

Earth Institute Executive Education Certificate Program in Conservation & Environmental Sustainability

Fall 2015 COURSES

MODULE 1

Environmental Markets: The Nexus of Business, Regulation, and Sustainability

Richard Weihe, Managing Partner, Karbone

Companies around the world are developing innovative solutions in the area of energy efficiency, water infrastructure, and waste management technologies. The leading companies in these markets are fast becoming major drivers of global economic growth as industries, governments, and societies come to terms with these challenges. Learn the history of the development of environmental markets and how they are used to solve environmental issues. Examine the political, business, and regulatory contexts of these markets using real-world examples through case study analysis. Topics include air quality, climate change, pollution, water, and renewable energy mandates.

- Meets: Mondays, Sept. 21, 28 Oct. 5, 12, 19 (5 sessions; 6:10-8:10PM)

Richard Weihe has over eighteen years experience in the energy and environmental sectors in a variety of roles including investment management, environmental credit and energy trading, and engineering consulting project management. As Managing Partner at Karbone, he spearheads business development activities and oversees the firm's practices in renewable power and environmental credit brokerage, capital advisory services, and renewable energy market research. Prior to Karbone, Mr. Weihe was a senior investment analyst with RNK Capital where he originated and directed investment analysis on a variety of private equity and project-related renewable energy and environmental credit transactions. Prior to RNK Capital, Mr. Weihe has held a variety of commercial and management positions in the energy and environmental risk management sectors. In the energy sector, Mr. Weihe has completed transactions in solar, wind, geothermal, landfill gas, biomass power, and biofuels. In addition, Mr. Weihe has completed water rights related transactions in the Western U.S.

Environmental Economics

Urvashi Kaul, Education Manager for Robert K. Kennedy Compass & Adjunct Assistant Professor, School of International and Public Affairs at Columbia University

This course provides an introduction to environmental economics through a discussion of the basic principles of microeconomics as they apply to environmental issues and analysis of case studies that illustrate how economics can guide conservation practice and policy. Class discussion also includes a review of solutions to such market failures, such as taxes and subsidies, fees and quotas, especially tradable emissions permits, e.g., carbon markets.

- Meets: Tuesdays, Sept. 8, 15, 22, 29, Oct. 6 (5 sessions; 6:10-8:10PM)

Urvashi Kaul is the Education Manager for RFK Compass. She works with the investment community to encourage the use of sustainability as an integral part of their strategies. Prior to joining RFK Compass in 2012, Ms. Kaul was an Assistant Director for Economic Research and Analysis at the New York City Economic Development Corporation, where she evaluated economic and fiscal impacts of development projects and events, and analyzed policies and

proposals related to New York City's economic development. She served as the standing advisor for the New York City Labor Market Information Service at the Center for Urban Research, City University of New York. Before that, she was an Economist for Fiscal and Budget Studies at the Office of the New York City Comptroller. Ms. Kaul is an Adjunct Assistant Professor of International and Public Affairs at Columbia University, where she teaches graduate level courses in Economics and Finance. She serves as the chair of the board of directors of Adhikaar, a New York based not-for-profit organization promoting social justice and human rights. She also serves as a member, board of directors of Asia Initiatives. A native of Kashmir, India, her education includes an MPA from Columbia University, with a concentration in International Finance and Economic Development; a Masters Degree from the Delhi School of Economics, University of Delhi; and an Undergraduate Degree from Miranda House College, University of Delhi.

MODULE 2

Systems Thinking to Facilitate a Regenerative Economy

Jeffrey Potent, Adjunct Professor, Columbia's School of International and Public Affairs.

This course introduces systems theory to advance the practice of sustainable development. We will explore how systems manifest in nature and in human society, and how systems thinking can complement conventional analytic approaches to understanding the world around us. We will learn about knowledge systems, an approach to learning and collaboration that can achieve outcomes which are scientifically sound, relevant to the issues at hand, and respectful of the interests of all involved parties. From there, we will examine how knowledge systems are applied to sustainable development to address the complex challenges associated with balancing environmental, social, and economic objectives over time. Along this journey, we will have lively discussions about what a sustainable and regenerative society might look like and the prospects of actually getting there.

- Meets: Tuesdays, Oct. 13, 20, 27, Nov. 10, 17 (5 sessions; 6:10-8:10PM)

Jeffrey Potent is an adjunct professor at EICES and the Columbia University, School of International and Public Affairs. He develops and teaches courses in corporate sustainable development, systems theory, ecosystem services, and sustainable agriculture, and also consults on corporate sustainability. Mr. Potent formerly led corporate partnerships for the US Environmental Protection Agency (EPA), Office of Water in Washington DC, advancing sustainable and market-based approaches to environmental protection. Earlier in his career, he served as EPA/US Department of Agriculture (USDA) liaison, facilitating collaboration among Land Grant Universities, EPA, USDA, and other agencies and academic institutions. In 2001 he established the regional component of the USDA National Integrated Water Quality Program, serving as regional coordinator and member of the program's national leadership team. Before that, he led an energy and environmental engineering consulting practice, managed pollution prevention programs for a large environmental agency, and planned telecommunications systems for a global telecommunications corporation.

Introduction to Ecology

Jenna Lawrence, *Department of Ecology, Evolution & Environmental Biology, Columbia University*

This course examines the interaction between the living components of the earth with the environment, including the distribution and abundance of plants and animals and the impact of human activities on these distributions. Key ecological principles are illustrated with applied examples of how changes in the environment affect ecological systems, ultimately providing you with the tools to evaluate environmental issues.

- Meets: Wednesdays, Oct. 14, 21, 28, Nov. 4, 11 (5 sessions; 6:10-8:10PM)

Jenna Lawrence received her Ph.D. from the department of Ecology, Evolution and Environmental Biology at Columbia University. Her research focuses on primate behavioral ecology, and her current lectures and interests extend to all biodiversity in both marine and terrestrial ecosystems. At Columbia University, she also teaches sustainability management at the graduate level and a Summer Ecosystem Experiences for Undergraduates (SEE-U) program that EICES provides in the Caribbean and Jordan.

Evolutionary Adaptations and Behavior

Scott Silver, *Facility Director/Curator of Animals, Wildlife Conservation Society*

Day to day survival in the animal kingdom is comprised of a nearly limitless catalogue of behaviors that individuals display throughout their lives. The interaction between physical adaptations, the environments within which animals live, and the behaviors they engage in generally maximize each individual's chances for survival and reproduction. Learn about the vast variety of adaptations and behaviors that are exhibited by everything from fruit flies to flying foxes, through an introduction to some basic concepts in animal behavior and evolution, as we survey some of the more fascinating examples within the range of behavioral adaptations. This class includes a day trip to the Bronx Zoo or Queens Zoo to observe some of the behavioral phenomena covered in class.

- Meets: Thursdays, Oct. 15, 22, 29 (3 sessions; 6:10-8:10PM) and Saturday Oct. 24 (11AM-3PM; Bronx Zoo or Queens Zoo trip)

Scott Silver earned his Bachelor's degree in zoology from the State University of New York at Oswego. Scott began his zoo-keeping career at the Bronx Zoo in 1983, as an intern in the mammal dept while in college. He joined the mammal dept. shortly after graduation in 1984, and in 1989 he transferred to the zoo's education department. He earned his Master's degree in Biology from Fordham University in 1993, and left the education department to pursue field research of translocated howler monkeys in Belize, Central America. He earned his Ph.D. in biology in 1997 and in 1998 joined the Queens Zoo as the assistant curator of animals, becoming curator in 2000. He became the Director at the Queens Zoo in 2007. He has been the Andean (Spectacled) Bear Species Survival Plan coordinator for the Association of Zoos and Aquariums since 2000, and has a long history of jaguar research throughout central.

MODULE 3

Ecology of Emerging Diseases

Peter Daszak, *President, EcoHealth Alliance; Adjunct Senior Research Scientist, Earth Institute Center for Environmental Sustainability, Columbia University*

Why do pandemic diseases like A.I.D.S., Ebola, influenza and SARS emerge? What causes them to ‘spillover’ from wildlife to people and spread so rapidly around the world? More than sixty percent of emerging infectious diseases that affect humans originate in animals and more than two-thirds of those originate in wildlife. Human processes that infringe upon previously uninhabited areas have the potential to profoundly affect our exposure to diseases around the world, causing millions of people to become infected, and costing billions of dollars each year. Yet health assessments rarely take into account the principles of disease ecology, the interaction of the behavior and ecology of hosts with the biology of pathogens. Gain an overview of the principles of disease ecology with an emphasis on the effect of disease on human, wildlife, domestic animal, and ecosystem health. Explore the environmental and socioeconomic drivers behind the rise of Ebola, SARS, HIV and other devastating pandemics, and examine the impact of disease on biodiversity and rates of extinction.

- Meets: Mondays, Nov. 23, 30 Dec. 7, 14, 21 (5 sessions; 6:10-8:10PM)

Peter Daszak is President of EcoHealth Alliance, a US-based organization which conducts research and outreach programs on global health, conservation and international development. Dr. Daszak’s research has been instrumental in identifying and predicting the impact of emerging diseases across the globe. His achievements include identifying the bat origin of SARS, identifying the underlying drivers of Nipah and Hendra virus emergence, producing the first ever global emerging disease ‘hotspots’ map, identifying the first case of a species extinction due to disease, coining the term ‘pathogen pollution’, and discovering the disease chytridiomycosis as the cause global amphibian declines. Dr Daszak is a member of the Institute of Medicine’s Forum on Microbial Threats, the One Health Commission Council of Advisors, the CEEZAD External Advisory Board, and served on the IOM Committee on global surveillance for emerging zoonoses, the NRC committee on the future of veterinary research, the International Standing Advisory Board of the Australian Biosecurity CRC, and he has advised the Director for Medical Preparedness Policy on the White House National Security Staff on global health issues. Dr Daszak won the 2000 CSIRO medal for collaborative research on the discovery of amphibian chytridiomycosis, is the EHA institutional lead for USAID-EPT-PREDICT, and is Editor-in-Chief of the journal Ecohealth. He has authored over 200 scientific papers, and his work has been the focus of extensive media coverage, ranging from popular press articles to television appearances.

Diversity and Conservation

Matt Palmer, Senior Lecturer, Department of Ecology, Evolution & Environmental Biology, Columbia University

Human life and wellbeing are dependent on goods and services provided by nature. However, this natural capital is chronically undervalued and often poorly understood. Biodiversity – the variety of life on earth – supports many ecosystem functions and the loss of diversity can have both obvious and subtle consequences. This course explores the scientific issues related to the origin, distribution, and functions of biodiversity and the consequences of biodiversity loss. We discuss a range of tools for conserving biodiversity – including species recovery plans, protected area management, and ecosystem-based management.

- Meets: Thursdays, Nov. 12, 19, Dec. 3, 10, 17 (5 sessions; 6:10-8:10PM; skip Nov. 26; Thanksgiving)

Matt Palmer is a faculty member in the department of Ecology, Evolution and Environmental Biology (E3B) at Columbia University. His research interests are based in plant community ecology, with emphases on conservation, restoration and ecosystem function. Palmer has done research on the effects of microtopography and plant interactions on centimeter-scale diversity patterns in fens of the New Jersey Pinelands. He is currently doing research on the community dynamics and ecosystem functions of urban forests and green roofs, the population biology of rare plants and the effects of forest canopy disturbance on understory structure and function.