

Sustainability Awards: 2012

Awarded May 16, 2013

Discovery Award

Winner: Dr. Keith Goyne

Runner-up: Dr. Rose-Marie Muzika

Respect Award

Winner: David Mars

Runners-up: Sharone Nehorai and Shashikanth Gajaraj

Responsibility Award

Winner: Ben Krietner

Runner-up: Ann Millington

Excellence Award

Winners: Ben Datema and Shashikanth Gajaraj

Nominating Information

Dr. Keith Goyne

Over the past eight years, Dr. Goyne's research has focused on investigating environmental challenges being combated in Missouri, the nation, and across the globe. Primary focal areas of Dr. Goyne's research include: (1) evaluating emerging contaminant interactions in geomechanics and developing techniques to mitigate organic and inorganic pollutant movement from the terrestrial landscape to water resources; (2) investigating agricultural land management practices that enhance carbon sequestration and improve soil quality; and (3) evaluating changes in soil quality and nutrients in natural forests harvested for woody biomass and timber, thereby identifying forest management practices that are sustainable for future forest growth and production. Notably, this work spans from molecular reactions to small watershed scale processes, thus demonstrating Dr. Goyne's ability to address pertinent scientific questions using a wide variety of techniques. His research in these areas has resulted in 27 publications in top-tiered journals in the field of soil and environmental science since arriving at MU in 2005.

As Dr. Goyne has quite a number of ongoing research projects investigating pertinent issues associated with environmental contaminants and land management effects on soil quality and nutrients, I have chosen to focus my discussion on his research investigating veterinary antibiotics. Veterinary antibiotics are pharmaceuticals used in animal agriculture for therapeutic, prophylactic, and growth promotion purposes. Although these drugs are quite useful in animal agriculture, large portions of an antibiotic dose pass through the gastrointestinal track of animals. These emerging contaminants are then released into the environment during land application of manure to improve soil fertility. Subsequently, surface water runoff events generated by large storms can transport veterinary antibiotics to surface water resources where they may harm aquatic ecosystems and increase development of antibiotic resistant pathogens.

Dr. Goyne has developed a novel research program investigating the use of vegetative filter strips to mitigate veterinary antibiotic entry into surface water resources. Due to the complexity of this work and the great need to develop solutions for reducing veterinary antibiotic runoff from agricultural lands, Dr. Goyne assembled and coordinated research activities involving ten scientists from three states and four research institutions. Experiments completed and in progress address: (1) veterinary antibiotic interaction with manure-derived dissolved organic matter and soils collected from vegetative filter strips (Chu et al., 2010; Chu et al., 2013a; Chu et al., 2013b); (2) the effects of different vegetative buffer species on antibiotic degradation (Lin et al., 2010); (3) antibiotic impacts on soil microbial communities present in filter strip soils (Unger et al., 2013); (4) validating the utility of vegetative filter strips to reduce antibiotic loads in surface runoff using plot-scale trials (Lin et al., 2011); and (5) the influence of veterinary antibiotics on herbicide degradation in agricultural soils (in progress). Cumulatively, this body of work demonstrates the great potential for using vegetative filters strips to intercept and mitigate veterinary antibiotic migration to surface water resources, and it greatly improves scientific understanding of veterinary antibiotics in the environment.

Dr. Rose-Marie Muzika

Muzika's research emphasizes disturbance ecology; particularly long-term changes in forest composition and processes as influenced by both natural and anthropogenic disturbances. Current research efforts within the broad topic of disturbance ecology include the effects of non-indigenous organisms on forest succession and the role of silviculture in moderating such effects. In an attempt to predict the resilience of specific forest types to disturbance, other ongoing research includes studies of the variability of recovery from disturbance and the influence of ecosystem type on the success of establishment of exotic organisms. Understanding plant species distribution and abundance, pre-settlement vegetation, interactions of climate and disturbance, and assessing site-related tree growth and stand development represent other fundamental questions of interest.

David Mars

David Mars is an Energy Management Specialist with Columbia Water & Light. His job is to educate our customers about the efficient use of energy and water. He interacts with civic groups, customers and students on a one-to-one basis daily. He takes on the advisory role of dealing with the thousands of new students coming to Columbia as first-time tenants, providing guidance on energy usage in their dwellings, advising on how to make an energy budget, and demonstrating specifics like how to properly set their thermostats. He also works diligently and tirelessly with the indigent and persons not able to pay their utility bills, finding solutions to their energy problems and assisting with finding help.

But David's work doesn't stop with our customers. He is also responsible for a monthly TV Show known as Conservation Tips that airs on the Columbia Channel. The show provides "how to" for simple energy efficiency retrofits, recycling and some renewable energy concepts that can be easily accomplished. Conservation Tips is available on YouTube and has been viewed by hundreds of thousands of people across the United States. David receives thank you notes from energy agencies all over the country, asking for permission to re-use the shows. In addition, David is known in the Columbia region for his many appearances on the Paul Pepper show as the Energy Guy. He has garnered a great rapport within

the the Mid Missouri region, and helped to secure Columbia's reputation as a sustainable community known throughout the entire country.

At Columbia Water & Light, we view conservation as a renewable resource. In the area of energy, especially, lifestyle awareness is the key to bridging the gap between growing needs and decreasing resources. David helps people understand that seemingly small choices they make on an everyday basis can save them energy and money, and those small choices multiplied across a community can mean huge leaps for conservation and sustainability.

David Mars has worked for Columbia Water & Light for over 30 years. He is a 1968 graduate of the University of Missouri. His Conservation Tips videos can be found on YouTube here:

<http://www.youtube.com/user/cwlvideo/videos>

Sharone Nehorai

Currently I (Sharone Nehorai) am affiliated with 4 clubs, and an officer in 2 of them. As an Awareness Chair in the Animal Welfare Club I educate , advertise donations to the CMHS (Central Missouri Humane Society), and promote discussions on controversial topics on animal welfare with scientific arguments at least once a week for campus members.

In Raptor Rehabilitation Project, I train with birds in order to provide assistance in presentations directed towards the general public. The most common way people find out proper methods for saving a wildlife species is to contact the nearest rehabilitation facility. When people fail to do so, they risk further endangerment of the animals' livelihood permanently (especially with birds and their hollow wing bones). Every few weeks I manage to be a part of a presentation which can last a few hours.

I am a CAFNR representative for F.A.S.S. (Fisheries and Aquatic Sciences Society), and our organization takes water quality very seriously for the health of our stream systems. We perform stream cleaning, gather data on macroinvertebrates, collect breeder fish, and other similar tasks every 3 weeks or so.

I educate my friends and family on a regular basis on new ways to promote sustainability. Also, if I happen to see someone who is considering throwing a recyclable away, I immediately offer to recycle it for them.

I perform frog husbandry tasks every other day in the Gerhardt lab in order for the frogs to provide research-based answers relating to their conservation in the wild, Our lab publishes research relating to noise pollution (cars driving by), edge effects (roads), and even more importantly, chytrid fungus! This summer I will have the blessed opportunity to contribute to the community by performing my own frog research with a fellow PhD student.

Shashikanth Gajaraj

Based on a personal experience, I have observed that the recycle bins are not located in a very convenient location for use. They are mostly hidden from sight atleast in Lafferre Hall (Engineering Building). The most accessible ones are the trash bins which end up disposing valuable resources in a

landfill. Excellent examples to this claim are the Engineering Library and Ketcham Auditorium. There are no recycle bins in the immediate vicinity and the only ones accessible are the trash bins. Nevertheless at the end of each working day or a meeting the bins collect valuable resources along with trash to eventually end up in a landfill.

As the President of the student organization, Shashikanth used the member resources to identify key problems and single out this issue. Later, he spearheaded and volunteered to segregate, identify and classify the waste over a period of time to locate key areas of waste generation such as the library, auditorium entrance, classrooms, department offices etc. He has now started a funding drive to raise money from corporate sponsors to provide additional recycle bins in addition to existing ones in the newly identified locations. Once installed, I believe the segregation of waste at the source will benefit better recycling programs and promote significant waste reduction. The janitors should be able to help empty these thereby sustaining the program in the long run. If successful, this program can be used as an example to implement across the campus. A very simple and effective step towards sustainability.

Shashikanth is crazy passionate about the environment. He understands that he needs more manpower to achieve his visions and so has spearheaded the 'Water & Environment Technologists' student organization, regularly increasing its membership with fun and social activities. But not forgetting the real motive, he has organized local water body water quality monitoring events and numerous Hinkson Creek and Columbia City cleanups. He has visited schools in and around Columbia and invited children over to the engineering college at MU to entice them about environmental engineering. He has also contributed on the 'technical' committee and as the 'health and safety officer' for Mizzou Engineers Without Border (EWB) with their wastewater treatment plant resurrection project in Honduras. He currently volunteers for the City of Columbia in their storm-water management program.

Ben Krietner

Ben Krietner established plans to create a green roof on top of Rollins Dining Hall. The green roof will soak up rainwater and provide benefits for the building's drainage and gutter system. It will also help with energy efficiency and noise reduction.

Ben received a \$27,000 grant from the MU Student Fee Capital Improvement Committee to create the first sector of the green roof. The green roof is designed using a modular system to make maintenance easier, but MU Campus Facilities is currently reviewing the proposal.

Ann Millington

She's trying to take actions to fix the problems on campus. Such as recycling across campus--but focusing on the major problem makers now (fraternities)--and she is trying to green the buildings too.

She's a freshman that's trying to make a huge difference on campus! She's green as they get, not literally of course. But, she goes out of her way to pick up water bottles and recycle them, she's vegetarian, and she's conscious of environmental footprint. She'd make a great candidate for the responsibility award.. or excellence, or any, really.

Ben Datema

He is currently the coordinator of the Environmental Leadership Office. In the past, he worked for the MU Sustainability Office and was an MU graduate. While an undergraduate student, he was an active member of Sustain Mizzou and helped organize Tiger Tailgate Recycling. He will be leaving the University for a job opportunity in Boston.

He has always been the central contact person for students who want to get involved with sustainability on campus. Many volunteer positions were filled by Ben's recruitment efforts and the success of some projects were heavily reliant on his communication skills.