Bright Green Future:
Algal Turf Scrubber
Dear Alumni, Friends, and Colleagues:

The inaugural issue of the Envision magazine (Spring of 2011), which was mailed out to approximately 3,000 recipients, was received with remarkable interest. The feature story about Dr. Ray Weil and Dr. Stephanie Lansing’s collaboration of mixing dairy manure and forage radish to produce renewable energy was the most talked about research on campus and beyond for months!

The Department of Environmental Science and Technology (ENST) continues to advance fundamental studies of the environment and excel in the development of innovative environmental technologies. In this issue, we are bringing you another unique research collaboration story—the Algal Turf Scrubber. In late 2011, Dr. Patrick Kangas, who has studied algae for more than 30 years, launched the Algal Ecotechnology Center. The Center promises to advance the design and implementation of ecologically engineered algal technologies for water quality management and economic development (See story, page 6).

We are also proud of the ENST undergraduate student and faculty team whose expertise in edible green walls helped to bring victory for the Chesapeake Bay inspired WaterShed solar house—the University of Maryland’s 2011 Solar Decathlon entry (Read story, page 2). These are the kind of hands-on projects the ENST faculty encourages our students to participate in, as it boosts their chances of finding their dream green jobs.

Dr. William W. Bowerman
Professor and Department Chair

Dr. Bowerman holding a nesting bald eagle from a nest within the Voyageurs National Park in Minnesota, where he has been monitoring contaminants and reproductive health of this population since 1989.
The Algal Ecotechnology Center founded in 2011 by Dr. Patrick Kangas and Dr. Frank Coale, promises to advance the design and implementation of ecologically-engineered algal technologies for water quality management and economic development.
Each of the 20 finalists took nearly two years to conceptualize, design, construct, deconstruct, transport, and reconstruct their houses for the ten-day, non-stop competition in Washington, DC. The Decathlon required each team to maintain a precise comfort level within the house, deliver hot water from the kitchen sink and shower, operate full-size appliances, entertain competing teams with dinner and a movie, and produce at least as much electricity with its solar panels as was consumed in the house. In addition, contestants were judged on architecture, market appeal, engineering systems, communications and affordability. More than 350,000 people visited the Decathlon, while 21,000 of them checked out Maryland’s WaterShed. Maryland entered hoping they could top their 2nd Place finish in 2007.

Participating for the fourth time in the competition, Marylanders were the most experienced team.

**HOUSE DESIGN FOCUSED ON WATER**

Before the design could begin, the team had to decide what the best “message” would be and the best way to present it to the public. With deep-felt concern about the health of the local ecological treasure—the Chesapeake Bay—and the rising awareness of global water problems, the message was clear—focus on water. The team ran with this idea, designed the house to use minimal amounts of water and electricity, and named it WaterShed. A major aim was to minimize heat gain from the intense summer sun. Green walls, or vertical gardens, were added to the west side of the house.
to shade the kitchen and breakfast patio in order to keep them cool, attractive, and at the same time capable of producing food. The angle of the roof was inverted like butterfly wings to bring rainwater to a central axis of the house, where it could be used to support life in the ponds, rain gardens, and wetlands surrounding the house. It also allowed rainwater to be stored and used to irrigate the vegetable garden. The bathroom was located along this central water axis to create the illusion that water was flowing under the house.

**PLANTS- NATIVE TO THE CHESAPEAKE BAY**

The wetland plants used in WaterShed were all native to the Chesapeake Bay watershed so that it closely mimicked the natural process of filtration. A green roof was installed to reduce the flow of storm runoff, slow down the unnecessary absorption of solar energy into the house and decrease the heating of the air surrounding the house. As all of these components came together over the construction period, the concepts and plans slowly started to materialize. “Looking back on old construction photographs and realizing how much progress we have made from week to week was immensely rewarding,” says Veronika Zhiteneva, an ENST undergraduate student. WaterShed mimics the cyclic nature of the Chesapeake Bay ecosystem, showing the public how the integration of these systems can improve efficiency and reduce the amount of resources needed. Students did not limit their outreach to Decathlon visitors, as Isabel Enerson describes, “through outreach efforts I have been able to engage to a higher degree with local schools in the surrounding community, the University, and various forums.”

This project has offered abundant learning opportunities for students across campus. “We were able to incorporate material that we were learning in class into an integrated physical application that was built and shown to the world as a finished working product,” says Scott Tjaden, ENST undergraduate student. “With WaterShed winning this year’s Solar Decathlon, I and every other student working on the project gained knowledge and experience we will use in future careers. It gave us memories we will never forget.”

**PHOTOS** (from top left): (1) UMD students resting before installation of the green roof. (2) ENST student, Scott Tjaden, explaining how the constructed wetland works during public tours. (3) The team educates visitors about their own home watersheds by having them place stickers on the map. (4) The Maryland team celebrating their first place. Photography courtesy of U.S. Department of Energy.
Dr. Bahram Momen, an associate professor in biostatistics and ecosystem ecology, received a Water Resources Competitive Grant of $200,000 through a joint program between the National Institutes for Water Resources and the U.S. Army Corps of Engineers. He intends to use the grant to revolutionize the way we quantify and communicate flood risk management.

Currently, most online software are presented in Geographic Information Systems (GIS) format and manipulated by GIS experts in response to requests from the authorities during floods. “An example of such a model is the Federal Emergency Management Agency (FEMA) Multi-hazard Loss Estimation Methodology model (HAZUS-MH), which is based on the Environmental Systems Research Institute, Inc. GIS software,” says Momen. These models are designed to predict losses due to major hazards for purposes of risk-management planning at the regional level. However, all of them require expensive hardware, software, and GIS-trained experts.

Titled “The Effectiveness of a Computer-assisted Decision Support System Using Realistic Interactive Visualization as a Learning Tool in Flood Risk Management,” Dr. Momen’s project has aims to involve both policy makers and likely flood-affected people. Time and money can be saved in preparing for floods if public and policy makers can directly participate in decision-making processes. “We propose to combine FEMA National Flood Hazard Layer with Google Earth, which will allow all stakeholders to directly participate during flood risk,” explains Dr. Momen.

The effectiveness of a computer-assisted decision support system that uses realistic interactive software in combination with collaborative learning, will be tested for the first time. Potential benefits of this new collaboration includes a better understanding and retention of concepts by the public; increasing their knowledge of flood risk, flood risk-reduction options, and action to reduce these risks. “This direct participation by learners is referred to as interactive visualization,” he explains.
Growing up in Oregon, Dr. Stephanie Yarwood dreamed of studying whales. Currently, an assistant professor of environmental microbiology in the Department of Environmental Science and Technology (ENST), she still has not forgotten about whales, but when asked about her shift of interest, she replies: “microbes are way more powerful!”

BILLIONS OF MICROBES UNDERFOOT

This is Dr. Yarwood’s first year of teaching environmental microbiology at the University of Maryland, but her hands are already full with various microbial projects. Microorganisms carry out many important functions of our lives. They fix nitrogen needed for plant growth, they weather minerals during soil formation, and they are important tools in green technologies like biofuels. Her research focuses on soil microbial communities, exploring how the presence or absence of some microorganisms affects the functioning of ecosystems and soil development. “There are more microbes in a gram of soil than there are stars in the sky,” says Dr. Yarwood. Even though we realize their importance, we know very little about them. “Only one percent of microbes can be grown in the lab,” notes Dr. Yarwood. “New tools are allowing scientists to study these organisms in ways we didn’t think were possible 20 years ago.” Today more than ever, microbial ecologists rely on molecules like DNA to give us clues about the identity and function of microbes under scrutiny.

INTERDISCIPLINARY SCIENCE

Dr. Yarwood especially enjoys the interdisciplinary opportunities within ENST. “In order to understand how soil microbes play a role in soil formation, we need to understand the physical, chemical, and biological relationships.” She is currently collaborating with Oregon State University to test the ability of microbial communities to maintain important functions, such as the decomposition of plant material after disturbance and learning how microorganisms colonize subsurface soil horizons. She also started a project with scientists at the ARS Sustainable Agricultural Systems Lab to study how changes in agricultural management might affect microbes and the processes they carry out. Moreover, she is investigating how microbial populations and soil nutrient cycling recovers during land reclamation of surface mining sites, in collaboration with Virginia Tech. “I really like to collaborate across scientific disciplines, to answer questions that I couldn’t answer by only studying microbiology,” Dr. Yarwood concludes.
Initially developed to control water quality in aquatic microcosms in the early 1980s by Dr. Walter Adey at the Smithsonian Institution, Algal Turf Scrubber™ technology has been studied and refined for more than 30 years. With widespread projects across the continent, researchers lacked a centralized place where they could share information and collaborate. The Algal Ecotechnology Center was founded in 2011 by Dr. Patrick Kangas and Dr. Frank Coale, faculty in the Department of Environmental Science and Technology, to serve that purpose. The new center aims to advance the design and implementation of ecologically-engineered algal technologies for water quality management and economic development.

The Algal Ecotechnology Center evolved from collaborations that had developed over several years during grant research, including funding from USDA, the Lewis Foundation, and the Norwegian oil company, Statoil. Through the succession of these grants the number of researchers working on the Algal Turf Scrubber technologies has grown in number. “The idea behind the center was to create an institution that could transcend any individual research project to foster collaboration on algal-based technologies and green economy development,” explains Dr. Kangas, who has been studying algae since 1979. The center has no external funding, but its website (www.enst.umd.edu/labs/algae), supported by the Department of Environmental Science and Technology at the University of Maryland, serves as an electronic clearinghouse for information about algal-based technologies. “The current geographic focus for the center is on the Chesapeake Bay Watershed,” says Dr. Kangas, but the long-term vision is to move to the Mississippi River watershed and even China.

**ALGAL TURF SCRUBBER- TREMENDOUS POTENTIAL FOR CLEANING POLLUTED WATERS**

Algal turf scrubber exploits algae’s natural ability to utilize excess nutrients, offering unparalleled performance in the removal of nutrients and pollutants from wastewater and polluted waterways.
“Algal production for water quality improvement demonstrates that the technology removes nutrients and sediments while adding dissolved oxygen to the water,” explains Dr. Kangas. “Furthermore, the algal biomass produced by this process, can be used as a feedstock for biofuel, fertilizer and other potentially valuable byproducts.”

The algal turf scrubber consists of a community of natural algae, attached to screens that are placed in the shallow treatment channels or raceways. The process involves pumping water over the screens, allowing the algae to perform its function. “Periodic harvest of algae removes pollutants from the water that have been incorporated in the algal biomass,” says Dr. Kangas.

...biomass production rates of algal turf scrubbers are among the highest of any recorded values for natural or managed ecosystems.

The efficiency of the algal turf scrubber as a waste treatment technology is directly related to the rate of algal growth - the faster the algae grow, the greater the pollutant uptake rate. “The rate of algal growth is controlled by manipulating water depth, flow rates, and concentrations of nutrients in the water that is being treated. All these factors can be adjusted to maximize algal metabolism and, thus maximize water treatment capacity,” tells Dr. Kangas.

In fact, biomass production rates of algal turf scrubbers are among the highest of any recorded values for natural or managed ecosystems. For this reason alone, researchers see a tremendous potential for cleaning up and restoring the Chesapeake Bay. Dr. Adey, the original inventor of the technology, estimates that approximately 3,000 acres worth of scrubber systems installed near the headwaters of the Chesapeake Bay could help regulators meet restoration goals and even turn over the Bay’s entire dead zone in only one year.
ENST alumnus and currently assistant professor at the State University of New York at Buffalo—Dr. David Blersch, has instituted a research program to assess the sustainability of algal cultivation technologies for pollution control and biomass production in Great Lakes communities.

The nearshore environment of the lower Great Lakes has been impacted by a shunted nutrient cycle, caused partly by invasive Dreisseniid mussels, which drives excessive production of harmful benthic algae. “I’m researching applications of controlled benthic filamentous algae cultivation for mitigating nutrient loadings and controlling wild algal production in the nearshore Great Lakes,” explains Dr. Blersch. Currently, he is investigating the use of ATS in both agricultural and urban settings, where ATS are being installed on abandoned industrial field sites in Buffalo to decrease effects of urban stormwater runoff.

Dr. Blersch is also examining the economical aspects of ATS, focusing on the algal biomass produced in a variety of cultivation methods and its potential as a bioenergy feedstock. In addition, he is looking at the development of feedback control for the optimization of the algal production processes. “The development of this technology is critical for the economical implementation of large-scale algae farming,” says Dr. Blersch. Feedback control designs for ecologically-engineered systems is a novel and promising field that will reveal the real potential and performances that can be expected out of ATS.

ENST alumnus and current environmental scientist at Biohabitats, Inc.—Dr. Peter May, has implemented a pilot research program to assess the suitability of algal cultivation technologies for Baltimore Harbor nutrient reduction and oxygenation. Dr. May is also working with Baltimore City middle school in developing lesson plans around the use of algal ecotechnologies.

With high nutrient loads coming into the harbor of Baltimore’s urbanized watershed, periodic algal blooms have in the past caused large fish kills resulting from oxygen depletion. Dr. May has installed an experimental ATS raceway on the Inner Harbor to test its potential role as a living filter of polluted urban runoff, using sunlight and photosynthesis to create biomass and to pump high concentrations of dissolved oxygen into the harbor. Because the ATS project has been assembled on the property adjacent to their East Harbor Campus, Living Classrooms teachers and staff member will be involved with the project as part of an environmental education program. Biohabitats scientists will work with Living Classrooms’ staff to develop an active learning curriculum centered on the ATS project which will run throughout 2012. Students will learn elements of biology, chemistry, ecology, economy, and sociology as it relates to water pollution and its treatment with algae. “Education is key here with the unique connection between Living Classrooms and the University of Maryland. There are so many interesting opportunities for learning with the ATS system across multiple levels, so it’s very exciting to be working with grade school students and teachers as well as local university researchers toward a common goal,” says Dr. May.
Floating Islands—Own One Today

Owning an island is easier than you might think, that is— a floating island. This man-made ecosystem mimics naturally occurring wetlands and has the ability to clean water while providing the same ecological benefits as natural wetlands. Dr. Joshua McGrath, assistant professor at ENST and alumnus Kevin Hedge are exploring the nutrient removal effectiveness of floating islands in poultry stormwater ponds on the Eastern Shore of Maryland.

The restoration of lost wetlands is an important focus of today’s land and water stewardship, as wetlands are the most valued and complex habitats on earth. Their progressive loss has contributed to a sharp decline in numerous bird species and vertebrate animals such as toads, frogs, caecilians, and salamanders. Constructed of post-consumer polymer fibers and vegetated with native plants, floating islands have the ability of natural wetlands to clean waterways. Pilot projects with floating islands are currently underway in the Baltimore’s Inner Harbor, the Chesapeake Bay, and several Eastern Shore poultry farms. To help study the effects of these islands, the Maryland Industrial Partnerships Program, an initiative of the Maryland Technology Enterprise Institute at the University of Maryland, has awarded $139,000 to BlueWing Company and Dr. McGrath for developing BioHaven Floating Islands.

FLOATING ISLANDS AND CLEAN WATER

Floating islands have the potential to be deployed in virtually all of the impaired waters, including the Chesapeake Bay. “Taking advantage of naturally occurring biological processes allows for the creation of a cost effective and low maintenance solution to boost nutrient removal and environmental remediation,” explains Dr. McGrath. Last summer, he lead a group of researchers to measure the nutrient removal capacity of floating islands in stormwater contaminated ponds on two Eastern Shore poultry farms—Church Hill and Federalsburg. These studies are currently underway and results are expected in the next few months. “If these affirm previous findings, the results will be used to estimate the efficiency of artificial wetlands so that they can be included in various cost-share mechanisms and tools such as the Chesapeake Bay Model,” says Dr. McGrath.

EFFECTIVENESS AND COST

As the need to reduce nutrient levels in wastewater is becoming increasingly critical, floating islands are the new cutting-edge wetland technology. “Using a nature-inspired system to clean water could truly be revolutionary on a global scale,” says Kevin Hedge, ENST alumnus and managing partner of BlueWing Environmental. Hedge estimates that a half-acre pond with poor water quality treated with 300-square-feet of floating island is capable of removing 183 pounds of nitrogen and 25 pounds of phosphorus per year, and would cost around $10,000. “Floating islands will become more effective with time as more natural surface areas like plant roots colonize and cover the island matrix,” concludes Hedge.
Fish in Peril?

Largemouth and smallmouth bass in regional waters are increasingly being reported with evidence of endocrine disruption—specifically testicular-oocytes (TO), an intersex condition where male fish possess immature female eggs within otherwise normally developing testes.

The condition is widespread within studied Chesapeake Bay tributaries including the Potomac, Susquehanna, and Eastern Shore river systems. There is little agreement on the seriousness of the observed condition at a population-level. While largemouth bass populations are generally strong, smallmouth bass have suffered serious declines in the Potomac River system in recent years. Moreover, despite significant effort by state and federal researchers, no particular culprit has been identified as causing TO in regional bass. The prevailing theory is that exposure to one or more likely, several estrogenic contaminants in wastewater discharges or agricultural and urban runoff are responsible for feminizing the male fish. However, complications arise in establishing this causal link. The slow development of bass from hatch to reproductive maturity, generally several years, places a considerable disconnect between the periods of contaminant exposure and observed effect.

TEAM YONKOS INVESTIGATES

Aquatic toxicologist Dr. Lance Yonkos is sidestepping this disconnect by transferring the question from the field to the laboratory. By exposing hatchery-reared largemouth bass at various developmental stages to controlled levels of common regional pollutants, Yonkos aims to identify contaminants of particular concern and establish developmental windows of sensitivity. Initial investigations are already underway and include an undergraduate research group comprised of ENST students. Using poultry litter as the contaminant source—identified previously as estrogenic by Dr. Yonkos and colleagues—the team expects to demonstrate the utility of largemouth and smallmouth bass as model species for toxicological study and hopefully shed some light on the causes of intersex in regional fish.
MATTHEW KARLIN, Environmental Science and Technology major, interned at New York Green Roofs, LLC, which specializes in sustainable designs throughout Manhattan, Brooklyn and the Bronx area. During the internship, Karlin learned the ins and outs of designing, installing, and maintaining green roofs. “I installed two green roofs as well as repaired, maintained, and of course, picked the weeds off many others,” he explains. “This taught me way more about green roofs than any textbook.”

As part of his job, Karlin also worked on irrigation systems, which involved artificial use of water for agriculture purposes, maintenance of landscapes, and revegetation of dry soils during periods of inadequate rainfall. “I did the nuts and bolts work for irrigation systems, which relied heavily on manual labor on rooftops, under the scorching sun,” he describes. In addition, Karlin learned how green businesses operate in America, realizing that they are as much profit oriented as any other company. “The fact is that green companies are businesses first. That’s the nature of the society we live in,” notes Karlin.

Karlin tells that the Restoration Ecology class he took with Dr. David Tilley is what sparked his interest in sustainable ecology projects like green roofs and green walls. “ENST provided me with the introduction to the environmental technology and helped me understand that I am happy when I am working outdoors in the field.”
AMANDA JOHNSON HREN, Environmental Science and Technology major, completed her internship at the Alliance for Green Heat in Maryland, a small nonprofit start-up group promoting residential thermal biomass as an alternative energy source. Hren believes that launching her career in a start-up atmosphere has made her more willing to voice suggestions to upper level management; which might otherwise be intimidating to a recent graduate.

Her internship also introduced her to the political aspects of renewable energy, as she attended House and Senate informational meetings arranged by industry groups. “These meetings showed me the remarkable ignorance of some elected officials when it comes to renewable energy, and it is something no one teaches you in class,” says Hren. “I strongly believe that having worked in both the renewable energy field and the unique environment of a start-up organization contributed significantly to getting me hired.”

Currently, Hren is a staff scientist at Apex Company where she works on a variety of environmental projects; proposal writing, remediation work and data collection. Her projects include stormwater sampling for the DC government, in-situ remediation of PCE-contaminated water, and Phase I and II environmental site assessments. “I feel lucky to have found a job I like so much, and so soon following my graduation!”

Hren believes that the ENST program made her who she is today, as it offered her so much room for choice and customization of the degree. “Within the Ecological Technology Design concentration, I was able to pick and se classes, which specifically appealed to my love of residential-scale renewable practices and designs.”
Dr. Weil has been fighting poverty in Africa for many years. In 2009 he teamed up with The Earth Institute to work on the Millennium Villages Project, which is aimed at sustainable solutions to end extreme poverty. For Dr. Weil, the project provided the opportunity to use what he knows about soil science and sustainability to find better ways for communities to lead their own development. The program works at 14 sites in 10 African countries and aims at enhancing farm productivity, health, education, and business development. “I am like the dirt doctor” Dr. Weil says, but instead of showing up with a doctor’s leather bag, he carries his toolbox filled with equipment used to test, monitor and sample soil and plants.

In addition to his ongoing work with Millennium Villages, Dr. Weil seeks to develop and upgrade the capacities of African universities to teach soil science and agronomy at the graduate level. Through a contract with Alliance for a Green Revolution in Africa, antiquated and outdated soil programs are receiving a modern and integrated facelift, to address the sharp decline in enrollment that soil programs were enduring throughout the past two decades.

Challenges that need to be addressed include recruiting high-quality faculty and staff, in addition to attracting qualified Ph.D. and Masters candidates that can make this effort succeed. In 2011, Dr. Weil spent six months working at the Sokoine University of Agriculture in Tanzania where he helped upgrade the Ph.D. programs and mentor some 20 new graduate students. His biggest challenge was to help ensure that the dissertation research of these students was both scientifically rigorous and relevant to the needs of furthering agriculture development in Africa.
From Ethiopia to Finland and from nutrient management to renewable energy, ENST faculty are active in 28 countries.
Dr. Jennifer Murrow Joins ENST

Dr. Jennifer Murrow is the newest faculty member in ENST. A wildlife biologist by training, she is teaching several courses, including Principles of Wildlife Ecology and Management, Wildlife Management Field Techniques, Urban Wildlife Ecology and Management, and Advanced Habitat and population Modeling of Wildlife. During the summer, she does independent research on butternut (Juglans cinerea), elk (Cervus canadensis), and American black bears (Ursus americanus). Since she started working at UM in August 2011, she has been involved with waste management, regarding habitat certification of their properties in Maryland through the Wildlife Habitat Council. She also has been featured in “National Geographic Kids” magazine and has been a guest speaker at Takoma Park Middle School regarding wildlife behaviors. Dr. Murrow advises more than 50 wildlife ecology and management students.

Learn more about Dr. Murrow at www.enst.umd.edu/People/Murrow

New Book for Dr. Prabhakar Tamboli

Dr. Prabhakar Tamboli, an adjunct professor in ENST, has published his book titled “Revitalizing Higher Agricultural Education in India: Journey towards Excellence.” The book gives a comprehensive insight into the many systemic problems that affect the Higher Indian Agricultural Education system. This includes the role of bilateral and multinational donors in agricultural universities and the role of the Indian Council of Agricultural Research in supporting Higher Education. “These authors have put together their knowledge of the sector of human resource development in critically analyzing the current issues and challenges facing higher education in the 21st century,” says Dr. Cheng-i Wei, Dean of the College of Agriculture and Natural Resources. “Their constructive and visionary suggestions to bring India’s Higher Agricultural Education system up to par with other world class systems, should serve as a road map to educators and policy planners around the world.”

Learn more about Dr. Tamboli at www.enst.umd.edu/People/Tamboli

For the Love of Soil

It is easy to take soil for granted, yet it is one of the most important resources we have. In response to growing concerns about the condition of soil around the world, the Soil Science Society of America (SSSA) has launched a campaign: “The Story of Soil.” The campaign is designed to educate the general public about the importance of healthy soils as well as introduce them to the soil science profession.

Dr. Marty Rabenhorst, professor of soil science in ENST, is on the SSSA Board of Directors. He has been involved in testing various ideas for this project. “We aim to grab people’s attention and help them realize that the soil is a crucial resource that affects their every day lives,” says Dr. Rabenhorst.

For more information, visit www.soils.org or follow @SSSA_soils on Twitter.
Explore Our World at 2012 Maryland Day!

Don’t miss the 2012 Maryland Day on April 28th from 10 a.m. to 4 p.m. All over Maryland’s 1250 acre campus, visitors can tour exhibits and demonstrations designed by students and faculty. The campus will be divided into six specific areas of exploration, learning and fun: Science and Tech Way, Ag Day Avenue, Arts Alley, Sports and Rec Row, Biz and Society Hill, and Terp Town Center. On the Ag Day Avenue, ENST professor Dr. Stephanie Lansing will demonstrate an anaerobic digestion system while Dr. Patrick Kangas will be showcasing a solar powered algal turf scrubber. In addition, ENST undergraduate student organization RESTORE will be selling cotton candy, and much more! Come back to campus, visit with friends, and see how the University has grown!

Learn more about 2012 Maryland Day at www.marylandday.umd.edu

POP(corn) Celebration

On February 18 ENST participated in the 2012 Discover Engineering Family Day as part of the kick off to Engineers Week. Four members of ENST in conjunction with the American Society of Agricultural and Biological Engineers, and in addition to student volunteers from the Fischell Department of Bio-Engineering spent the day introducing families to the science behind one of America’s favorite snacks—popcorn. This was done through a presentation entitled “POP(corn) Science”, which demonstrated the scientific process of making popcorn. The presentation was combined with a short video clip explaining how popcorn is harvested, sorted, weighed, graded, inspected, and packaged. Discover Engineering Family Day, now in its 8th year, is designed to provide hands-on STEM (Science, Technology, Engineering, and Mathematics) activities for family and children. Located at the National Building Museum in Washington DC, the event attracted more than 13,000 people.

Dr. Bruce James Named Best Professor

Dr. Bruce James, ENST professor of soil chemistry and Director of the Environmental Science & Policy Program, was named “Best Professor” by “The Diamondback” Readers’ Choice Awards.

Dr. James’s newest recognition from “The Diamondback” will be added to a lengthy list of awards, including the Lilly-CTE Teaching Fellow Award, the College of Agriculture and Natural Resource’s Teaching Excellence Award, and the University of Maryland’s Distinguished Scholar-Teacher Award. “I was really surprised, having not known about the award at all,” he said. “It is a very special award, indeed, especially since it was from Maryland students, those whom I serve through my teaching. I am flattered and honored.”

Learn more about Dr. James at www.enst.umd.edu/People/James

Since coming to the University of Maryland in 1986, Dr. James has taught classes focusing on environmental science and soil science. He recently became one of the Sustainability Studies program directors and is teaching a new course—Introduction to Sustainability.
More than one million sea turtle eggs hatch on Sri Lanka’s coast every year, fighting the natural elements and human egg poachers, before even reaching the sea. This 3-day-old Green turtle hatched at the Nimal Shantha’s Turtle Farm in the coastal town of Pereliya, which was completely destroyed in the 2004 Tsunami.