sciences and the Carolina Environmental Program (now the UNC Institute for the Environment).

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