

Institute for Environmental Science and Policy

IESP WELCOMES NEW ASSOCIATE DIRECTOR, DAVID WISE, PH.D.

Inside

<i>Letter from the Director</i>	2
<i>Energy Engineering Master's Program</i>	3
<i>Energy Research: Steffen Mueller</i>	3
<i>Current Research: National Children's Study</i>	4
<i>Faculty Focus: Christopher Boyer</i>	5
<i>Faculty Achievements</i>	6
<i>Sustainable Brownfields Grant</i>	6
<i>Upcoming Events</i>	6

Institute for Environmental Science and Policy

School of Public Health West
Room 529
2121 West Taylor Street
(M/C 673)
Chicago, IL 60612-7260
Ph: 312-996-1081

iesp@uic.edu
www.iesp.uic.edu

Staff

Director:
Thomas Theis

Assistant Director,
Business Affairs:
Maggie Jameson

Dr. David H. Wise has accepted the position of Associate Director of the Institute for Environmental Science and Policy as of August 16, 2009.

Professor Wise joined UIC in 2006 as a joint faculty member with Biological Sciences in conjunction with the National Science Foundation Landscape Ecological & Anthropogenic Processes (LEAP) program. He will retain his position with Biological Sciences with increased administrative responsibilities at the Institute.

Professor Wise has an international reputation in field experiments with terrestrial food webs and the ecology and behavior of spiders. He has authored 74 peer-reviewed research publications and a book with Cambridge

University Press entitled *Spiders in Ecological Webs*. Additionally, Professor Wise has presented over one hundred invited research lectures in sixteen countries.

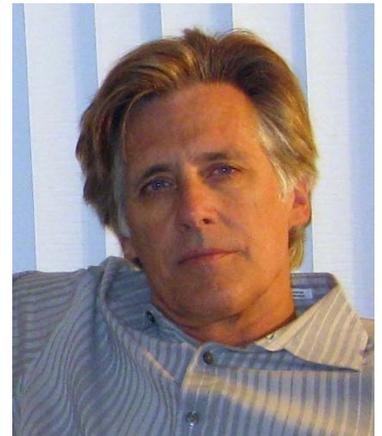
Professor Wise began his studies at Swarthmore College where he earned a B.A. in Zoology. He received his Ph.D. from the University of Michigan. His move to the University of Illinois happened after holding faculty positions in colleges of arts and sciences at the University of New Mexico and the University of Maryland Baltimore County, and in the College of Agriculture at the University of Kentucky.

Professor Wise has been an Alexander von Humboldt Research Fellow at the University of Göttingen and a Fulbright

Scholar at the University of Buenos Aires.

Since arriving at UIC Prof. Wise has taught in the interdisciplinary LEAP doctoral training program and has been active in the Chicago Wilderness alliance. He now serves as Co-chair of the Chicago Wilderness Science Team.

While David is not new to IESP, we hope you will join us in welcoming him to his new position.



Mission Statement

The mission of The Institute for Environmental Science and Policy (IESP) at the University of Illinois at Chicago is to advance multidisciplinary research and scholarship within the environmental and health sciences, engineering, economics, urban planning and the social sciences among UIC's faculty and students, to prepare the next generation of environmental scientists and decision makers, and to transmit workable solutions for environmental problems to the public sector.

FROM THE DIRECTOR



Thomas L. Theis, Director, IESP

“The way humans manage the environment, embodied in our public policy, involves a complex interplay of scientific understanding and technological advances, plus an array of other factors—legal, economic, social, ethical, and perceptual—that collectively reflect the cultural values and biases of society.”

- Thomas Theis

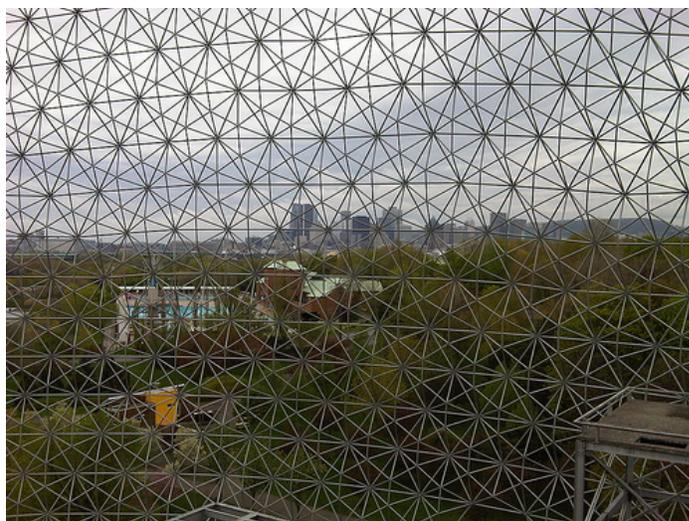
I was at a meeting recently, consisting mostly of environmental professionals, discussing the concept of ecosystem *functions* and the *services* that these functions enable these systems to deliver. Ecosystem functions are familiar to most scientists who do research in this area, and include such aspects as cycling of materials through a system, or following the cascade of energy that drives a system, or understanding the storage and retention of water or other materials within the system. But the concept of ecological services makes some scientists uncomfortable because it incorporates an economic or perhaps commercial component that may confound research directions and most certainly transcends disciplinary boundaries. And yet the services concept has an intuitive appeal to most humans—that our general well-being depends to a significant degree on the “services”, most of them free, that ecological systems provide (examples are supplies of clean air and water, regulation of climate, provisioning of food and fiber, and recreational and ascetic opportunities to name a few), and any contaminants or forces that threaten to alter these services are perceived to threaten our quality of life, perhaps even our very existence.

Because of this connection between risks to human well being associated with the impairment of ecosystem services, the “services” concept is usually seen to be a highly anthropocentric view of human-nature interactions. But ultimately setting a value to an ecological system, like all valuation exercises, is an inherently human undertaking. Indeed in the course of the meeting, Christopher Stone’s popular essay on environmental law from the 1970s, “Should Trees Have Standing?” was brought into the discussion. Stone’s line of thought traced the history of legal “rights” beginning with subsets of humans (gradually broadened to include almost all humans), extended to human-governed institutions (such as corporations), and eventually to human-managed natural systems or subsystems (such as real estate, forests, and agroecosystems).

Of course it isn’t that a forest should or should not be able to muster a defense for itself, but rather whether or not our legal systems should permit humans to make the case for them, even if the spirit of enlightened self-interest motivates the process. And the

point, made by others at different times and places, is that the way humans manage the environment, embodied in our public policy, involves a complex interplay of scientific understanding and technological advances, plus an array of other factors—legal, economic, social, ethical, and perceptual—that collectively reflect the cultural values and biases of society.

IESP is advised by two groups of people, an external board of professionals who are engaged in the practice of environmental management, and an internal board of faculty and staff at UIC who pursue scholarly interests on the environment. The membership of both consists of people with diverse backgrounds, experiences, and expertise that span the range of relevant disciplines that contribute to our understanding and management of the environment in which we live. Our most recent addition to the internal advisory committee is Professor Christopher Boyer of UIC’s Department of History, who is profiled in this issue of the newsletter. Chris’ interests include the complex issues surrounding deforestation and land reform in Mexico and Latin America.



New Professional Master's Program in Energy Engineering

Due to the recent hike in oil and gas prices and growing concern about global warming and dwindling natural resources, interest in energy efficiency is at its highest level since Jimmy Carter turned down the thermostat and donned a cardigan sweater in the 1970s. So the timing for UIC's new Master's program focused on designing for energy efficiency couldn't be better. Forty students are now enrolled in the Master's of Energy Engineering program, which is part of the Department of Mechanical and Industrial Engineering.

In coming up with the idea to develop the program, "we recognized there was a gap," says Professor William Worek, head of the Department of Mechanical and Industrial Engineering. "There was nothing like this." The multi-faceted program goes far beyond a traditional engineering curriculum, with courses in HVAC design, power generation, basics of energy engineering and auditing, engines, combined heat and power, advanced and renewable energy engineering, energy-efficient design, and management of engineering projects. "Interest in the energy area, as well as waste, productivity and other related issues, is high, and we are expanding where we want to be in this system," says Worek. "Our expertise in the industrial sector, combined heat and power [also known as cogeneration, a system that generates electricity and thermal energy in an integrated system], and economics is probably very hard to match."

Students are mainly professionals who are working during the day, so the courses are offered in the evening. "We thought a two-year program was too rigid" given the students' busy schedules, Worek says, so the students can choose to complete the program in two, three or four years. The degree is designed to give students broad knowledge of energy efficiency that they can then apply in important industry and management positions. In terms of possibilities for expanding the program, several additional course options may be added soon in order to provide students with more choice and flexibility. Faculty are talking with various companies about holding courses at company sites.

For more information about the program, please contact Bill Ryan at 630-561-4448 or e-mail at wryan@uic.edu

Focus on: Steffen Mueller, Senior Research Economist at IESP and Energy Resources Center

Steffen Mueller received his PhD in 2004 as a student in IESP's Integrative Graduate Education and Research Traineeship Environmental Manufacturing Management (EvMM) program, a doctoral program with a goal of exploring innovative solutions to industrial environmental problems, making use of the tools of systems analysis, product and process redesign, risk analysis and life-cycle assessment in the furtherance of the emerging concepts of environmental sustainability. Since graduating, he has been a researcher with UIC's Energy Resources Center, specializing in biofuels and bioenergy research. So with his new joint appointment with IESP, he has come full circle.

"Energy is a big part of sustainability, so it makes sense for me to be affiliated with IESP as a broader part of the sustainability mission," Mueller notes. "IESP researchers focus on areas like agriculture and water, both of which have a critical nexus with energy research. The IESP affiliation increases my ability to meet people working in these related fields and to make additional connections."

Mueller's research focuses on a number of different areas. He analyzes the sustainability of corn ethanol production, including the global warming impact of different types of ethanol production pathways and land use changes associated with the production of corn ethanol. And he looks at energy production from agricultural waste, specifically the use of corn stalks that are left in the field after harvesting as biomass feedstock to generate steam and electricity.

Mueller notes that he and his colleague Ken Copenhaver are also evaluating the use of satellite imagery to help Carbon Trading Organizations verify compliance with agricultural protocols undertaken for agricultural soil carbon offsets; members of Carbon Trading Organizations (such as the Chicago Climate Exchange) that commit to reducing their greenhouse gas emissions can offset their emissions by following certain practices

that will reduce emissions.

How did he become interested in these areas? Prior to starting in the EvMM program, he worked in the energy field in the private sector, and continued that work while taking classes in the evening. At that time, he says, the debate began over the contribution of ethanol to greenhouse gas emissions, and he became involved in this issue. This field of research "has really taken off" in the last two or three years, he notes. Because it is understood that ethanol production has both environmental benefits and costs, there is a "need to look at detailed production pathways - to assess impacts of different technologies," he explains.

Mueller says that when he began the EvMM program, there was little interest in energy both on campus and in general. "But EvMM did recognize that energy policy and technology and regulation were important," he says. It is also very interdisciplinary, requiring both a technical understanding of energy generation as well as an understanding of the complex regulatory aspects. "So it is a special area, and EvMM was ahead of its time in both recognizing its importance prior to the current energy crisis and in seeing it as interdisciplinary."

Funders for Mueller's research are diverse, ranging from agencies like EPA, the Department of Energy and NASA to private industry and not-for-profits.



Arden Handler Leads UIC Efforts on National Children's Study

Anyone who follows children's environmental health has noticed an increase in recent studies showing that a person's early, even *in utero*, environmental exposures may have an effect on their health as a child and even as an adult. For example, recent studies have linked early exposure to bisphenol-a, which is found in many plastic products, to obesity and reproductive problems later in life.

This study "is a big deal," says Handler. "An amazing number of variables are being studied. For example, there will be air sampling in a child's home, school, day care - everywhere they spend time." It is also unique, Handler notes, in being longitudinal - that is, following children over the entire course of their childhoods and into early adulthood. By contrast, "most surveillance of children done in this country is cross-sectional, and looks at someone once," she says.

Handler says that the very establishment of the study represents an acknowledgement of these types of effects over time, as embodied by conceptual models such as the 'life course perspective.' "We used to think that someone's health at age three had nothing to do with their health at eight or 15," she says. The National Children's Study "is

that fetal health affects infant health affects child health affects adult health, and that adult health in turn affects fetal health. It's all connected."

The study is a partnership of numerous federal agencies, universities, medical centers, and other organizations. The Children's Health Act of 2000 authorized the National Institute of Child Health



and Human Development, in collaboration with the CDC, EPA, and other agencies, to develop and implement the study. Some questions the study aims to answer include: Can very early exposure to some allergens help prevent asthma in children? How do genes and the environment interact to promote or prevent violent behavior in teenagers? Are lack of exercise and poor diet the only reasons why many children are overweight? Do infections impact de-

velopmental progress, asthma, obesity, and heart disease? How do city and neighborhood planning and construction encourage or discourage injuries? Working hypotheses have been developed, and are likely to be refined as the research yields preliminary results.

Handler notes that UIC, Northwestern University and the University of Chicago were all interested in applying for a grant to participate in the project, "so we went in as a consortium," she says - successfully. The "NCS-Greater Chicago Study Center" includes UIC's School of Public Health and College of Medicine, the Institute for Healthcare Studies at Northwestern University's Feinberg School of Medicine (which is the lead entity of the consortium, with Jane Holl as PI), and the University of Chicago's Department of Pediatrics of the Pritzker School of Medicine (Daniel Johnson, PI) and the National Opinion Research Center. This consortium is responsible for leading the NCS study in three contiguous coun-

ties: Cook, Will and DuPage.

According to Handler, the study is now in the planning stages in Cook and DuPage counties. The researchers have met with community groups, organized community advisory boards, and are analyzing birth and census data in order to identify a representative sample of neighborhood areas to include. The researchers expect to be in the field in 2011.

Christopher Boyer, Associate Professor of History and Latin American and Latino Studies



Christopher Boyer,
Associate Professor

Would someone concerned about climate change look to UIC's Department of History for information about this critical environmental issue? Absolutely. Mexico has the fifth-highest rate of deforestation in the world – and Christopher Boyer, Associate Professor of History and Latin American and Latino Studies, carries out research on the history of forest management in Mexico that helps shed light on how they are managed both yesterday and today. And those management methods affect both the environment and the indigenous Mexican population.

A UIC professor since 2001, Boyer published his first book, *Becoming Campesinos: Politics, Identity and Agrarian Struggle in Postrevolutionary Michoacán*, in 2003. In writing that book, which examined land reform in western Mexico, he realized that researchers knew a lot more about the political struggles of people to get their land back after the Mexican Revolution of 1910 than about how

they used the land they were given. However, land given out after the revolution was both agricultural and forested – and those who lived in the forests had to contend with loggers as well as government bureaucracies in charge of managing the woods. “So there was a story to be told,” Boyer says.

He is now finishing a book about the relationship between rural communities – many indigenous – and foresters and others who are in charge of managing Mexican forests. Boyer explains that for much of the twentieth century, community-based forestry was strongly regulated and development plans were set up – some of which took the peasants into account and some of which didn't. “This has often led to conflict between peasants and those who manage the forests,” he says.

Boyer identifies several lessons that this aspect of Mexican environmental history holds for the Mexico of the present. In comparative terms, Boyer notes that in India, long-term exposure to scientific forest management plans “led many people to be self-policing – to guard against poor use of the forests. Yet in Mexico, a conservation ethos hasn't really developed because of governance issues and the conflicted relationship between the government and the people.” So history matters, he says. As Mexican policymakers search for a solution for deforestation, they can't pretend they're starting from scratch; “People remember history.” Boyer says the trend now is to offer payments to rural communities that agree not to cut down the trees.

And although the U.S. and Mexico have very different histories, Boyer sees some parallels there, too. In Mexico, he notes, more people live in the woods and therefore control its use. That is mainly not the case in the U.S., he says, except for New England and a few other small areas. “But there is an affinity between the two countries in terms of efforts to get people to collaborate” to protect forest land, he says. Boyer also teaches a class on environmental history, “Environmental History of the Americas.” It is offered to undergraduates once per year, and focuses primarily on the U.S. and Latin America, also touching on Canada. Boyer's work certainly dovetails with the recent interest in global warming and deforestation. He notes that while people may be interested in his earlier work on Mexican land reform, “all they want to talk about now is my new research.”



Faculty Awards and Appointments

Mary Ashley, Professor of Biological Sciences, received this year's UIC Graduate Mentoring Award.

Michael Iversen, Adjunct Assistant Professor of Urban Planning and Policy and LEAP doctoral student, gave two presentations recently: "Urbanized ecosystems: Conceptualization to proof-of-concept. Poster session," presented at the National Science Foundation 2009 IGERT Principal Investigators Meeting in Alexandria, VA, and "The ecology of design," at Wild Things 2009: a Chicago Wilderness Conference for People and Nature, at UIC. He also created and organized Green Tuesdays in the Village, an annual public lecture series on environmental topics and issues specifically relevant to the Village of Oak Park. This year's theme, Resettling Oak Park: a Self-Sufficient Village, was a four-part weekly series on approaches toward food, energy, and community self-sufficiency that was held in April.

David Wise, Professor of Biological Sciences, has been appointed Co-Chair of the Chicago Wilderness Science Team. He has also been appointed to the advisory board of Chicago Wilderness Magazine.

Moira Zellner, IESP and Urban Planning and Policy professor, has received two grants for interdisciplinary research from the College of Liberal Arts and Sciences.

IESP Receives Sustainable Brownfields Grant

What does it mean to develop a brownfield, or contaminated site, in a sustainable way? How might that differ from cleaning up a site and then building a conventional office park? And what might be the benefits of undertaking a green development in terms of, say, reducing pollution, increasing property values, or improving public health?

A new five-year, \$750,000 grant from the U.S. Environmental Protection Agency to IESP aims to provide some answers to these questions. The project involves seven researchers from three campuses: Susan Kaplan and Tom Theis of IESP, Serap Erdal of UIC's School of Public Health, and Joshua Linn of UIC's Economics department; economist John Braden and pathobiologist Marilyn Ruiz O'Hara of the University of Illinois at Urbana-Champaign; and Christopher De Sousa of the Department of Geography and Urban Studies Program at the University of Wisconsin-Milwaukee. Project technical advisors are St. Louis-based architect Dan Hellmuth, who specializes in sustainable design, and Minneapolis-based green urban redevelopment consultant Michael Krause.

While environmental regulations originally focused on setting limits for emissions of different types of pollutants and provided for penalties for those who didn't comply, sustainable development takes a proactive, holistic approach to pollution prevention, aiming to be less polluting and more environmentally beneficial from the start. It involves considering a wider array of costs and benefits than have traditionally been taken into account - ultimately leading to potentially broader benefits to the community.

Still, while some well-regarded examples of sustainable redevelopment of brownfields exist around the country, and while green building and other elements of sustainable redevelopment are becoming better-known among some professional sectors, challenges to more widespread awareness and acceptance of sustainable redevelopment remain. These include questions about whether these techniques are a cost-effective alternative to conventional building practices, and limited awareness of both the concept and value of sustainable redevelopment of brownfields by municipalities, planners, developers and the public. The project is beginning with Professor De Sousa identifying and analyzing elements of sustainable development at "green" brownfields sites around the country, including policies and practices that can lead to such sites being successfully carried out and "lessons learned" in the process. Researchers will also carry out life-cycle analysis of sustainable components of such projects, and work to measure an array of environmental, economic, and community health benefits of redeveloping a brownfield in a sustainable manner.

In addition to the research, the project will include technical assistance consisting of a website highlighting best management practices for sustainable redevelopment of brownfield sites, an easy-to-read guidebook, and a workshop.



2009
External
Advisory
Board
Meeting:
September
29-30