Assistant Professor Dr. Carole Gibbs is jointly appointed to the Departments of Criminal Justice and Fisheries and Wildlife. She is the first faculty member hired in MSU’s effort to join the two fields to create a focus on the area of environmental crime. Gibbs decided to come to MSU because of the unique opportunity to study and develop a program on environmental crime. “MSU is innovative in creating such an interdisciplinary program,” she said.

Gibbs teaches in the master’s certificate program on environmental crime, which includes a sequence of three classes. The first course covers the importance of natural resource sustainability and how management strategies connect to enforcement. The second class links theories of environmental crime to criminal justice, regulatory, and alternative strategies to reduce it. “Sometimes it’s difficult for students to understand the connection of theory…but then it starts to resonate,” she said. The third class focuses on international environmental

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As Ben Gramig, doctoral candidate in the Department of Agricultural Economics and ESPP, finishes his final year at MSU, he prepares to enter the world of teaching and research at Purdue University, where he has been hired as assistant professor of Environmental and Natural Resource Economics. At MSU, Gramig’s research blends economics, public policy and decision making, to improve management of livestock disease.

Gramig’s research looks at the economics behind livestock disease management and the influence of policy design on farm decision-making. He examines whether government policies eradicate diseases effectively, by looking at whether farmers invest in biosecurity (management actions or investments that reduce the risk of infection) and report diseases in their livestock in response to economic incentives.

The United States government’s current response to disease outbreaks includes restrictions on moving livestock and livestock culling, with farmers paid for their culled livestock. While the incentives created by this policy lead farmers to report disease outbreaks, Gramig found that when the disease levels fall to a low enough level “the incentive flips,” and farmers reduce the rate at which they invest in biosecurity, which can lead to resurgence in disease. Analysis of epidemiology together with economic and social behaviors is needed to make sounder policies. Gramig said, “If you don’t account for feedbacks between disease dynamics and economic or behavioral dynamics… analysis of coupled natural and human systems is incomplete, and the insights into policy design may be limited.”

Gramig said that the ESPP courses he has taken complemented his other studies at MSU through their systems approach, which is reflected in his research’s integration of human and social behaviors with epidemiology.

He is currently finalizing his dissertation, tentatively titled, ‘Essays on the Economics of Livestock Disease Management: On-farm Biosecurity Adoption, Asymmetric Information in Policy Design, and Decentralized Bioeconomic Dynamics.’ His thesis consists of three essays addressing theoretical and empirical economic dimensions of livestock disease management. Two of these essays are currently under review at journals and the third will be submitted following the defense of his dissertation this winter.

Gibbs would like to be a part of creating a new generation of scholars to study environmental crime, and hopes to attract those interested in the link between criminal justice and natural resources. She noted that students in multiple disciplines are interested in this new field and that it is being well received within both of her departments. In the future, she hopes to establish a connection to federal agencies and to make the online certificate courses accessible to professionals who work in environmental fields, particularly environmental management and enforcement. As part of making this connection to the outside world, Gibbs helped organize a September workshop on environmental crime and natural resources (see story on the conference).

Conducting international research is another goal. She is interested in establishing a study abroad program in Australia and has an interest in Southeast Asia and Africa, as well, because these regions are afflicted by diseases, pollution and wildlife management problems. “It’s fascinating how it all connects” she said.

Gibbs received her Masters and Ph.D. in Criminology and Criminal Justice from the University of Maryland. She began graduate school with an interest in corporate crime as well as race, gender, and justice, and always opted to work on the environmental questions connected to those topics. Examining whether and why minority and poor neighborhoods contain a disproportionate amount of environmental hazards is one of her areas of research. Her most recent research involves studying the relationship between corporate citizenship, sanctions, and environmental performance.

Her current appointment is 60% Criminal Justice and 40% Fisheries and Wildlife. The departments are searching for a second position with a complementary mix to provide a balance in the newly developing program. With the second hire, MSU may be the strongest program in this area in the United States.
Discussing the next five years
(...continued from pg 1)

• Make MSU’s areas of excellence better connected with and more visible in national and global efforts.

I believe that the initial goals for ESPP have stood the test of time and should continue to guide our actions in the future. But over the last five years there have been exciting and very challenging developments in the environment, in environmental science and policy and at MSU. While much of what we have already done will continue to be useful, we also must think about how the new context of ESPP requires new approaches to pursuing our basic goals.

I invite you to engage in a community dialogue on the future of ESPP. We have just posted a document intended to provoke this discussion, http://espp.msu.edu/about/nextfiveyears.html. This document suggests at least five themes that we might engage over the next five years:

- Coupled human and natural systems
- Ecosystems and human well being
- New methodological and conceptual challenges
- Risk, values and decisions
- Sustainability science

Each of these is a “cross-cut” with the areas of excellence that have been identified in the original Signature Program areas and in the projects funded by the Environmental Research Initiative. Our discussion should examine what each of these emerging areas might mean in the MSU context, and how we might most effectively engage with them.

Communication in ESPP is always a challenge. Our community includes over 165 faculty in over 40 departments, many students who engage in diverse ways, and a larger community at MSU, in Michigan and across the globe. To facilitate a broad dialogue on the future of ESPP, we have created a blog “ESPP: The Next Five Years.” We hope you will examine the “provocation” document and contribute to the blog as part of a community-wide discussion about our direction for the future.

Best wishes for the New Year!

Students in ESPP capstone course research the mysterious Buruli ulcer

ESP 804 (Environmental Applications and Analysis) is the capstone of the ESP specialization, and a chance for students to integrate what they have learned in a collaborative, interdisciplinary project. Last spring’s 804 students began a research project on the Buruli ulcer, a tropical disease most prominent in West Africa that may have environmental links. The five Ph.D. students in the class developed an expert elicitation project, which aims to reduce the uncertainty surrounding the disease by identifying areas of agreement and disagreement amongst experts. They are anticipating publishing an article on the results of their study in the near future.

“This class enveloped what ESPP is supposed to be,” says Marcia JnBaptiste. “Interdisciplinary research…has helped me think outside the box.” Classmate Sara Parr agrees. “It’s very different from any other class I’ve ever had…in a good way,” she said, “and it was driven wholly by graduate students.” Students in the class are from the Departments of Crop and Soil Sciences, Philosophy, Zoology and Sociology. The course is guided by Professor Thomas Dietz and allows students to select and pursue their own area of study in the environmental science and policy field.

Class member Stephanie Miller had previous experience working on the Buruli ulcer, which helped the class to choose the topic. The Buruli ulcer is a newly emergent infectious disease, found mainly in poor, rural communities in 30 tropical and subtropical countries in Africa, the Americas, Asia and the Western Pacific. It is directly caused by an organism in the family of bacteria that cause tuberculosis and leprosy, and that occupies a specific niche within aquatic environments. The way it is transmitted is something of a mystery, with no evidence suggesting the disease can be transmitted from human to human. Research is investigating whether changes to the environment, such as land use changes and climate change, contribute to the emergence of the disease.

The class sent an Internet-based survey to 30 of the world’s leading experts on the Buruli ulcer last spring, and received responses from half (participants in Africa had difficulty responding due to limited internet access). The survey asked experts for their opinions on potential factors surrounding the emergence of the disease, specifically in Africa and Australia.

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Law enforcement and science join forces at MSU’s environmental crime conference

Criminologists and law enforcement officials came from all over the United States to share ideas with wildlife and environmental science professionals at MSU’s conference on Environmental Crime and Natural Resources Sustainability in September. The conference was organized to bridge the academic side of environmental crime and science with the practitioner side. This conference demonstrated that trans-disciplinary research can result in more effective ways to prevent environmental crimes. Panelists presented both research and practical applications on a diverse set of environmental topics and identified future steps for MSU. The conference was sponsored by the Department of Criminal Justice, Department of Fisheries and Wildlife, and Environmental Science and Policy Program, and is part of an effort to make MSU the center of research for environmental crime.

Three topics highlighted at the conference were illegal logging, the ivory trade, and the illegal wildlife trade. In developing countries, an estimated $5 billion in government revenues is lost due to illegal logging. The ivory trade is booming again despite its ban in 1989, and has led to resumed poaching in Africa. The international trade in endangered species is the third largest contraband business in the world.

“Where were you 10 years ago when I was trying to find someone to help me with this?” -Magrath

Conference presenters described how common themes are implicated in all these crimes. The natural resource is often located in developing countries, with corrupt governments, poor regulatory enforcement, inadequate penalties, and people desperate for income. Demand for resources is rising worldwide, and especially in China, with its large population and increased affluence. Circulation of resources is facilitated by the Internet and porous borders. The Internet creates an open channel for trade, making it easy to purchase illegal wildlife products. Only about 6% of goods entering the US are being checked, and usually not for violation of environmental laws, said Andrew Lauterback, senior criminal enforcement attorney for the EPA and chairman of Interpol’s Environmental Crimes Committee.

Common solutions advocated at the conference include addressing regulatory inadequacies, looking for ways to benefit both poor people and their environment, and increasing consumer awareness. “Environmental protection is taking a backseat to human survival…but we can join the two needs,” said Lauterbeck, describing how poverty leads to illegal logging and wildlife poaching. New technologies can also help detect and prevent environmental crime.

For example, David Skole, professor in the Department of Forestry at MSU, explained how geographic information systems give an advantage to law enforcement officials trying to track illegal logging in places such as the Amazon. With street-level images, researchers can see what areas are hot-spots, and officials can quickly find where illegal loggers roadways are developing. Scientists are also matching DNA from the dung or carcasses of elephants to the DNA of collected ivory, said Dr. Kelly Millenbah, associate professor in the Department of Fisheries and Wildlife, in order to locate poaching hotspots. Making consumers aware of where their products come from and how they were obtained can help to lessen the demand for illegal products.

International efforts to address environmental crime include the Forest Law Enforcement and Governance Program (FLEG), which works to ensure that governments prosecute individuals and companies involved in the illegal timber trade, and Interpol’s “worst offenders” database and prosecutor’s network that facilitates communication between prosecutors and law enforcement officials around the world.

Conference participants were excited about the potential for collaboration as a way to strengthen enforcement programs and to create better-informed solutions. “Where were you 10 years ago when I was trying to find someone to help me with this?” asked Bill Magrath, lead natural resources economist at the World Bank, addressing the attendees. As participants described global initiatives, they highlighted the benefits from increased cooperation between academics and practitioners. McGrath said that FLEG should involve criminologists and lawyers to become truly effective. Lauterback called for a mobilization of academics to help alleviate environmental crime through education, industry involvement, and public (...continued on next page)
MSU has high profile at 2007 SEJ Conference

The Society of Environmental Journalists (SEJ) held its 17th annual conference at Stanford University this September. Over 900 journalists, educators, students, and representatives of non-governmental organizations convened from all over the country to network and attend sessions, making it the largest turnout ever.

Jim Detjen, director of MSU’s Knight Center for Environmental Journalism, and founding president of the SEJ, attended the conference with 10 of the environmental journalism program’s faculty and students. MSU had the largest presence of any university, Detjen said, “and it has been [that way] for a long time.”

The five-day conference began with an award ceremony for outstanding environmental journalism in broadcast, print and online journalism. Two MSU students, Carol Navarro and Mairin MacDonald, received third place in the category Outstanding Student Reporting for their story in EJ magazine, ‘Who Owns the Water?’ (Spring 2006 issue). The story exposed the environmental problems associated with bottled water consumption and described implications for the Great Lakes.

The following day, attendees toured nine environmentally significant places in the region. “We were right in the heart of the Silicon Valley, where there were a lot of things to draw from that could be related to the conference,” Detjen said. Tour focuses included green architecture, estuary problems caused by sprawl, avian death associated with wind power, sustainable logging and wine making, and Bay Area wetland restoration.

Conference sessions sessions subjects ranging from trade and environmental degradation, to how to report on the environment in a politically conservative market. Detjen commented that each year there is more emphasis on climate change, and that this year was no exception. “The lively debates covering the skeptics of climate change has largely disappeared throughout the years,” he said. Now, the focus is on covering the direct evidence of climate change.

Second-year Environmental Journalism student Summi Gambhir attended the conference and remarked on its usefulness in preparing her for her future career. “It was a good chance for me to meet with potential employers…and it gave me a broader perspective of environmental journalism,” she said.

The high energy discussions throughout the conference provided participants with new issues to chew on, and some motivation to keep plugging away at their work in environmental journalism. Next year’s conference will be held at Virginia Tech from October 15-19.

For further details on the conference agenda and blogs from attendees, visit: www.sej.org
The China Initiative
First of MSU’s efforts to bridge environmental science across nations

As China seeks to reduce the impacts of industrialization on its environment and citizens’ health, Chinese scientists are coming up with solutions to the problems their country faces. “Possibly some of the best environmental research in the world is coming from Zhejiang University [ZJU],” says Dr. Thomas Dietz, director of ESPP. ESPP and MSU are partnering with ZJU, located in the city of Hangzhou (southwest of Shanghai), to develop a unique exchange program for international interdisciplinary environmental studies and research involving faculty, undergraduate and graduate students.

The partnership was developed to create a synergistic way of connecting across nations to tackle environmental problems. “What we’re seeing is a change in philosophy of what it means to be international,” said Dietz. Much of what is happening to our environment is occurring globally, so working with scientists in newly industrialized countries like China (where scientific research is strengthening) provides a broader comparative perspective on environmental issues and how to manage them.

The Chinese Ministry of Education is significantly increasing funding of international education for Chinese students, with plans to send 80 to 90 students per college abroad to continue their education. ZJU is one of the leaders in such exchanges, which is one reason MSU is working with it. “Another main reason is that they have an entire college of environmental science dedicated to addressing [these] issues,” said Dr. Jiaguo Qi, director of MSU’s Center for Global Change and Earth Observations, and associate professor in the Department of Geography, who is also working on the China Initiative.

Through the program, ZJU students will complete three years of undergraduate study in China, then continue with a masters program at MSU in their field of study. The first three masters programs participating are in Public Policy, Civil and Environmental Engineering and Geographic Information Science.

MSU faculty will also work with ZJU on research projects that are expected to focus initially on water quality issues and managing pollution in China. “The concept [is that] we’ll have very strong partnerships, including joint research projects involving faculty and students” said Dietz. “There are a number of areas where we have complementary strengths,” he said “and the comparison across countries will provide deep insights into how coupled human and natural systems work and how we can govern them.”

One project that MSU will be working on with ZJU is on water pollution issues of the Tiaoxi agricultural watershed that flows into Lake Taihu, located on the border of the Zhejiang province. This lake is China’s third largest body of freshwater, one of China’s “Great Lakes.” It was once a beautiful lake that supplied drinking water and fish. Now, heavy fertilizer use on rice paddies has added nutrients to waters discharging into the lake. Chemical plants situated on its northern shore have contributed additional pollution and the lake has recently become eutrophic, or oxygen deficient. This has not only damaged the beauty of the lake but has made the water undrinkable and unfishable. The initiative will examine the causes of water pollution and develop water treatment systems. MSU students will help conduct field experiments and lab work, as well as work with the local students on better methods to treat their water.

“What we’re seeing is a change in philosophy of what it means to be international” - Dietz

The education program is still being finalized. Qi said that ZJU has responded very positively to the prospect. “Zhejiang had a presentation on the program and about 130 students attended. They estimate about 20% of the students would come,” he said. The next step, Qi added, is for MSU to set up the infrastructure to accommodate such a large number of students in ongoing programs.

Qi hopes this collaborative effort will train young students well, so they can go back and use the skills they learned, in China. “They will become leaders in research and they will think of MSU,” he said. Chinese students often get hired by their universities to do research, Qi explained, so having this experience at MSU may foster future collaborations on other projects between the two universities. The partnership also opens up opportunities for MSU students to work in China. Last summer, a small group of MSU students (Chaopeng Shen, Rachael Shwom, Linda Novitski and Nathan Torbick) pioneered this effort by working at ZJU.

China is first on the list of countries with which MSU and ESPP are partnering, but other countries will likely be added.
The Invasive Species Initiative

Making strides in the battle to protect Michigan’s native species

Some of the animals and plants we have come to know and even love are aliens and can cause widespread problems, particularly for the Great Lakes. Approximately 34% of plants in the Great Lakes region are exotic, or non-native, species. Invasives are those exotic species that cause environmental and/or economic harm. MSU’s Invasive Species Initiative brings together faculty, students and staff across campus who are researching ways to combat invasive species in the Great Lakes.

The initiative is funded by ESPP’s Environmental Research Initiative, which is supported by the Vice President for Research and Graduate Studies, the Provost, the College of Social Science, the College of Engineering, the College of Agriculture and Natural Resources and the Michigan Agricultural Experiment Station.

The initiative’s current projects include creating an inventory of potential invasive species in Michigan and analyzing their risk potential; creating an interactive website for training people to detect, report, and map local invasive species; and organizing workshops to develop networks in the scientific community and partnerships with policymakers.

“We’re interested in looking at which species are the ticking time bombs that could become invasive in the future” -Landis

The inventory of invasive species in Michigan is in development, with preliminary results finding that there are about 1200 terrestrial exotic species compared to the 180 known aquatic exotic species. No assessment had previously been done on terrestrial organisms and so most previous attention has been centered on aquatic organisms. Further research is needed to determine if the exotic species found are invasive or not, but this inventory will serve to better inform policy makers. "We’re interested in looking at which are the ticking time bombs that could become invasive in the future," says Dr. Doug Landis, professor of Entomology and director of the Invasive Species Initiative.

Combating invasive species can be expensive, and is further complicated by climate change and globalization. Climate change makes it harder for native species with to survive and easier for invaders that are more tolerant of change to take over. The Great Lakes are a port for global trade, leaving them very susceptible to invasive species. For these reasons, preventing the entry of new exotics to Michigan and the Great Lakes basin “is really high on everyone’s list,” Landis explained.

The initiative is working on public outreach by creating an interactive website for Michigan citizens to track and map invasive species in their areas, and by networking with public officials and the scientific community. The website will foster education and management of invasive species in Michigan and will facilitate the reporting of infestations. Workshops are bringing the MSU community together with external organizations such as the Department of Natural Resources and the Nature Conservancy. An internal website fosters communication on campus, and includes news and events, resources for research in the field, and an expertise database (which lists 45 MSU faculty, staff and post-docs working on particular invaders.) See the Invasive Species website for more details: http://www.invasivespecies.msu.edu/index.asp.

Landis met with two members of the Michigan House of Representatives recently to inform them about invasive species in the state. “I think it was eye opening to them,” he said. There is a need for stricter trade policies that enforce screening for invasive species, Landis says, but an even greater need to predict the pathway by which they enter Michigan.

The Environmental Biogeochemistry Research Initiative

Building a sense of community

Biogeochemistry is a discipline that has exploded in the last decade, says Dr. Merritt Turetsky, assistant professor in the departments of Plant Biology and Fisheries and Wildlife, and co-director of the Environmental Biogeochemistry Research Initiative (BERI).

It’s an integrative discipline that lies at the nexus of biology, chemistry and geology and looks at how living organisms (from microbes to plants and animals) interact with their chemical and physical environment. These interactions play important roles in limiting the abundance and distribution of plants and animals. Environmental biogeochemistry looks at the effects that human disruption of the environment has on these processes by studying the impacts of large scale changes such as global warming and declines in

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biodiversity. “With the onslaught of ecosystem stressors like climate change, our work is becoming at the forefront of exciting science, and is motivated and influenced by policy,” Turetsky says. “It’s the perfect home if you’re engaged in environmental issues, but you’re also interested in science and you like to do outdoor research.”

BERI represents about 12 different departments, involving 35 faculty members and 23 students, and is considered a potential signature program for the university.

The initiative is funded by the ESPP’s Environmental Research Initiative, which is supported by the Vice President for Research and Graduate Studies, the Provost, the College of Social Science, the College of Engineering, the College of Agriculture and Natural Resources and the Michigan Agricultural Experiment Station.

The initiative seeks to build a sense of community by bringing faculty and students together. Dr. Nathaniel Ostrom, professor of Zoology and co-director of the BERI, says, “I think the process is working….I think students appreciate that there’s a community out there.” Turetsky agrees. “This group has been gelled by the ERI….It’s the first time we’ve ever defined ourselves as a group of biogeochemists here at Michigan State,” she says. She believes that MSU is now a competitive place to do biogeochemistry. Second year Ph.D. student Jason Martina, who is one of the student coordinators of the BERI, said “at a big university where there are so many departments, it’s hard to know all your resources… So, it’s amazing how a (sense of) community can have an effect on a graduate student’s perspective.” The initiative has also created a website, which helps to foster communication amongst participating faculty and students.

A central goal of the initiative is engaging students in the field of environmental biogeochemistry. Through funding, BERI has enabled students to participate in over a dozen biogeochemistry research projects. Students have been gathering data, traveling to conferences and work on getting published. The initiative is also working to form a master’s specialization in biogeochemistry, which would complement other programs like Ecology, Evolutionary Biology, and Behavior Program (EEBB) and ESPP.

BERI is also reaching to the outside world to promote awareness of the field and the types of research being done at MSU. Participants are doing this by writing a series of white papers aimed at the university and public; these form a basis of scientific knowledge on issues that biogeochemistry examines, such as climate change and invasive species. The initiative plans to hold a forum in the next six months to discuss a key issue with scientists from around the region. One topic being considered is climate change in the Great Lakes, which are now exhibiting a temperature increases comparable to the Arctic region. “There is no real idea of how it will change the ecology of fisheries in lakes,” Ostrom said.

Turetsky said that solving society’s complex problems requires a variety of different backgrounds, and that biogeochemistry brings such people together. “[The initiative] has given our group more power in terms of communication, and allows us to leverage our collective wisdom” she said.

For more information on what BERI is doing, visit their website: http://biogeochemistry.plantbiology.msu.edu/index.html

The Bioeconomy Initiative

Seeking to improve Michigan’s economy

In response to climate change, rising oil costs, concern over our dependency on foreign fuels and Michigan’s need for jobs, MSU has launched a Bioeconomy Initiative. The initiative seeks to organize the research and resources at MSU to help Michigan transition into a bioeconomy. The first efforts focus on using plants to produce fuels, chemicals and materials. Researchers are also interested in broader ways in which human well-being depends on ecosystems.

The Office of Biobased Technologies (OBT) was created last year as a central location for the campus community, state officials and private businesses to exchange information on bioeconomy research and advances in the marketplace. It has since given MSU researchers the capacity to compete and win (in collaboration with other universities) a Department of Energy grant to build the Great Lakes Bioenergy Research Center, which will accelerate basic research in the development of cellulosic ethanol and other biofuels.

The OBT has also surveyed faculty to identify those who (...continued on next pg)
Taking the Initiative

(...Bioeconomy Initiative continued)
are interested in the bioeconomy, in order to promote cross-disciplinary research on campus. The result is a list of MSU faculty across campus who are conducting research in the bioeconomy, along with their contact information and areas of interest (available online: http://www.bioeconomy.msu.edu/experts.aspx). “It’s a moving target in the sense that more and more people are seeing opportunities (in the bioeconomy), so we’ll probably have to update it every couple of years,” says Dr. Steve Pueppke, director of the OBT.

The OBT is addressing some of the most challenging issues surrounding biofuels, including the production costs and the “food versus fuel” debate. Growing plants locally in Michigan is one way to alleviate the costs of shipping large amounts of biomass for processing, and OBT researchers are looking at other ways to reduce costs. Harvesting crops like soybeans and corn for fuel as well as sustenance has led to increased costs of human and animal food. However, the debate can be avoided by using wood or plant fibers (also known as cellulosic fuel) instead of food crops. One company that is developing cellulosic fuel technologies, Mascoma, will collaborate with MSU researchers and recently committed to build a plant in Michigan.

MSU researchers are developing biomaterials in addition to biofuels. Products such as cups, eating utensils and clothing, as well as materials used for buildings and automobiles are being developed in order to help the United States to reduce the 80 million tons of petroleum that yearly goes into manufacturing plastics. Polylactide (known as PLA) is one type of plastic, made from corn, that has the potential to replace some petroleum based-products, says Dr. Susan Selke, acting director at the School of Packaging. “We’re looking at ways to improve performance [of bio-based products],” she says. Researchers at the School of Packaging are studying ways to make bio-based plastics less sensitive to heat, and ways of incorporating anti-microbial materials into products.

“Biofuels and biomaterials are the most visible steps in moving towards an economy that is in harmony with the environment,” says Dr. Thomas Dietz, director of ESPP. “We are just beginning to understand the complex ways in which our well being depends on ecosystems and how we are changing [them], sometimes to the detriment to our well-being.” Agriculture and recreation are the second and third largest segments of Michigan’s economy, for example. Dietz pointed to the importance of the Millennium Ecosystem Assessment’s (MA) global effort to examine the relationship between human well being and ecosystems. The MA, initiated in 2001, brought together over 1,300 experts to assess trends in the world’s ecosystems, the services they provide, and the options to restore, conserve or enhance the sustainable use of ecosystems.

Pressure to create a bioeconomy is becoming more prevalent in the United States as we seek energy security. Pueppke says, “If we pay serious attention to renewable fuels over years and decades, we’ll create a bioeconomy, but we have to have patience and persistence to do so.” Dietz says the next step for research is examining the human and environmental dimensions of the bioeconomy. “We are in the planning stages of some important activities to bring MSU to national leadership in these areas, just as we are in the other areas of bioeconomy sciences and engineering.”

ESPP News

(...Buruli Ulcer story continued from pg 3)

Some of these factors were: the types of pathways that lead to infection, which aspects of climate change might affect the emergence of disease, and the impact of land use changes such as deforestation and mining. Experts were also asked for predictions of where the disease will spread.

“With a problem like emerging infectious diseases, it can take researchers a long time to establish certainty regarding infection pathways and ecology of disease-causing microorganisms....Meanwhile, people continue to get sick,” says David Bidwell, student in the class.

The expert elicitation approach “give[s] a large scale perspective on what people agree and disagree on,” with the research at hand, Miller says. With the Buruli ulcer, it is important to understand what is known and where there is expert consensus in order to better treat and contain the disease.

More ESPP News continued on next page...
Tropical insect study sheds new light on biodiversity protection

MSU researchers Dr. Anthony Cognato, assistant professor of Entomology and Jiri Hulcr, doctoral student in the department of Entomology, participated in a groundbreaking study this year that holds implications for sustainability and conservation research in tropical regions.

The study, published in Nature (Aug 9, 2007 online), found that regional species of tropical insects that were considered specialized to live in one location were found thriving hundreds of kilometers away. "Contrary to what has been thought, what we found is that if environmental conditions at each site are equal, we can find almost all regional species at each site," said Hulcr.

The team collected data on how diversity is distributed in the lowland rainforest of Papua New Guinea; researchers studied approximately 500 species of insects, including bark beetles, which Cognato and Hulcr specialize in. Hulcr said this is one of the largest areas ever examined in this field of study, which extended 1000km. They found that even the host-specific insects that feed on certain plants found in one region were found in other regions as well, as long as they found similar plants to feed on. The findings might hold true in other ecosystems but more research is needed, Hulcr said.

Policy makers must often decide on what areas to preserve, and research like this helps guide those decisions to lessen the impact on wildlife. In tropical regions like Papua New Guinea, habitat fragmentation can cause a loss of biodiversity, because it can create a barrier for movement and gene flow between populations of species, and a greater chance of extinction. Cognato and Hulcr’s data support the notion that tropical forests have a greater chance of survival if they are kept as large pieces, instead of as a number of smaller fragments. Though the insects he studied were found in many locations, "if you continue to fragment, you might reach a point where... the forest is going to crash, and we don’t know where that point of no return will be," Cognato said.

One of the problems this line of research faces is that “there is a need to study tropical biodiversity [in entomology] but there are few to do it," Cognato said. He explained that his study was part of a five-year National Science Foundation grant for Partnerships for Enhancing Expertise in Taxonomy.

Cognato and Hulcr plan to continue their studies in other tropical regions such as Thailand and South America.

Growing interest in Animal Studies prompts focus at MSU

The field of Animal Studies is receiving increasing attention at MSU, as interest in the field continues to rise along with our concern for animals. Animal Studies is a developing field which examines animals in cross-disciplinary ways, in order to understand human-animal relationships in the past and present. MSU has an increasing number of courses in Animal Studies, will likely soon become the first university in the world to offer a graduate specialization in the field, and will also host an Animals and Society Institute fellowship program this summer.

Animal Studies looks at what the human relationship is with animals and why it is so, in order to improve the quality of life for both. “It is trying to take the perspective of animals instead of a human’s perspective of animals,” explained Professor Paul Thompson, W.K. Kellogg Chair in Agricultural, Food and Community Ethics. The field has implications for how people and animals relate in multiple settings, from industrial farming to natural ecosystems.

Two new graduate level courses being offered are Animals and Social Transformations (SOC 840), and People and Nature (ACR 891). Animals and Social Transformations (is a historical overview of the cultural relationship between humans and other animals, and how those relationships have altered with changing social conditions. The course covers a range of topics such as the Black Plague, dead animal portraiture and animal massacres. People and Nature (a one-time seminar) studies animals as philosophical and ethical subjects, reflexive thinkers, pets and food, spectacle and sport, symbols, and scientific objects.

A decision on whether the graduate specialization in Animal Studies will be approved is expected mid-January and would then be in place for the Fall 2008 semester. The specialization is sponsored by the Department of Sociology.

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Animal Law (LAW 565A), taught by Law Professor David Favre, surveys animal legal issues including property status, zoning, and cruelty laws. “Law is the structural framework for analysis….It tells you how we make our judgments,” he says. Over the past five years, Favre says he has “seen an explosion of interest” in animal law nationally, with a jump from 15 to 90 law schools offering the subject. This increase was driven mainly by student demand, he says.

There are philosophical underpinnings of animal studies to consider, such as whether animals reason and experience pain, and how animals experience the world. Ethics and Animals, though under development, is currently being offered as PHL 491 and is taught by Thompson. The course uses disciplines including cognitive science and ethology (the study of animal behavior) to answer such questions. The course reveals differing perspectives on how humans view animals. “In conservation, it’s the animal’s role in its ecosystem that is significant, not the individual animal itself,” he said, which is why animal rights groups often argue with conservationists (e.g. regarding protecting deer as a means to protect individual animal rights versus controlling their population in order to preserve all animals by protecting the natural balance of the ecosystem).

Applied Animal Behavior (ANS 305) focuses on the behavior and welfare of domestic animals and wild animals in captivity. The course is taught by Janice Siegford, research assistant professor in Animal Sciences, and looks primarily at how humans interact with domestic animals and how we can use knowledge of animal behavior to improve our treatment of them. “It’s us getting them, instead of them getting us,” Siegford explained, as humans tend to anthropomorphize (or assign human attributes to) animals and often don’t understand the needs of animals or their motivations for behaving certain ways. She also teaches Animal Welfare Assessment (ANS 305-730), an online course that considers the subjectivity of animal welfare, by comparing evaluations of the welfare of animals in different scenarios.

To better understand the human-animal bond and how animals enrich people’s lives, the College of Nursing has developed the Human-Animal Bond Initiative. The initiative researches the effects of using animals as companions for chronically ill children and people in nursing homes. This therapy aims to help patients ease symptoms and to improve the quality of life for both humans and the animals. Animal therapy is already available; the Society for the Prevention of Cruelty to Animals is one organization that participates, using its shelter animals to soothe the elderly in nursing homes.

In line with the university’s increased attention to the field of Animal Studies, it will be hosting a six week Animals and Society Institute summer fellowship program in 2008 for intensive research on any topic related to human-animal relationships. The aim, for the six to eight participants accepted into the program, is to support their individual research through mentorship, guest lectures, scholarly exchange among fellows, and opportunities to contribute to the intellectual life of MSU by producing a paper or other final product.

ESPP Graduate Recruiting Fellowship Announcement

This year ESPP will make available several, Doctoral Recruiting Fellowships for students who will matriculate in the fall 2008 semester.

The goal of these fellowships is to attract the strongest possible cohort of students to pursue doctoral education focused on the environment.

Students MUST be nominated by their intended home department and departments are limited to two nominations. Students may not apply directly for these fellowships but must work with their intended home department to apply for an ESPP Doctoral Recruiting Fellowship.

The fellowships are $30,000 per year, for 2 consecutive years, per award. Departments commit to provide two additional years, for a total of four years of support. Students are expected to complete the four required courses outlined as a part of the ESPP Doctoral Specialization. International students are eligible.

Application materials must be received by ESPP no later than January 26th, 2008 and should be sent to:

Electronic: espp@msu.edu
Subject Line: ESPP Fellowship
-or-
Regular Mail:
Environmental Science and Policy Program
ATTEN: ESPP Fellowship
274 Giltner Hall
Campus
Environmental Science and Policy Program
Michigan State University
274 Giltner Hall
East Lansing, MI 48824