



Green Ink:

The Newsletter of the Environmental Science and Policy Program at Michigan State University

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(photo courtesy of stock exchange photos)

New Faces at ESPP and MSU

ESPP Welcomes Assistant Professors

Dr. Kendra Cheruvilil, Dr. Jay Lennon and Dr. David DiCarlo

ESPP would like to welcome Dr. Kendra Cheruvilil, an Assistant Professor jointly appointed in the Department of Fisheries and Wildlife and the Lyman Briggs School of Science.

Cheruvilil is an aquatic ecologist whose research interests include the role of aquatic plants in lake foodwebs, the effects of exotic species on lake foodwebs, and the role of the landscape in structuring lake biology and chemistry.

Currently, Cheruvilil is conducting an economic evaluation of Michigan lakes to determine whether a lake's water quality can benefit the economy. Cheruvilil is using hedonic regression models to demonstrate the monetary importance of good lake water quality to state legislators and stakeholders. She works with the Water Resources Institute and Dr. Dan Kramer.



"It's hard to put a value on an aquatic resource," said Cheruvilil, "but if you're able to put it into dollar amounts, then that's something that makes sense to people."

Cheruvilil decided on MSU because of the possibilities of the joint appointment. She explained that the Lyman Briggs School places a lot of emphasis on good teaching and undergraduate student learning and the Department of Fisheries and Wildlife provides a perfect "research home" for her, so it was the best of both worlds. "Both programs were a really nice fit for me," said Cheruvilil.

ESPP would also like to welcome Dr. Jay Lennon, an Assistant Professor jointly appointed in the Department of Microbiology and Molecular Genetics and the Kellogg Biological Station (KBS).

Before coming to MSU in August 2006, Lennon was at Brown University in Providence, R.I. There he studied marine microbial ecology by looking at photosynthetic bacteria and the viruses that infect and kill them.

"There can be upwards of ten million viruses per one milliliter of water," said Lennon. "It has been suggested that viruses can influence global biogeochemical cycles, but in reality, we don't really know what kinds of impacts they have on biodiversity and ecosystem processes."

Lennon plans to continue his research at MSU to address the broader questions involved with understanding spatial and temporal patterns of microbial diversity and how they influence ecosystem processes.

Currently, Lennon co-teaches a class on campus in microbial ecology and a field class in biogeochemistry at KBS. Lennon said that he came to MSU because the school has a really good reputation for ecology, biodiversity and microbiology. "I felt pretty lucky to have an offer to come here," said Lennon.



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From the Editor

Welcome to the third newsletter of the Environmental Science and Policy Program (ESPP) at MSU.



My name is Jessica Knoblauch, and I'm the graduate assistant news writer for ESPP. This issue we added a special section highlighting developments in climate change research at MSU.

As always, we welcome comments and suggestions on how to improve our communication with you. Please feel free to email me at knoblau7@msu.edu

And please visit our Web site at www.environment.msu.edu for the latest environmental news updates.

(Please see pg. 10 for the article on Dr. David DiCarlo)

ESPP News

ESPP Student Wins National Science Foundation Grant

Stephen Aldrich, a doctoral student in the Department of Geography and ESPP, recently received a dissertation improvement grant from the National Science Foundation (NSF).

Aldrich's dissertation research focuses on the landless movements in the Brazilian Amazon and their association with deforestation. The landless movements involve landless rural workers who occupy lands they claim are unproductive to force the government to redistribute the land. These movements have popular support in Brazil because many people believe much of the land in the Amazon is either poorly used or not used at all, said Aldrich. Examples of poorly used land in the Amazon include large ranches (often exceeding 8,000 hectares) where only very small cattle herds are kept, or land grants made originally for extractive activities which are no longer undertaken.



The people involved in the movements are often from urban areas, have no land or jobs, and want to be able to support themselves. They try to force reform by occupying the land in the hope that such action will cause the governmental agency in charge of land reform to act. If they can prove the land is not being used, the government will redistribute the land.

The unused land is often owned by private land owners who received huge grants of land from the government through land speculation, development projects and even political favors. Aldrich hypothesizes that these private land owners cut down forests on their land to prove the land is being used and thereby prevent a governmental redistribution.

Aldrich will map deforestation patterns from 1984 to 2006 using Landsat imagery, which supplies high resolution visible and infrared information, and geographic information systems (GIS). Using these technologies, Aldrich will create regression models that will illuminate the causes of deforestation.

Next, Aldrich plans to spend a month during the summer in Brazil conducting interviews with ranch owners concerning deforestation. He explains that the maps can only tell part of the story and that it is necessary to talk to the land owners in Brazil to know the reasons behind the data. "Nobody has looked at why land owners make these decisions," said Aldrich. "It's important that their story be uncovered too."

ESPP Faculty Member Named Robert Wood Johnson Health and Society Scholar

Dr. Sabrina McCormick was recently named a Robert Wood Johnson Health and Society Scholar. The scholar program is designed to build the nation's capacity for research, leadership and action to address the broad range of factors affecting the health of human populations. It is considered one of the most prestigious awards made to young researchers in the health sciences.

McCormick plans to research the impact that climate change will have on health. She will create an interdisciplinary program that will address health issues such as heat-related illnesses as asthma or heat stroke. McCormick will also study how climate change will exacerbate existing health inequalities in poor communities.



"This program is such an ideal fit because it allows me to begin to investigate a topic that is a new focus but that also fits into my broader expertise and framework," said McCormick. McCormick will be at the University of Pennsylvania for the two-year program.

McCormick is jointly appointed in the Department of Sociology and ESPP. Her research interests involve the intersections between health and environment, environmental social movements, the role of science in politics, and the development of participatory institutions around environmental decision-making. She is the director of the films *Damming Brazil* and *No Family History*. She was also a fellow of the United Nations Global Environmental Outlook Project.

ESPP News

ESPP Student Studies Complex Systems

Pariwate “Perry” Varnakovida, a Ph.D. student in the Department of Geography and ESPP, recently attended a class at Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts. His class, which was partially funded by ESPP, taught him the skills to map the urbanization of the Earth through the study of complex systems, network architectures and evolutionary processes.

“I decided to take the class to help better understand the complex system of humans and the environment,” said Varnakovida. Understanding complex systems is key to Varnakovida’s research, which is concentrated around urban growth modeling and landscape prediction in Thailand.

“My research focuses on the factors that go into urban expansion,” said Varnakovida. “You have to look at physical parameters as well as social parameters when looking at urban expansion.” This included taking into account factors such as local economics, migration and household formation, elevation, and the proximity of the area to roads.



During the past two summers, Varnakovida has collected data in Thailand as part of the Nang Rong Project. A relatively poor farming district, Nang Rong has experienced rapid growth and development over the past 20 years, making it an ideal location for understanding changes in social networks, human migration, agricultural practices, land use and land cover, and human population-environment interactions.

The goal of the Nang Rong research is to contribute to a better understanding of complex issues of a society in transition. Varnakovida explained that a better understanding of the pattern and process of urban expansion leads to more efficient planning and will guide more systematic and effective resource management and preservation plans. “Being able to advise communities on something such as where to build new houses so as to avoid a flood plain helps areas save money for the community,” said Varnakovida.

While in Thailand, Varnakovida collected data about the area from municipal offices and surveyed houses and buildings to document attributes such as the size of the structures and the number of floors in each house or building. The data were combined with base data including geographic and social coverages derived from social surveys, Thai government maps, aerial photography and satellite imagery. Using the time series of classified Landsat images, aerial images, and a database of the village settlements, a temporal geographic information system (GIS) was created to map the landscape and enhanced through classification of the satellite imagery.

Varnakovida said that one of the most useful aspects of the class was learning how to use tools that analyze complex systems. “The class was very helpful,” said Varnakovida. He added that because there were people from all over, from Belgium to England to Korea, that he was able to learn more than he would in a less diverse class. “It was a good group to be connected to.”

ESPP Specialization Student Wins of Detroit Press Club Award



Congratulations to ESPP specialization student Richard Grogan, a Ph.D. student in the Media and Information Studies program, on his 2007 Michigan Excellence in Journalism award from the Detroit Press Club Foundation. Grogan won first place in the Student Expression of Opinion category for an essay he wrote entitled “Life and Times of a Biodieseler,” which chronicled his experiences as an owner of a biodiesel-fueled vehicle. His essay appeared in the fall 2006 issue of MSU’s EJ Magazine and can be viewed at <http://www.ejmagazine.com/2006b/biodieseler.htm>

For breaking ESPP news, please visit <http://www.environment.msu.edu/news/news.html>.

Special Section on Climate Change

The existence of climate change, and humans' role in causing it, have become increasingly clear. Recent reports by the Intergovernmental Panel on Climate Change (IPCC), an internationally-recognized group of scientists, describe climate changes worldwide and explain them as very likely to have anthropogenic causes. These shifts in climate mean multiple changes in natural and human systems. Water resources, ecosystems, human health, and virtually all areas will be affected directly or indirectly.

MSU researchers are responding to the challenge posed by climate change in multiple ways. Looking globally and regionally, they are clarifying understanding of climatic processes and their impacts, and identifying ways to mitigate the degree of climate change and adapt to changed circumstances.

This special section of the newsletter highlights some of the groups and individuals working on climate change. For a complete listing of MSU climate change research, please see <http://climatechange.msu.edu>.

Climate Change Research at MSU: Groups

The Pileus Project

The Pileus Project seeks to help decision makers incorporate current and potential climate and climate variability information into decision-making processes. The project focuses on two leading industries in the Great Lakes region: agriculture and tourism. Pileus is funded by the Environmental Protection Agency and MSU's Environmental Research Initiative.

Researchers are working with tart cherry growers to determine the effect of climate on Michigan's tart cherry industry. Michigan is the world's largest producer of tart cherries, and growers are concerned about warmer temperatures causing spring freeze events which damage crops.



Growers are actively involved in the research process. They interact regularly with researchers, sharing their knowledge and expertise, and, in some cases, provide yield data from their crops. "The growers have served as an integral part of the project," says Dr. Julie Winkler, one of the principal investigators for Pileus.

Pileus also assists decision makers in the tourism industry. Future climate change may have a large impact on Michigan's tourism industry, especially winter recreation. Warmer winters could adversely impact many winter recreational sports such as snowmobiling and cross country skiing, as these sports have not traditionally been supported using machine-made snow. On the other hand, tourism industries such as golf and camping may benefit from warmer temperatures during spring and fall.

Winkler emphasizes that the goal of the project is to achieve a better understanding of how climate may impact people and industry. "We can provide the decision makers with informational tools, but ultimately they have to make the decision."

Bio Economy Initiative



Michigan is working to build an expanded bio-based economy sector that connects the strength of its agricultural, forest and natural resources research with the strengths of its industrial sector. This initiative will help meet the growing demand for renewable resources of materials, chemicals and energy in products, processes and packaging.

In 2006, MSU created the Office of Bio-Based Technologies to help achieve this initiative, directed by Dr. Steven Pueppke. Associate Director Dr. Bruce Dale said the purpose of the office is to promote all areas of bio-economy research on campus. "We want to serve as a clearinghouse of information for those who are working on bio-based technologies," said Dale. He encourages anyone wishing to become involved in bio-economy research to stop by the office.

Another objective is to foster connections between the public and private sector. Some aspects of Michigan's economy have already been affected by bio-based technology. For example, corn ethanol plants are developing across the region, helping to build the rural economy and provide jobs. The bio-based initiative will position MSU as a university that is able to bring bio-based technology from the laboratory to the marketplace. "We want to be able to recognize and respond to these types of opportunities in the field of bio-based technologies," said Dale.

Climate Change Research at MSU: Groups

Kellogg Biological Station Long-Term Ecological Research Site

The Kellogg Biological Station (KBS) Long-Term Ecological Research (LTER) site is part of a national LTER Network established by the National Science Foundation (NSF). At these sites, long-term research provides a better understanding of ecological phenomena in both natural and managed ecosystems. The KBS site represents intensive row-crop agriculture and is headed by principal investigator Dr. Phil Robertson, a professor jointly appointed in the Department of Crop and Soil Sciences and the Kellogg Biological Station. Over 40 MSU faculty from 15 departments and 5 colleges participate in the project, which was established in 1988.

Agriculture, which covers a significant portion of the earth's land surface, greatly impacts the earth's climate as it is one of the main producers of several greenhouse gases. For example, nitrogen and methane are released into the air through waste production and fertilizer use. However, agriculture can also help slow down global warming through the storage of carbon in soil; this is achieved by such management techniques as reduced tillage and the use of cover crops. Agricultural managers can also abate the increase of greenhouse gases other than carbon dioxide in the atmosphere through better fertilizer management.

The same management techniques can both mitigate and magnify the problem of global warming, which makes the practice of picking the "better" technique that much more difficult. For example, no-till farming increases the amount of carbon that is sequestered in the crop fields, which reduces the overall amount of carbon released into the atmosphere. However, no-till farming also increases the amount of chemicals applied to the fields. Since one of the purposes of tilling is to remove weeds, agricultural managers who practice no-till farming generally have to apply more pesticides and fertilizers to their crops, thereby increasing the amount of nitrogen released into the atmosphere. "There are trade-offs between different systems," said Sara Parr, a Ph.D. student in the Department of Crop and Soil Sciences, ESPP student, and member of the LTER team. "Therefore, you have to look at the whole system to determine which techniques are best."

Further research will be conducted by the LTER team to determine how management can change the impact of agriculture on global warming, how changes in management affect the economics of the farming system and how policy instruments can be designed to encourage more environmentally friendly farming practices.



Center for Global Change and Earth Observations

While climate change is clearly due to both human and natural systems processes, it is still unclear what humans should do to adapt to climate change. The Center for Global Change and Earth Observations (CGCEO) is attempting to answer these questions through interdisciplinary research that uses the tools of both the social and bio-physical sciences.

Currently, members of the Center are studying how land use and changes in land cover, the physical material at the surface of the Earth, affect climate. "Once land use or land cover changes, its physical attributes such as the ability to regulate water and nutrients or sequester carbon will change as well," said director of the center Dr. Jiaquo Qi. "These attributes are the major human-induced forces of climate change."



The Center is conducting research to quantify land use and land cover changes using satellite observations and model linkages to regional climate. Once the links are better understood, decision makers can develop a strategy to mitigate and adapt to climate change. "Once climate change happens, it impacts human decisions on what to do with their land. Our goal is to help foster better adaptation and mitigation strategies," said Qi.

Climate Change Research at MSU: People

Shades of Gray: Climate Change's Mixed Effects on the Tourism Industry



When people think of climate change's consequences, they generally have negative expectations: life-threatening heat waves, droughts and wildfires, more frequent storms, rising sea levels and the accelerated extinction of species. But when it comes to the effects of climate change, the issue isn't just black and white.

According to Dr. Robert Richardson, an Assistant Professor in the Department of Community, Agriculture, Recreation, and Resource Studies (CARRS), climate change can present positive opportunities as well, especially in the tourism industry.

“You can get very different pictures of climate change's effects just by looking at different areas,” said Richardson, who has studied the economic impacts of climate change in the United States and Central America.

Richardson's dissertation research focused specifically on the economic impacts of climate change in Rocky Mountain National Park. To determine the effects that climate change will have on that area, Richardson surveyed park visitors and asked them whether they would visit the park more often, less often, or later in the year, depending on various climate scenarios.

The survey's results concluded that park visitation would increase anywhere from nine to 12 percent due to predicted changes in climate. Richardson says that the visitation increase is due to warmer temperatures, which means longer summer seasons and milder winters. “It makes it a lot easier to visit when the roads and trails are snow-free,” he said.



However, Richardson came to a very different conclusion when looking at the economic impact of climate change on Belize, a tourism-dependent country where people often vacation to go snorkeling or diving. The primary attraction of these activities is to observe underwater life around coral reefs; however, increased water temperatures are causing coral bleaching, which is slowly killing the reefs. Rising sea levels also threaten the viability of coastal and island tourism.

Richardson worries that without the reefs, tourism will decrease. “This sector is very vulnerable to climate change,” he said. To determine whether tourism will decline due to coral bleaching, Richardson has conducted a survey of tourism providers in Belize to assess the vulnerability of the local tourism industry.

Whether climate change effects will be positive or negative, Richardson says that preparations for climate change must start now. “If park visitation is expected to increase, park managers and urban planners need to plan for this increase in some way, whether it's by installing mass transit systems or building more hotels,” said Richardson. The same goes for areas in which tourism is expected to decline. Right now, 16 percent of Belize's GDP comes from tourism. If that number is expected to fall, changes will need to be made for the country to survive economically. “The hope is that this research will send a signal to the government that they need to adapt to this problem now and promote different types of tourism,” said Richardson.

In 2003, Dr. Richardson spoke at the 1st International Conference on Climate Change and Tourism in Tunisia. He is presently involved in a project that examines the role of sustainable tourism development in poverty reduction strategies in Zambia.

Environmental Science and Policy Program

environment.msu.edu
phone: 517.432.8296
fax: 517.432.8830

Michigan State University
274 Giltner Hall
East Lansing, MI 48824

Climate Change Research at MSU: People

Knowledge is Power: ESPP Student Educates the Next Generation on Climate Change

Sara Parr, a Ph.D. student in the Department of Crop and Soil Sciences and ESPP, is one of eight fellows at Kellogg Biological Station (KBS) participating in a project designed to help arm young students with the tools and knowledge they will need to make informed decisions about climate change.



The KBS project is part of a national network of teaching sites funded by the National Science Foundation (NSF). The Graduate Teaching Fellows in the K-12 Classroom project began in 2006 and teams KBS graduate students pursuing advanced degrees in ecology with K-12 science teachers in rural districts near KBS.

One project goal is to improve the graduate students' communication skills through interactions with K-12 teachers. "If you're going to be informing people, especially those who don't have a scientific background, you need to be able to communicate scientific ideas at a level that people can understand," said Parr.

Another goal is to enrich science instruction in K-12 schools. During her two days a week at Plainwell Community Schools, Parr helps supplement the curriculum by providing additional knowledge and expertise to the classroom. "The teachers are very appreciative [of the fellows] because it allows them to plan activities that they normally wouldn't have the time or scientific expertise to do," said Parr.



Climate change is among the topics Parr teaches in both her middle and high school classes. Though most of the students "know the gist" of what climate change is all about, one of the biggest struggles of teaching it is to get the kids to see the problem on a local scale. "Most of these kids were born in the 90s, so they've basically grown up hearing about climate change," explained Parr. "But when they think about climate change they're mostly thinking about polar bears, so bringing the issue to Michigan can be a challenge."

Parr helps overcome that challenge by pointing out to students the local effects of climate change. One example she uses is the ski resorts in Michigan, whose business has been suffering due to a lack of snow. Since a lot of students ski over winter break, many of them see the effects of climate change first-hand without even realizing it. "Once you point it out, they get it," said Parr.

Another issue with teaching climate change is the inherent interdisciplinarity of the issue. "[As a teacher], you have to deal with the fact that even if you're teaching about the scientific aspects of climate change, you have to teach a lot of other things so that the students can understand the whole issue," said Parr.

In addition to teaching the students, the fellows will be holding a workshop in April to help teachers get more information and ideas on how to teach this issue. "It's useful to arm the teachers with enough knowledge that they have a better handle on the issue," said Parr.

Parr said that the experience has helped her to learn more about climate change and how to better explain it. "Students always want to know why something happens," she said. "Explaining the "why" forces you to think about things and re-educate yourself."

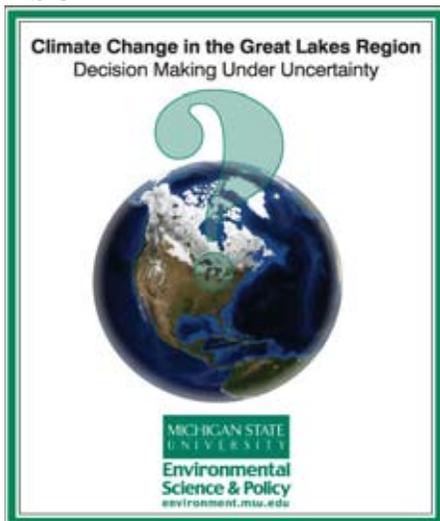
Environmental Science and Policy Program

environment.msu.edu
phone: 517.432.8296
fax: 517.432.8830

Michigan State University
274 Giltner Hall
East Lansing, MI 48824

Climate Change Research at MSU

Climate Change in the Great Lakes Region: International Symposium on Climate Change at MSU



More than 150 people descended on MSU's Kellogg Center this March to hear from some of the world's most respected experts on climate change and decision making. ESPP, with partial funding from the National Science Foundation (NSF), hosted the two-day symposium, entitled "Climate Change in the Great Lakes Region: Decision Making Under Uncertainty." Featuring 12 speakers from the United States and Canada, the event focused on how climate change could affect weather, agriculture, wildlife, and natural features of the Great Lakes Region and the challenges facing decision makers who must adapt to those changes. Speakers also highlighted research on how humans cope with uncertainty, and how that research applies to climate-related decisions.

The symposium was particularly successful in helping university researchers connect with decision makers—one of ESPP's foremost goals. Each of the three speaker sessions was followed by a multidisciplinary discussion panel. The panelists, drawn from nonprofit organizations, business interests, and local and state government, helped focus the discussion. The audience included professors and students from MSU and other nearby universities, as well as representatives from environmental organizations, businesses and federal

agencies. At the end of each day, attendees participated in facilitated conversations. Conversations were even more engrossing at a poster session and reception held on the first evening of the event.

The following participants were winners in the poster competition:

Best Overall Poster - Sara Parr, Andrew T. Corbin and G. Phillip Robertson (Kellogg Biological Station and Dept. of Crop and Soil Sciences, MSU) "Fluxes of Nitrous Oxide and Methane and Soil Carbon Change in Ten Ecosystems Along a Management Intensity Gradient in SW Michigan"

Best Student Poster - Catalina Oaida and Natalia Andronova (Dept. of Atmospheric Oceanic and Space Sciences, University of Michigan) "Detecting Climate Change in the Great Lakes"

Best Faculty Poster - Philip Myers (Museum of Zoology and Dept. of Ecology and Evolutionary Biology, University of Michigan), Barbara Lundrigan (MSU Museum and Dept. of Zoology) and Susan Hoffman (Dept. of Zoology, Miami University) "Climate-induced Changes in the Small Mammal Communities of the Northern Great Lakes"

ESPP is producing a white paper that will summarize the key points made during the two days. It will be posted to the symposium website (www.environment.msu.edu/climatechange). Slides from the speakers' talks are also posted at that site.

Web site on climate change work at MSU:

<http://climatechange.msu.edu>

A new website offers a comprehensive listing of diverse MSU work on climate change. The website features:

Faculty members. Faculty work on all aspects of climate including climatic processes, ecosystem effects, and policies for mitigation and adaptation.

Projects, programs, and centers. These are concentrations of faculty members working on specific climate-change-related topics.

Campus operations and other initiatives. MSU is working to reduce its impact on climate change; this involves reaching members of the university community and affecting the technical infrastructure. These are the groups that make it happen.

Courses. Courses in multiple departments have content addressing climate change.

Events. Seminars and other events provide forums for discussing climate change.

Other resources. These are Michigan-specific materials on climate change and other resources developed by MSU staff, students, and faculty.

The Web site is continually being updated and we welcome your feedback and information to include. Please send it to Maya Fischhoff (mayaef@msu.edu) or Jeanne Bisanz (bisanz@msu.edu)

ESPP Faculty Member Awarded Chauncey Starr Award



Faculty member Dr. Joseph Arvai recently received the Society for Risk Analysis' 2006 Chauncey Starr Award. Named for one of the founders of the application of risk analysis to environmental and technology policy, the award is given each year to recognize an outstanding young risk analyst.

Arvai is an Assistant Professor in the Department of Community, Agriculture, Recreation and Resource Studies (CARRS) and ESPP. He was one of the first two hires made by ESPP.

Arvai spoke at the annual meeting of the American Association for the Advancement of Science (AAAS) in mid-February. He joined other scientists at a symposium to discuss how people evaluate risks and make decisions based on those evaluations. Arvai also participated in a press conference at AAAS entitled "When Less is More: Affect, Preferences, and Low- and High-Risk Options." Since the press conference, Arvai has been interviewed by news media outlets including Science Daily, KCBS News, German Public Radio, the Australian Broadcasting Corporation and the BBC.

ESPP Students Win Honorable Mention in AAAS Student Poster Competition

Congratulations to ESPP doctoral students David Bidwell and Rachael Shwom, who recently received an honorable mention in the 2007 American Association for the Advancement of Science (AAAS) Student Poster Competition. Their poster, entitled "Deliberation Lite: How Does Feedback Influence Public Climate Change Policy Support?" was presented at the AAAS annual meeting in February.

The poster is based on Bidwell's and Shwom's research through a National Science Foundation (NSF) grant on public attitudes towards climate change mitigation policies. Dr. Tom Dietz, principal investigator on the NSF grant, and Dr. Amy Dan, a post-doctoral associate on the grant, were also co-authors on the poster.

"Finding workable policies to reduce human-induced climate change will require broad public support," said Bidwell. "For these kinds of large-scale policy issues, it is important to have reliable methods for gauging public preferences."

One-time mail or phone surveys, or polls, have traditionally been used to assess levels of public support for these policies. The project researchers wanted to determine whether different types of polling methods, such as one-time polling (the traditional method) and deliberative polling, affect responses to survey questions.

Many scholars have recommended deliberation, a process where people share information and talk to each other about what should be done about a problem, as an alternative to polling. "People who answer surveys often provide quick off-the-top-of-their-head answers. By providing information about what factors others consider, survey respondents may think through their policy support a bit more and their responses may provide a more accurate reflection of their actual policy support," said Bidwell. However, it is difficult and expensive to have face-to-face deliberation for regional and national issues. Deliberative polling is a way to integrate a measure of deliberation into traditional polling efforts.



To evaluate the different types of polling methods, the researchers used a mail survey that asked respondents to indicate their level of preference for eight types of policies that could be implemented to reduce greenhouse gas emissions. They divided respondents into two groups, with each group completing two surveys. For the first group, the researchers used a "deliberation-lite" process. Before taking the second survey, this group received feedback on how their fellow group members responded to the first survey and what factors they considered when responding. The second group did not receive any feedback prior to completing the second survey.

The researchers found that minimal deliberation did result in statistically significant changes in policy preferences. Bidwell says that more research is needed to understand how the deliberation affected responses. "This line of research could help us design low-cost deliberative strategies for surveying the public," said Bidwell.

ESPP Student Goes to Washington: Shwom Serves as NRC Fellow

What's the best way to set up and evaluate an interdisciplinary research program that helps society adapt to the impacts of climate variability and change? That was the question the National Oceanic and Atmospheric Administration (NOAA) asked the National Research Council (NRC) recently. Rachael Shwom, a Ph.D. student in the Department of Sociology and ESPP, helped answer this question during a ten-week fellowship at the NRC.



In response to NOAA's question, the NRC convened a panel of scientists to help identify what NOAA should be researching and how it should set up and evaluate a research program. The advisory panel decided to hold a workshop featuring scientists who study the processes of climate change, social scientists who study how to make climate change science useful to various decision-makers, and the decision-makers who are impacted by climate change. "With changing climate patterns, there are groups of people who face new challenges, like farmers dependent on a certain amount of rain or those who live on the coasts and may be impacted by rising sea levels," Shwom explained.

As part of her fellowship duties, Shwom worked with NRC program officer Dr. Paul Stern and panel chair Dr. Helen Ingram in putting together an agenda for the workshop. Shwom was responsible for finding speakers and collecting previous research done on how people use or do not use climate information in decision-making. "The workshop went great and we had some really informative scientists and decision-makers there talking about different ways climate change research can be made more helpful to all kinds of decision-makers," says Shwom.

Shwom says she took the fellowship because the topic of climate change and its human dimension greatly interested her and she wanted to understand more about the policy aspects. "It was a great opportunity to get connected to policy makers and meet other scientists in the field," says Shwom. "I also met a lot of great people, including the other fellows from all fields of science. I highly recommend it."

The Christine Mirzayan Science & Technology Policy Graduate Fellowship Program within the Policy and Global Affairs Division of the National Academies (of which the NRC is a part) is designed to engage graduate science, engineering, medical, veterinary, business, and law students in the analysis that informs the creation of science and technology policy and to familiarize them with the interactions of science, technology, and government. It is offered three times a year and is funded by the NRC.

ESPP Welcomes Dr. David DiCarlo

ESPP would like to welcome Dr. David DiCarlo, an Assistant Professor jointly appointed in the Department of Crops and Soil Sciences and Geological Sciences. His research interests include pore-scale physics and its effects on large-scale flows.

Currently, DiCarlo is a physical scientist at the Agricultural Research Service, the research arm of the U.S. Department of Agriculture (USDA). There he performs experiments and theoretical analysis on multi-phase flow, preferential flow and flow in cracking and swelling soils. Flow is the movement of water and air through soils. "One of the benefits of soils is that they filter out harmful chemical and biological species," said DiCarlo. "They can be a superb filter."



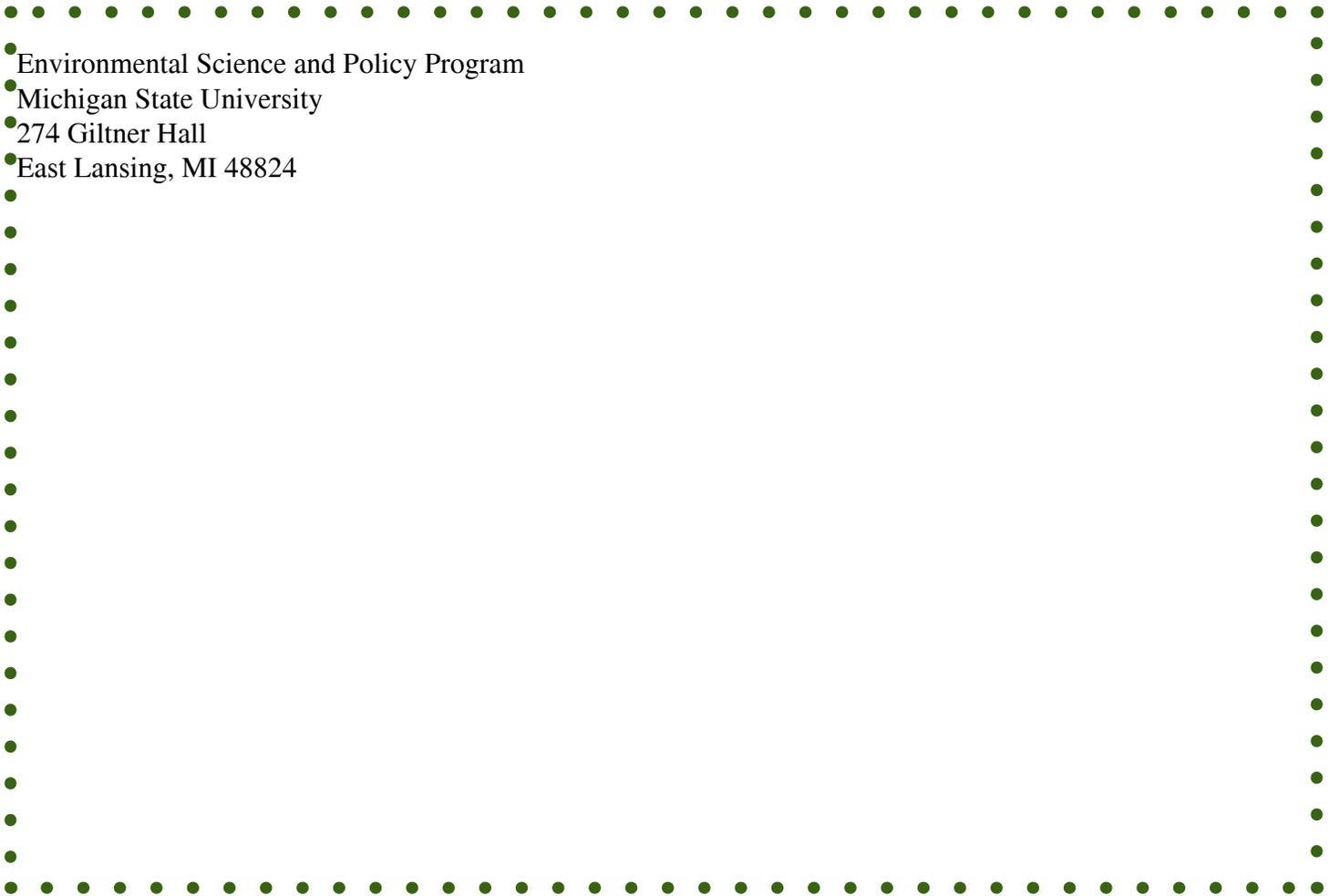
However, sometimes the water does not move through the soils as expected, causing their filtering capacities to diminish. This can become a dangerous health issue when parasites such as cryptosporidium, often found in dairy cattle, are able to find their way into drinking water supplies.

DiCarlo's research on water movement through soils will determine why some soils filter biological species out of the water better than others. "Right now the models that describe water movement and the species they transport are not very robust. We want to know what's really going on with these species and why soils perform the functions that they do," said DiCarlo.

DiCarlo begins teaching at MSU in Fall 2007. "MSU is an excellent research institution," said DiCarlo. "I'm looking forward to interacting with the researchers and broadening my work."

ESPP Faces and Places





Environmental Science and Policy Program
Michigan State University
274 Giltner Hall
East Lansing, MI 48824