JEFFREY BRAWN (professor and department head)
Dr. Brawn investigates how climate change and land use affect biodiversity. With an emphasis on birds in Illinois and tropical ecosystems, he is advancing understanding of how we can conserve populations and communities of wildlife. He also studies the role of wildlife in the dynamics of infectious diseases such as West Nile Virus.

YUJI ARAI (associate professor)
Dr. Arai employs a broad range of traditional and cutting-edge molecular scale approaches and tools at various temporal scales to better understand the complex chemical processes in soils and at the mineral-water interface. This understanding allows him to predict the biogeochemical fate/cycles of nutrients and contaminants and to assess the risk in the aquatic and terrestrial environment.

RICHARD J. BRAZEE (associate professor)
Dr. Brazee's research mathematically models the optimal use of natural resources, including forests, land, and fishery stocks over time. His research provides extensive foundations for other scholars' research efforts, is adopted by financial institutions to evaluate long-term projects, and serves as a basis for public policy and management debates.

JENNIFER FRATERRIGO (associate professor)
Dr. Fraterrigo is advancing the mechanistic understanding of how ecosystems, and the services that they supply, respond to environmental change. By integrating processes that operate at different spatial scales, she supports decision-making that promotes ecosystem and landscape resilience.

KAIYU GUAN (assistant professor, Blue Waters professor)
Dr. Guan provides solutions for real-life problems, such as large-scale crop monitoring and forecasting, water management and sustainability, and global food security. He uses satellite data, computational models, field work, and machine learning approaches to address how climate and human practices affect crop productivity, water resource availability, and ecosystem functioning.

ROBERT J.M. HUDSON (associate professor)
Dr. Hudson's research helps advance methods for more accurately simulating soil carbon dynamics and the reactivity of trace metals in natural waters. His group developed a novel technique for measuring methylmercury that has been applied to quantify mercury pollution in muscle tissues of wildlife, waters of wetlands, rivers, and denitrifying bioreactors, and sediments of wetlands and coastal oceans.

ANGELA D. KENT (professor)
Dr. Kent studies microbial communities that help sustain healthy ecosystems. Her work predicts impacts of global change and other human forces on the functions of microbial ecosystems, and enhances environmental quality by harnessing microbial processes.

MING KUO (associate professor)
Dr. Kuo's work helps cities provide a healthy human habitat for their residents by showing the benefits of urban greening. Her research shows that urban greening reduces aggression and crime in inner cities, reduces ADHD symptoms in communities of all sizes, promotes self-discipline and academic achievement in children, and promotes health across the lifespan by boosting the human immune system. She also defines sustainable landscape practices for all federal lands in the United States and internationally.
WHAT WE DO & WHY IT MATTERS, cont’d

Natural Resources and Environmental Sciences

**ERIC LARSON** (assistant professor)
Dr. Larson focuses on protecting and managing freshwater species and ecosystems. He improves conservation decision-making by taking advantage of modern tools like environmental DNA (eDNA), stable isotope analysis, and species distribution modeling. This approach allows him to forecast which species are at risk of extinction and which species are likely to become invasive before those patterns are detectable using classical tools.

**JEFFREY MATTHEWS** (assistant professor)
Dr. Matthews contributes to the conservation and restoration of wetland ecosystems. He conducts field research on the ecology of freshwater wetlands, ecological restoration, and ecosystem services. He also studies U.S. and international environmental policies that affect wetlands.

**KEVIN MCSWEENEY** (clinical professor)
Dr. McSweeneY focuses on reclamation of disturbed land. He is improving handling and transport of soil material and use of specially selected plants to reduce soil compaction. Research is conducted in Illinois and China on active and abandoned mine sites and has application to other disturbed lands in rural, industrial, and urban areas.

**DANIEL C. MILLER** (assistant professor)
Dr. Miller identifies solutions to one of the most pressing challenges of our time: conserving the earth's rich biological diversity while enhancing the well-being of some of the world’s poorest people. He focuses on understanding the effectiveness of funding for conservation and development programs around the world, especially relating to forests in tropical countries. His findings inform policy, funding decisions, and new research directions.

**JAMES MILLER** (professor)
Dr. Miller is advancing our understanding of strategies for conserving biodiversity in working landscapes, comprising both private agricultural holdings and protected areas. He collaborates with social and natural scientists at several universities, as well as land managers in the private and public sectors to address this crucial issue.

**RICHARD MULVANEY** (professor)
Dr. Mulvaney focuses on increasing nitrogen fertilizer uptake in crops, with the goal of increasing profits while reducing negative environmental impacts of excessive nitrogen inputs. This has led to partnerships with the private sector that are directed toward improving application techniques and exploiting the potential of the Illinois Soil Nitrogen Test for site-specific nitrogen management.

**LULU RODRIGUEZ** (associate professor)
Dr. Rodriguez designs, implements, and evaluates the impact of communication campaigns related to agriculture, renewable energy, the environment, food safety, and food security. She works to cultivate science literacy among citizens, and her studies illuminate best practices in communicating science, especially when science is disputed, and when scientific issues become controversial.

**ROBERT SCHOOLEY** (associate professor)
Dr. Schooley investigates how wildlife species and communities respond to human land-uses in a rapidly changing world. He investigates the effects of habitat fragmentation and landscape connectivity on mammals and applies insights to effective conservation. He also assesses the outcomes of large-scale restoration projects intended to benefit biodiversity.

**CORY SUSKI** (associate professor)
Dr. Suski integrates tools in animal behavior, animal physiology, and ecology to protect aquatic resources. He designs novel conservation strategies for stressors that include climate change, angling, and invasive species. His research spans from genes to watersheds, and involves both field and laboratory work.

**CARENA VAN RIPER** (assistant professor)
Dr. van Riper advances knowledge of the psychological mechanisms that shape how people make decisions about the environment. She works closely with stakeholders to incorporate their viewpoints into policy outcomes, as well as develop management strategies for responding to threats ranging from global environmental change and invasive species to human-wildlife conflicts in protected areas.
**MICHÈLLE WANDER** *(professor)*

Dr. Wander works with farmers, educators, and policymakers to quantify the benefits of diversified and organic production, precision conservation and woody perennial polycultures, and determine how standards, voluntary marketing, and decision support tools can encourage soil stewardship.

**MICHAEL WARD** *(associate professor)*

Dr. Ward focuses on species of conservation concern and has developed novel approaches to species conservation. He uses telemetry to radio monitor the behavior and migration of birds. He works with a broad spectrum of people from farmers in central Illinois to the U.S. Army to the Cuban and Mexican governments.

**ANTHONY YANNARELL** *(associate professor)*

Dr. Yannarell uses microorganisms to control weeds and harmful invasive plants. His research sheds new light on the microorganisms that help these pest plants to succeed and the ones that can be used to fight them. By understanding the many different ways that plants and microbes interact, he seeks to improve agricultural productivity and to protect natural areas that are threatened by invasive pests.