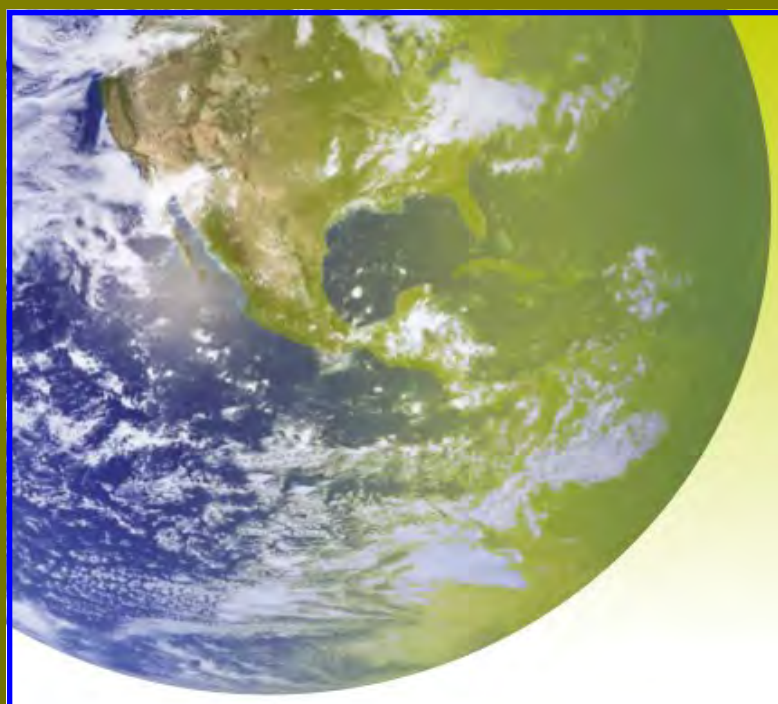

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RESTORING THE PLANET'S ECOSYSTEM SERVICES

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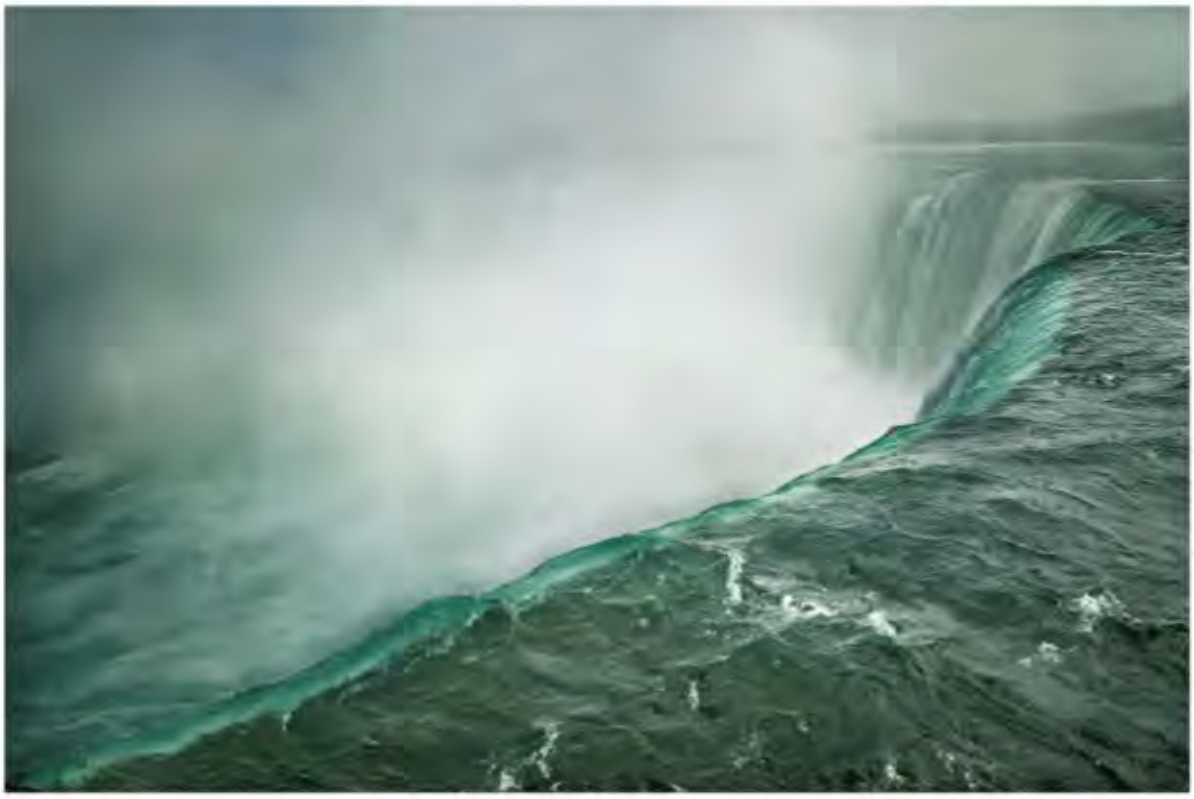

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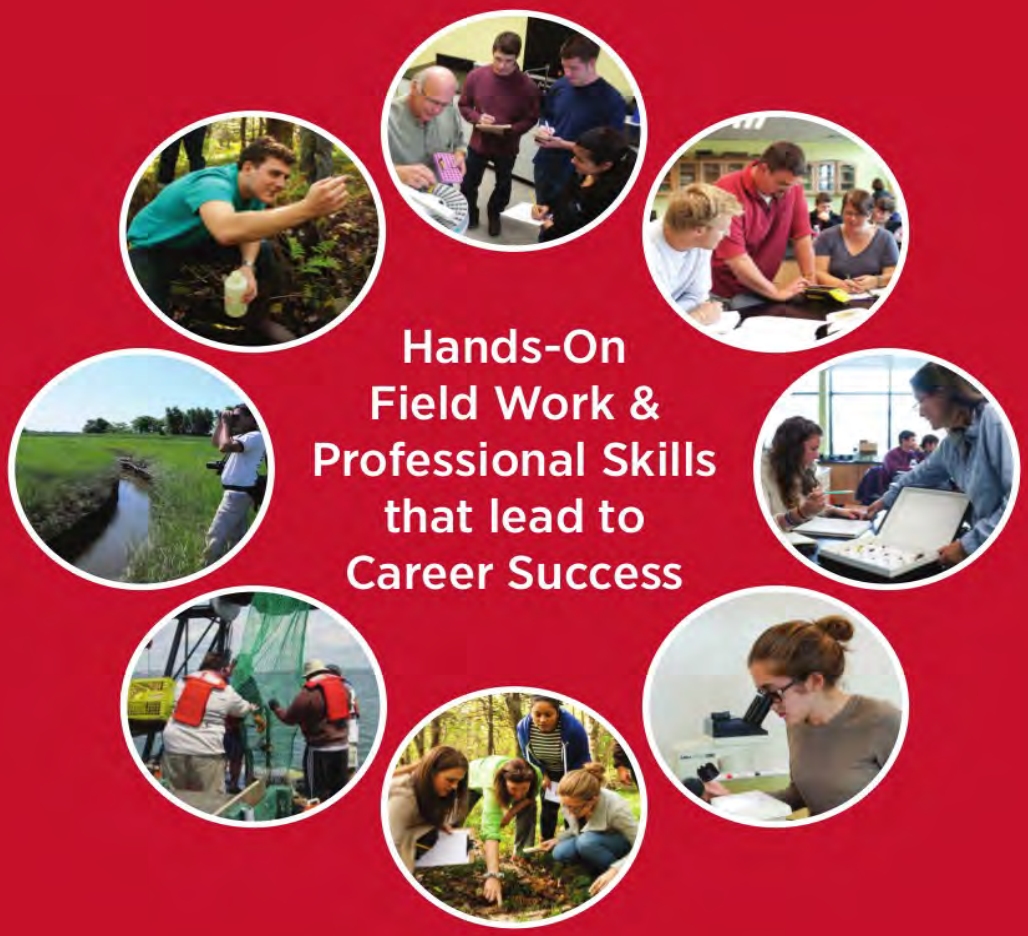

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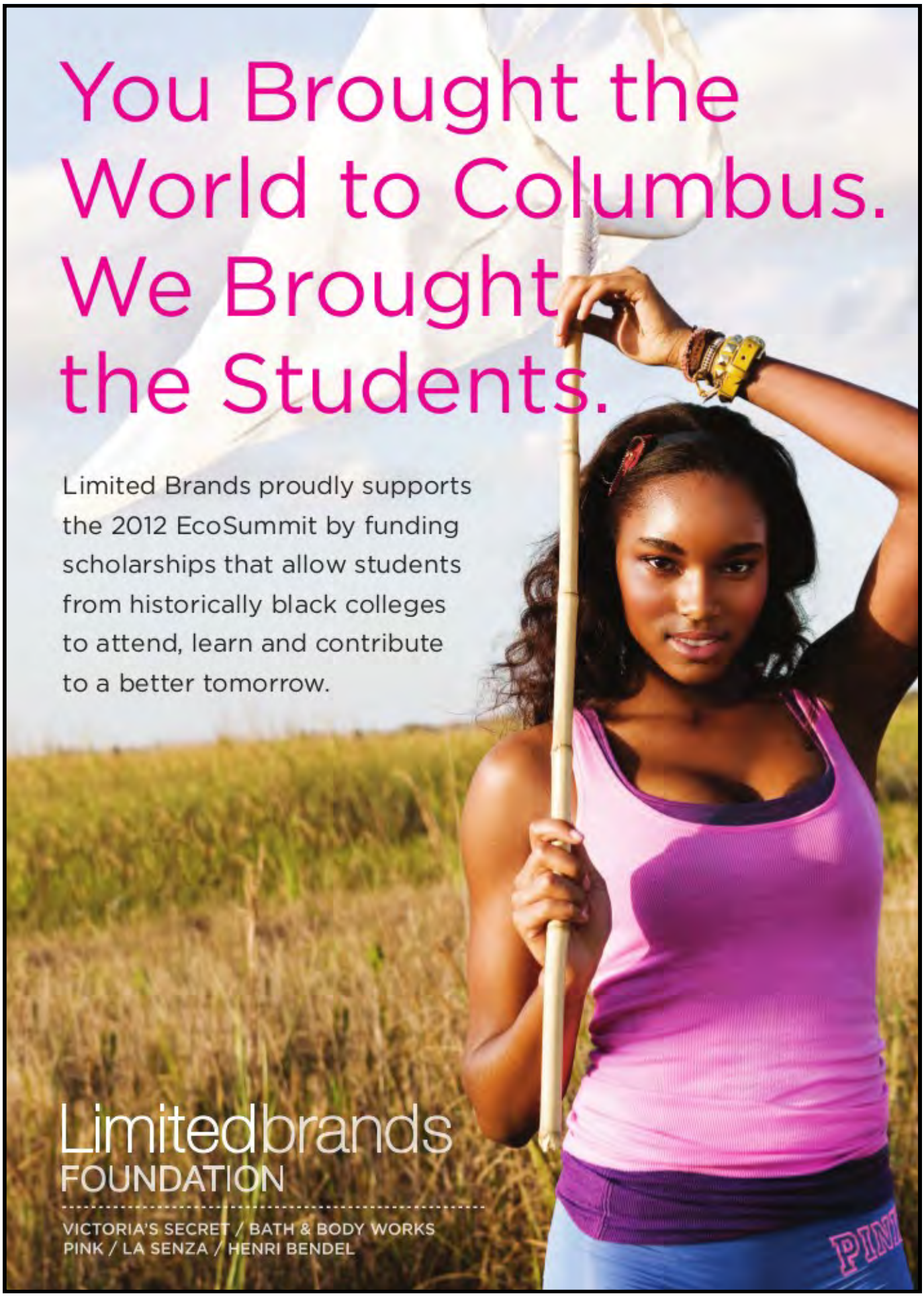
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The Ohio State University — where one of our key themes is Energy and the Environment — is proud to be a sponsor of the **EcoSummit.**

Welcome to Columbus!

The Ohio State University

The College of Food, Agricultural, and Environmental Sciences

The School of Environment and Natural Resources

Welcome to EcoSummit 2012 in Columbus, Ohio, USA!

Dear Colleagues and Friends,

We expect at least 1500 to 1600 delegates from 75 countries to come to this 4th EcoSummit (first one was in 1996) to hear 10 plenary presentations from some of the world's premier ecologists and environmental scientists and over 500 invited presentations in 65 symposia from participants coming from around the world, and to take part in 21 forums and workshops on practical issues related to improving our environment. Moreover, there are an additional 800 general-session and poster presentations during EcoSummit 2012.

Over 100 of you are just arriving to Columbus after 6 pre-conference field trips based in Atlanta, New York, Washington DC, Miami, Chicago, or Columbus that focused on some of the largest ecosystems and ecosystem restorations in Eastern USA. And 1200 of you will take part in one of the 33 mid-conference field trips to fascinating locations throughout Ohio on Wednesday, October 3.

Far more than offering descriptions of the world's environmental problems, this EcoSummit focuses on prescriptions for those problems. Symposia and lectures relate to ecological engineering, ecological restoration, green infrastructure, the prosperous way down, adaptation to climate change, earth stewardship, ecohydrology, eco-informatics, ecological modeling, sustainable agriculture, protection of biodiversity, carbon sequestration, human ecology, and enhancement of ecosystem services.

And the grand ecosystems of the world that will be discussed! The Mesopotamian Marshlands of southern Iraq, the Florida Everglades, the Louisiana Delta, the Yangtze River in China, the Amazon and Pantanal of Brazil, the Laurentian Great Lakes of North America, the Baltic Sea in Europe, the Hackensack Meadowlands and Delaware Bay of Northeastern USA, and many more. And lest we forget, E.O. Wilson's plenary lecture – and two of our pre-conference field trips – feature the Appalachian Mountain ecosystems that are at Columbus's doorstep – 1.9 million square kilometers of recovering and virtually intact deciduous forests and streams that Wilson calls "America's treasure house of biodiversity."

We also honor many of the scientists on whose shoulders we stand and especially note the momentous contributions of three of them whom we especially honor here – Rachel Carson, H.T. Odum, and Elinor Ostrom. Their influence permeates the entire EcoSummit 2012.

I give personal thanks to our many donors and to The Ohio State University, MORPC, the Ecological Society of America, INTECOL, the Society for Ecological Restoration International (SER), the EcoSummit Committee, and especially the hard-working conference staff at OSU, MORPC, and Elsevier for their perseverance and help in making this event happen.

We are excited that you are here in central Ohio and hope you take advantage not only of the great program but also of Columbus's many amenities that await you just outside the Columbus Convention Center doors. Enjoy!

Best regards,

William J. Mitsch, Ph.D.
Chair, EcoSummit 2012

Professor Emeritus of Environment and Natural Resources, The Ohio State University

Eminent Scholar and Sproul Endowed Chair, Florida Gulf Coast University

Columbus, Ohio, USA

Dear Participant,

The Columbus, Ohio region and the Mid-Ohio Regional Planning Commission (MORPC) welcome you to the fourth international ecological conference, Ecological Sustainability: Restoring the Planet's Ecosystem Services. Rarely does such an opportunity exist to showcase our region and the ecological issues that impact the entire world.

We are fortunate to have in our region a rich history of diverse and engaged scientists, business leaders, community activists, and concerned residents who are committed to our planet, our ecosystems, and our sustainability-based businesses.

During the forums, sessions and activities this week, you will have the distinct opportunity to network, engage and create conversation to better understand the complex and interconnected nature of ecological systems and the various solutions in protecting and enhancing their services.

I salute you, the leaders in your fields, for your commitment, your talent, and your dedication to making a difference for our world on a daily basis, tirelessly working to restore and steward our natural resources while ensuring that the planet's residents have the best options in energy, food, recreation, and sustainability.

Enjoy your week-long stay in our beautiful city and experience the wonderfully enriched region through the lens of the field trips offered. Take a moment to experience Columbus, its quaint neighborhoods, exquisite boutiques and vast array of restaurants. Let us be your guide while you're here. You will find us a friendly, helpful and knowledgeable community.

Again, I welcome you to Franklin County, to the City of Columbus, and to EcoSummit 2012. We're glad you're here!

With best regards,

Marilyn Brown
Franklin County Commissioner
MORPC Board Chair,
EcoSummit 2012 Host Committee Chair

Columbus Convention Center. Photo courtesy of D.G. Dolshavsky

EcoSummit History

EcoSummit 2016

Location to be formally announced at the Closing Ceremony, October 5th, 2012.

Please join us to congratulate and welcome the future conference secretariat!

EcoSummit 2007 Beijing, China, May 22 to 27, 2007

Ecological Complexity and Sustainability: Challenges and Opportunities for 21st Century's Ecology

Ecological complexity and sustainability are becoming a core concept and instrument for improving our common future. The aim of this EcoSummit was to encourage a greater integration of both the natural and social sciences with the policy and decision-making community to develop a better understanding of the complex nature of ecological systems. This understanding provides the basis for sustainable solutions to environmental problems.

EcoSummit 2000 Halifax, Nova Scotia, Canada, June 18 to 22, 2000

Understanding and Solving Environmental Problems in the 21st Century

Six discussion groups focused on the following topics: Toward a new, integrated hard problem science; Integrated assessment and modeling; Complex adaptive hierarchical systems; Ecosystem services; Science and decision making; Quality of life and the distribution of wealth and resources.

EcoSummit 1996 Copenhagen Denmark, August 16 to 20, 1996

During the eighties and the beginning of the nineties, several new ecological disciplines grew rapidly: ecological modelling, ecological economics, ecological engineering and biological conservation. International societies and peer reviewed international journals were founded. It was, however, important for these ecological disciplines, which were all indispensable tool boxes for a holistic use of ecology in environmental management, to fertilize each other. So, the focus of the first EcoSummit was to integrate the various ecological disciplines to the benefit of environmental management; this has continued to be a supporting idea behind the EcoSummit conferences to this day. Copenhagen was the cultural capital of Copenhagen in 1996, leading to many cultural opportunities during the meeting.

Contents

EcoSummit 2012 Committee

FRANCISCO A. COMIN

Paco Comin is Research Professor at Pyrenean Institute of Ecology-CSIC, Zaragoza, Spain (2002-2012). He studied under Ramon Margalef and was formerly Professor of Ecology (1983-2002) at University of Barcelona. He is an experienced researcher on biogeochemistry and community ecology of aquatic ecosystems, with a particular interest on the integration of ecological restoration in strategies and programs for the sustainable development of human societies in different countries of Europe and Central and South America. He chaired the 2005 Society of Restoration Ecology International (SER) Congress in Zaragoza Spain. He is serving on the EcoSummit 2012 Committee as an appointed representative of the Society of Ecological Restoration International.

ROBERT COSTANZA

Bob Costanza is Visiting Fellow, Crawford School of Public Policy, Australian National University, Canberra, Australia and was most recently Distinguished University Professor of Sustainability in the Institute for Sustainable Solutions at Portland State University. Before moving to PSU in Sept. 2010, he was the Gund Professor of Ecological Economics and founding Director of the Gund Institute for Ecological Economics at the University of Vermont, on the faculties at University of Maryland and Louisiana State University, and a visiting scientist at the Beijer Institute in Sweden and the Illinois Natural History Survey. Dr. Costanza is also currently a Distinguished Research Fellow at Ecological Economics Research center New Zealand and Massey University, Palmerston North, New Zealand; a Senior Fellow at the National Council on Science and the Environment, Washington, DC, and at the Stockholm Resilience Center, Stockholm, Sweden. Dr. Costanza received BA and MA degrees in Architecture and a Ph.D. in Environmental Engineering Sciences (Systems Ecology with Economics minor), all from the University of Florida. Dr. Costanza is the author or co-author of over 500 scientific papers and 22 books on transdisciplinary research integrating the study of humans and the rest of nature to address research, policy and management issues at multiple time and space scales, from small watersheds. Dr. Costanza is co-founder and past-president of the International Society for Ecological Economics, and was founder and chief editor of the society's journal, *Ecological Economics* (1989-2002) and is founding editor in chief of *Solutions*. His awards include a Kellogg National Fellowship, the Society for Conservation Biology Distinguished Achievement Award, a Pew Scholarship in Conservation and the Environment, the Kenneth Boulding Memorial Award for Outstanding Contributions in Ecological Economics, and honorary doctorates from Stockholm University and the Ecole Normale Supérieure de Lyon.

ALAN P. COVICH

Alan Covich is Professor of Ecology in the Odum School of Ecology at the University of Georgia and currently president of the International Association for Ecology (INTECOL) for 2009-2013. He previously served as president of the Ecological Society of America (2007) and the American Institute of Biological Sciences and as Director of the Institute of Ecology and as Head of Fishery and WIldlife Biology at Colorado State University. Dr. Covich's research focuses on freshwater ecology of streams, lakes, and wetlands in both temperate and tropical ecosystems. His studies on food webs and ecosystem services in the Luquillo Mountains of Puerto Rico are part of the US National Science Foundation's Long Term Ecological Research (LTER) Program. He serves on the LTER National Advisory Board and the Science Advisory Committee for the Land Trust of Puerto Rico. He chairs the Centennial Committee of the Ecological Society of America and serves on the Scientific Committee of the INTECOL meeting being organized by the British Ecological Society in London in 2013. He also served on the NSF NEON Operations Review Committee (2012) and the Executive Committee of the Tyler Prize for Environmental Achievement (2012-2014). And chaired the NSF Blue Ribbon NEON Review Committee (2008-2009), the NSF Committee of Visitors in Environmental Biology (2009), and the Climate-Change Advisory Committee for Resources For the Future (2008-11). He was a Fulbright Scholar at Coimbra University, Portugal (2004) and a NSF Sabbatical Fellow at the National Center for Ecological Synthesis and Analysis in Santa Barbara, California (2000-2001) focused on drought impacts on streams.

RUDOLF S. DE GROOT

Dolf de Groot is Associate Professor in Integrated Ecosystem Assessment & Management with the Environmental Systems Analysis Group of Wageningen University, the Netherlands. He is a Landscape Ecologist by training and has worked for over 25 years on ecological-economic analysis of impact of land use and climate change on ecosystem services as a tool for sustainable planning and management. Dr. De Groot has published over 100 scientific papers, including 2 books, and was involved as Coordinating Lead author in the UN-supported Millennium Ecosystem Assessment (2001-2005) and the recently published study on "The Economics of Ecosystems & Biodiversity" (TEEB 2008-2010). He is a member of the editorial board of several journals, including *Conservation Letters* and *Regional Environmental Change*, editor-in-chief of the international journal on *Biodiversity Science*, *Ecosystem Services and Management* and topic editor of the new Elsevier journal *Ecosystem Services: Science, Policy & Practice*. He is Global Theme leader on Ecosystem Services of the IUCN Commission on Ecosystem Management (CEM) and Chair of the Ecosystem Services Partnership, a worldwide network to enhance the science and practical application of ecosystem services assessment.

CLIFFORD DUKE

Since 2003, Dr. Cliff Duke has directed the Ecological Society of America's (ESA) Office of Science Programs, which promotes the continued development of ecological science and its integration into decision-making and education. As Science Director, he has led a wide range of projects. Examples include workshops promoting data sharing and archiving; ESA's Emerging Issues Conference series; outreach efforts for the U.S. Geological Survey's National Climate Change and Wildlife Science Center; a series of reports on biofuels and sustainability; and peer reviews of research programs and studies for federal and state agencies. Previously, Dr. Duke worked for fourteen years as a consultant in environmental impact analysis and project management on National Environmental Policy Act and Comprehensive Environmental Response, Compensation and Liability Act projects for defense, transportation, and waste management facilities. Dr. Duke has a Ph.D. in Botany and an M.A. in Public Policy Science, both from Duke University, and did postdoctoral research at Northeastern University, Wellesley College, and Harvard University. He is a representative of the Ecological Society of America on the EcoSummit 2012 Committee.

BRIAN D. FATH

Brian Fath is Professor in the Department of Biological Sciences at Towson University (Maryland, USA). He is also a research scholar in the Advanced Systems Analysis Program at the International Institute for Applied Systems Analysis (Laxenburg, Austria). He held a Fulbright Distinguished Chair position at Parthenope University of Naples, Italy in spring 2012 and has taught courses on ecological networks and modeling in Germany, Portugal, Croatia, Denmark, China, France, and Russia. Dr. Fath is editor-in-chief of the journal *Ecological Modelling;* president of the North American Chapter of International Society for Ecological Modelling (ISEM); and chair of Baltimore County Commission on Environmental Quality. He has published over 100 research papers, reports, and book chapters, has co-authored the books *A New Ecology: Systems Perspective* and *Ecological Modelling* (4th edition) and is Associate Editor-in-Chief for *Encyclopedia of Ecology*. Dr. Fath graduated from Miami University (Ohio, USA) in 1990 with degrees in physics and aeronautics. He completed an MS degree in environmental science at Ohio State University (1993) and earned a PhD in ecology from the University of Georgia (1998). He was a post-doctoral fellow at the University of Georgia (1998-2000) and the U.S. Environmental Protection Agency in Cincinnati (2000-2001).

BOJIE FU

Dr. Bojie Fu is Professor of landscape ecology in the Research Centre for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China. His major research interests are landscape patterns and ecological processes, land use change and environmental effects, and ecosystem services and assessment. Dr. Fu is and academician of the Chinese Academy of Sciences, a member of the executive board of International Association for Ecology (INTECOL), vice-president of International Association of Landscape Ecology, vice chair of the Scientific Committee of Chinese Ecosystem Research Network (CERN) and vice-president of the Chinese Ecological Society. He serves as editor-in-chief of *Chinese Geographical Science*, and is on the editorial boards of *Landscape Ecology and Landscape and Urban Planning*. He has published more than 300 scientific papers and 8 books, with about 120 papers published in international journals.

RICHARD B. HOWARTH

Rich Howarth is Professor of Environmental Studies at Dartmouth College and the Editor-in-Chief of *Ecological Economics*. His work centers on the normative aspects of environmental governance with applications to topics such as energy use, climate change, and ecological conservation. Professor Howarth holds degrees from Cornell University (A.B., 1985), the University of Wisconsin-Madison (M.S., 1985), and the University of California at Berkeley (Ph.D., 1990), where his work focused on international comparisons of energy-use trends and the economics of sustainable development. Prior to his appointment at Dartmouth, he held positions at the Lawrence Berkeley National Laboratory (1990-1993) and the University of California at Santa Cruz (1993-1998).

ANTHONY JOHN JAKEMAN

Tony Jakeman is Professor, Fenner School of Environment and Society, and Director of the Integrated Catchment Assessment and Management Centre, The Australian National University. He has been an Environmental Scientist and Modeller for over 35 years and has over 300 publications in the open literature. His main background is in applied mathematics and hydrology. Interests include integrated assessment methods and decision support systems for water and associated land resource problems, including modelling and management of water supply and quality problems in relation to climate, land use and policy changes and their effects on biophysical and socioeconomic outcomes. Dr. Jakeman has undertaken research projects and consultancies for AusAID, the Murray-Darling Basin Commission/Authority, many federal, state and local government agencies, and Catchment Management Authorities, often working as project leader. For example he has been leader of the Integration programs in two federally funded Centres: one is the Commonwealth Environmental Research Facility known as Landscape Logic; and the other is the 2009-funded National Centre for Groundwater Research and Training. He has held visiting positions at Stanford, Cambridge and Lancaster Universities, CSIRO and the US Geological Survey; and is Adjunct Professor at the University of Western Australia. He was also warded the Silver Medal of Masaryk University in 2011 for contributions to environmental modelling and software. In 2012 he was awarded the Ray Page Lifetime Achievement Award from Simulation Australia. Dr. Jakeman is editor-in-chief, *Environmental Modelling and Software* (since 1996); foundation president, International Environmental Modelling and Software Society (2000-2006) and elected Fellow (2004); President and Fellow, Modelling and Simulation Society of Australia and New Zealand, Inc.; Vice-President, International Association for Mathematics and Computers in Simulation; International Advisory Board of the C.T. de Wit Graduate School for Production Ecology and Resource Conservation, Wageningen University; and regularly a member of scientific advisory committees of international conferences.

BLANCA JIMÉNEZ

Blanca Jiménez is currently Professor and Head of the Treatment and Reuse Group, Department of Environmental Engineering, Engineering Institute, UNAM (National Autonomous University of Mexico). She obtained her PhD Summa Cum Laude in Water and Wastewater Treatment from the Institut National des Sciences Appliquées, France. She has received 22 awards – among them the shared Nobel Peace Prize (2007) as part of the United Nations IPCC (Intergovernmental Panel on Climate Change), the Mexican National Science and Arts Prize in Technology and Design (2009), the Global Water Award (2010) granted by the IWA (International Water Association), and membership of the Nominating Committee for the Stockholm Water Prize (2007-2012). For some of these awards she was the first person from the developing world to receive them, and in some cases the first woman. She has 31 years of professional experience with UNAM as her permanent base since 1980. In addition, she has held the following positions, some of them as part of sabbatical visits: 1985 - research engineer for Lyonnaise des Eaux, Paris; 1991 – deputy coordinator of the Water Quality Department and 1991-1992 – coordinator of the Human Resources Development Department of the Water Sector at IMTA (Mexican Institute of Water Technology); 1988-1989 –coordinator of the Environmental Engineering Department at UNAM; 1991-2001 – head of the Hydraulics and Environmental Department at the Engineering Institute, being the first, and until now, the only woman to have attained this position; 2005– leader of the project to control helminths eggs and reuse sludge from dry toilets for agricultural production at the University of Pretoria in South Africa.; and 2009– development of the Mexican Climate Change and Water Research Program at the National Ecological Institute of Mexico and Coordinator of leading authors for the freshwater resources chapter under the adaptation theme for the IPCC. Dr. Jiménez's scientific and technical (national and international) writing amounts to 414 publications (books and book chapters, papers in journals, norms, standards and patents), which have received more than 1210 citations. In addition, she has delivered 150 sponsored research and technology project reports, collaborated with 15 international groups, provided 24 consulting services and presented 263 invitation lectures in Mexico and abroad. She has also been active in human resource development through leading research groups; advising undergraduate, masters and PhD thesis students; lecturing and providing courses at UNAM and other universities in Mexico as well as abroad. Her fields of expertise include: water and wastewater treatment technologies; sludge treatment and revalorization projects; water and health, urban water, development of achievable norms to control and prevent pollution in developing countries and countries in transition; evaluating and maximizing benefits of non-intentional or incidental water reuse (recently denoted as 'de facto reuse'); developing IWRM (Integrated Water Resources Management) plans to achieve effective environmental linkages of the quantity and quality dimensions of the resource, and assessing the environmental, social and economic effects of climate change on water.

SVEN ERIK JØRGENSEN

Sven Erik Jørgensen is Professor emeritus at the University of Copenhagen, Copenhagen, Denmark. The focal topics of his research are ecological modelling, systems ecology, ecological engineering and ecological indicators. He has edited or authored 76 books and published 360 papers (2/3 in international peer reviewed journals). He was the founding editor of the journal *Ecological Modelling*, for which he served as the editor in chief from 1975-2009. He was also the editor in chief of Encyclopedia of Ecology. He has received several prizes: the Prigogine Medal, The Pascal Medal, the Einstein Professorship of Chinese Academy of Sciences. In August 2004 he was awarded, along with his American collabaorator and friend Bill Mitsch, the 2004 Stockholm Water Prize by King Carl XVI Gustaf of Sweden for lifetime achievements in the modeling, management, and conservation of lakes and wetlands. He is honorable doctor of Coimbra University, Portugal and Dar es Salaam University, Tanzania. He is elected member of the European Academy of Sciences, for which he is chairman of the division for Earth and Environmental Sciences. He is the president of the International Society of Ecological Modelling (ISEM) and was chair of the first EcoSummit held in Copenhagen in 1996.

RAVINDER KAUR

Ravinder Kaur is Project Director, Water Technology Centre, Indian Agricutural Research Institute, New Delhi, India. She has also been a Fulbright Fellow at University of Florida (USA), an IHELP Fellow at Iowa State University (USA) and an ICAR National Fellow. Dr. Kaur has 19-year-long rich research and academic experience in environmental impact assessment (EIA) of poor quality irrigation waters; un-gauged basin flood forecasting under varied land use and climatic conditions; land and water management planning on physically/ chemically degraded agricultural lands; agricultural profitability/ food security analysis of national capital region, India; and wastewater treatment /re-use in agriculture. These projects have resulted in successful development of several copyrighted / patented technologies such as: ResourCeS© - a spatial decision support system for assessing regional-water use, water productivity, soil-water-vegetation health and benchmarking canal irrigation performance; IMPASSE© and Usar© - generic EIA tools for proposing alternative conjunctive water use and crop rotation plans for salts/ heavy metal contaminated agricultural lands; DROP© - a simulation model for assessing runoff/ soil losses from ungauged catchments; Img2Info© and Ref2Info© - novel multi/ hyper-spectral data analyzing software for precise resource characterization/ discrimination from space/ ground platforms (patented technology) and batch flow wetland systems for treatment and re-use of sewage waters for irrigation.

STEFAN KLOTZ

Stefan Klotz has been Head of the Department of Community Ecology at the Helmholtz Centre for Environmental Research (UFZ) in Halle (Germany) since 1996. The focus of the department is on the analysis and assessment of natural and anthropogenic structural changes in biological communities, and thus on the development of a scientific basis for understanding and managing biodiversity. Basic research at the department is concerned with functional relationships in populations and communities, and with degradation, stability and the regenerative potential of biological communities. His focus lies on analysing and assessing the influences of natural and anthropogenic changes as global warming and global species exchange on biological communities. The main research fields are plant ecology, macroecology, biogeography and biological invasions.
He has been the president of the European Ecological Federation since 2006 and member of several national and international ecological societies.

BAI-LIAN LARRY LI

Larry Li is Professor of Ecology and Directors of the CAU-UCR International Center for Ecology, and Sustainability, and XIEG-UCR International Center for Arid Land Ecology at University of California-Riverside. He has a broad interdisciplinary background and experience in mathematical, statistical and computational modeling applications in ecological studies. He published more than 200 refereed journal articles, 30 book chapters and proceedings papers, and 8 books or edited special issues. Among his many honors and awards, he was elected to be Honorary Professor of Russian Academy of Sciences (2005), IHE Fellow (1988), AAAS Fellow (2006), and "French University Professor" (2006). He is also Founding Editor-in-Chief of two international journals: *Ecological Complexity* (Elsevier) and *Journal of Arid Land* (Science Press). He chaired the successful Beijing Eco Summit 2007, and currently is co-chair of the Committee for EcoSummit 2012, Columbus, Ohio, USA.

JIANJIAN LU

Jianjian Lu is Professor of Ecology, East China Normal University, Shanghai, China, where he is also director of the Chongxi Wetland Research Center; Lifetime Professor in ecology and environmental sciences; Chief Scientist in Sino-US Eco-partnership for wetland research; and Director of Sustainable Development Research Center of the Yangtze River Basin, China Development Research Academy. He recieved his MS in ecology in 1981 at East China Normal University, China, his Ph.D. in ecology in 1985 at Washington State University, USA. He is author of "Wetlands in China", and 9 other works, and more than 100 papers published in *Science, Ecological Engineering*, *Wetlands*, *Science in China*, and *Ecology* (in Chinese) and so on since 1986. His main research interests are in wetland ecology, ecological restoration, and systems ecology. He gained an honors certificate for strategic research on a national medium- to long-range program for scientific and technological development in ecology and environmental science; and first-class prize of scientific and technological development for ecological engineering in Jiuduansha Shoals, Shanghai.

STUART A. LUDSIN

Stu Ludsin is a researcher at the Aquatic Ecology Laboratory and assistant Professor in the Department of Evolution, Ecology, and Organismal Biology at The Ohio State University. He previously worked as a Fisheries Research Biologist with NOAA's Great Lakes Environmental Research Laboratory (2002-07). His research has explored mechanisms that regulate fish population and community dynamics in Great Lakes, estuarine, coastal ocean, coral reef, and inland reservoir ecosystems with a goal of applying this ecological understanding to resource management problems. His past and current service-related activities are diverse and extensive. Most notably, he currently is an elected U.S. representative on the board of directors for the International Association of Great Lakes Research, as well as an appointed member of the Great Lakes Fishery Commission's Board of Technical Experts, the Healing Our Waters – Great Lakes Coalition's Technical Advisory Committee, and the Ohio Sea Grant College Program Advisory Committee. He is serving on the EcoSummit 2012 Committee as an appointed representative of the Ecological Society of America.

ÜLO MANDER

Ülo Mander (PhD 1983 Tartu University, Estonia in landscape ecology) is Professor of landscape ecology and physical geography and head of the Department of Geography, Institute of Ecology and Earth Sciences, University of Tartu, Estonia.
His main research interst is in the fields of nutrient cycling in agricultural landscapes, controlling nutrient fluxes by riparian buffer zones and constructed wetlands, pattern and processes in wetland ecosystems, and landscape changes and its ecological consequences. He has more than 250 scientific publications (151 in journals indexed by Thomson Reuters Web of Science; TR-WoS) and edited 12 special issues of TR-WoS journals and 12 books by international publishing companies (Springer, WIT Press). His citation index by TR-WoS is over 1300, h-index 22. He is member of the editorial board of several international peer reviewed journals: *Ecological Engineering* (Elsevier), *Landscape and Urban Planning* (Elsevier), *Landscape Ecology* (Springer), *Journal for Nature Conservation* (Elsevier), *Ecological Indicators* (Elsevier), *Wetlands* (Springer). He is member of the board of the International Ecological Engineering Society (IEES) and member of several international organisations and societies (IALE, IWA, INTECOL, SWS). He was a Fulbright Fellow to Ohio State University, USA, in 2008-09.

JAY F. MARTIN

Jay Martin is associate Professor in the Department of Food, Agricultural and Biological Engineering at Ohio State University. He is an ecological engineer with expertise in both hydrology and ecosystem modeling. His research focuses on interactions between watersheds and downstream ecosystems. He is currently investigating connections between water quality in The Great Lakes and the upstream watersheds. He has completed similar projects in the Mississippi Delta and Gulf of Mexico. His other areas of research include natural systems for water treatment, small-scale bioenergy production and analyzing ecosystem sustainability. Dr. Martin is past-president of the American Ecological Engineering Society (AEES) and has been active in its activities for the past decade. He is on the editorial board of *Ecological Engineering*. Dr. Martin received his M.S. in Environmental Engineering Sciences from the University of Florida and his Ph.D. from the Department of Coastal Ecology at Louisiana State University.

WILLIAM J. MITSCH

Bill Mitsch is distinguished Professor of Environment, Natural Resources, and Ecological Engineering and director of the Olentangy River Wetland Research Park at The Ohio State University, Columbus, USA. In October 2012 he will become eminent scholar and director, Everglades Wetland Research Park, and Juliet C. Sproul Chair for Southwest Florida Habitat Restoration and Management at Florida Gulf Coast University, Naples Florida. He received his B.S. in engineering at University of Notre Dame and Ph.D. in systems ecology at University of Florida. Prior to Ohio State University he was on the faculties of Illinois Institute of Technology and University of Louisville. His research and teaching have focused on wetland ecology and biogeochemistry, wetland creation and restoration, ecological engineering, ecosystem restoration, and ecosystem modeling. Dr. Mitsch has authored or co-authored over 300 peer-reviewed papers and other publications and has edited or co-authored 17 books including 4 editions of the textbook *Wetlands* and 2 versions of *Ecological Engineering*. He is founder and editor-in-chief of *Ecological Engineering*. He has served on 4 National Research Council panels under the U.S. National Academy of Sciences (1991-2004), the U.S. Environmental Protection Agency Science Advisory Board (SAB) (2001-2011), a review team for the Swedish MISTRA (Foundation for Strategic Environmental Research; 1996-2000), and advisory panels for restoration and research in the Louisiana Delta, the Florida Everglades, and the Pantanal in Brazil. He co-chaired a SCOPE project on Ecological Engineering and Ecosystem Restoration (1994-2002) and a national committee to determine solutions to the Gulf of Mexico hypoxia (1997-2000). He is past-president of the *Society of Wetland Scientists* and the *American Ecological Engineering Society*. Dr Mitsch has been a Fulbright Scholar at University of Copenhagen, Denmark (1986), and the Okavango Research Centre, Maun Botswana (2007). His awards include U.S. EPA National Award for Wetland Research (1996), a Fellow of the American Association for the Advancement of Science (AAAS) (1997), Distinguished Scholar Award at The Ohio State University (1998), the Theodore M. Sperry Career Award from the Society of Ecological Restoration International (SER) (2005), Lifetime Achievement Award from the Society of Wetland Scientists (2007), Einstein Professorship from the Chinese Academy of Sciences (2010), and a Doctorate *honoris causa*, University of Tartu, Estonia (2010). In August 2004 he was awarded, along with his Danish collaborator and friend Sven Erik Jørgensen, the Stockholm Water Prize by King Carl XVI Gustaf of Sweden for lifetime achievements in the modeling, management, and conservation of lakes and wetlands. His 20-ha Olentangy River Wetland Research Park at The Ohio State University, started in 1991, was declared the USA's 24th Ramsar Wetland of International Importance in 2008. He chaired the 1992 INTECOL Wetland Conference held in Columbus USA and is chair of EcoSummit 2012 in the same city.

FELIX MÜLLER

Felix Müller has studied Biology and Geography at the Universities of Kiel and Regensburg and his PhD thesis about soil-geographical investigations on the fate of pesticides and nutrients in ecosystems was published in 1987. Since that time he has been working at the Ecology Centre of the University of Kiel. He was the scientific coordinator of the long-term R&D project "Ecosystem Research in the Bornhöved Lakes District" and has since that time participated in several national and international research projects. Since 2010 Dr. Müller is affiliated as leader of the Department Ecosystem Management at the Institute of Resource and Nature Conservation of Kiel University. His main recent research interests are ecosystem analysis, ecosystem modeling, ecosystem services and ecosystem theories, applications of ecosystem approaches at the landscape scale and the derivation of holistic indicator sets for the management of human-environmental systems. Dr. Müller is editor-in-chief of *Ecological Indicators* and board member of 5 journals, e.g. *Ecological Complexity* and *Ecological Modelling*. He is past-president of the German chapter of the International Association of Landscape Ecology and Secretary of the German Chapter of the International Long-Term-Ecological Research Program.

FRIEDRICH RECKNAGEL

Fred Recknagel is associate Professor, University of Adelaide, Australia and Ecology Evolution and Landscape Science, North Terrace. He is editor-in-chief of the Elsevier journal *Ecological Informatics*. Dr. Recknagel's research interests include lake eutrophication and algal blooms, Cyanobacteria bloom early warnings, catchment management and ecological informatics.

RALF SEPPELT

Ralf Seppelt studied applied mathematics at the Technical University Clausthal Zellerfeld, Germany, obtained his doctorate degree at the Technical University Braunschweig, Germany, in agroecology and systems analysis where he worked as research assistant and lecturer at Institute for Geoecology. After several research visits at the Gund Institute for Ecological Economics, Burlington and Maryland, USA, as well at the CSIRO in Canberra, Australia, he obtained a full Professorship for applied landscape ecology at Martin-Luther University Halle-Wittenberg, where he lectures on Environmental Modelling. He is head of the department for Computational Landscape Ecology. At UFZ he is responsible for the research topic Land use Options of the programme Terrestrial Environment of the Helmholtz-Association. In the BMBF programme on "Sustainable Land Management" he coordinates the synthesis project GLUES "Global Assessment of Land Use Dynamics on Greenhouse Gas Emissions and Ecosystem Services." His major research focus is land resources management based on integrated simulation and modelling systems. He thus is interested in the interactions and interrelationship of anthropheric and biospheric processes. This requires methodological developments in landscape ecology such as model integration, hybrid model systems and scales in space and time. He written a book and over 60 papers.

ALEXIA STOKES

Alexia Stokes is a research scientist at Institut National de Recherche Agronomique (INRA), Montpellier, France. She received her PhD from the University of York UK in 1994. In collaboration with the Forestry Commission in Edinburgh, she studied the growth responses of young trees subjected to wind loading. Alexia's particular interest was to understand how tree growth and architecture adapts to mechanical stresses, with a special focus on the root system. After post-doctoral study in Germany, examining root wood strength, Alexia began work at INRA, Bordeaux, France. Working principally on Maritime pine, Alexia and colleagues investigated tree root anchorage with regard to wind storms. In 2005, Alexia began work in China for 2 years, studying how vegetation (plant root systems) could be used to fix soil on slopes against landslides and erosion. She is now based at INRA, Montpellier, France and continues her work on tree mechanics and slope stability in the French Alps and southern China. Recent interests include the ecophysiology of tree root growth at high altitudes and in winter, as well as an understanding of global patterns in root functional traits. Through the use of models at different scales, Alexia aims at implementing fundamental knowledge thus making it available to the stakeholder.

FLORENCIA TRAMA

Florencia Trama is director of Centro Neotropical de Entrenamiento en Humedales - Peru, an NGO based on wetlands and sustainability (2006-present) and director of Centro de Capacitación en Conservación y Desarrollo Sostenible (CECACDS), a training center for conservation and sustainable development in the Amazon basin in Peru (2011-present). She is a biologist with an ecology specialization with her first degree from CAECE University at Buenos Aires Argentina. She then received an MS in Management and Conservation of Wildlife at UNA-National University in Costa Rica and later obtained a specialization in ecological sanitation. She has experience in management of natural resources with a social emphasis; monitoring of aquatic fauna and flora; eco-toxicology, bio-monitoring and water quality. She worked at the National Park Administration in Argentina (1998-2001) and as the biological monitoring coordinator for the restoration project of the Palo Verde marsh at the OTS in Costa Rica (2003-2005). She was the Latin American and the Caribbean program intern at Ducks Unlimited in Memphis, TN (2005-2006) where she had the opportunity to participate on wetland restoration and waterfowl monitoring at different countries in Latin America. In 2006 she moved to Peru where she is finishing her Ph.D, in water resources at the National University Agraria La Molina.

JOSÉ G. TUNDISI

Dr. Tundisi is Professor Emeritus of Environmental Science at the University of São Paulo, São Carlos, Brazil. He has specialized in reservoir limnology and ecology of inland waters, watershed management, water resources management and environmental planning. He is currently President of the International Institute of Ecology and a full member of the Brazilian Academy of Sciences. He is a staff member of the Ecology Institute – Excellence in Ecology – Germany and served for 20 years as a member of scientific committee of ILEC in Japan. He was President of National Research Council in Brazil (1995 – 1999) and was also President of the International Advisory Board of the Millenium Institutes Initiative from the government of Brazil. Dr. Tundisi is co chairman of the IANAS water programme with Prof. Dr. Blanca Jimenez of UNAM Mexico and is Chairman of the IAP water programme. He has published 320 papers and 35 books.

MOHAN K. WALI

Mohan Wali is Professor emeritus in the School of Environment and Natural Resources (SENR) at the Ohio State University (OSU). At OSU since 1990, he served as Director both of SENR, and of the Ohio State Environmental Science Graduate Program, and as Professor in the John Glenn School of Public Affairs. Earlier, he served on the faculty and administration of the State University of New York-Syracuse and the University of North Dakota. An ecologist by training, he and his associates and graduate students have conducted research in the western Himalayas, the Danish woodlands, Canadian boreal forests, mid-continent North America, and the eastern temperate deciduous forest on vegetation-environment relationships, ecosystem restoration, and impacts of global climate change. He served as General Chairman of the 1983 AIBS Annual Meeting, and as Co-Chair (with Dr. Robert L. Burgess) of the IV International Congress of Ecology in 1986. Both meetings were anchored by the Ecological Society of America.

RUSONG WANG

Rusong Wang is Professor at the Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China. He was recently designated as Academician by the Chinese Academy of Engineering for his career in ecological engineering and urban sustainability. He has been working on urban sustainability methodology especially integrative planning and management approaches for urban and industrial ecosystems since 1981. He developed the "Social-Economic-Natural Complex Ecosystem (SENCE)" approach together with Prof. Ma Shijun that combined ancient Chinese ecological thoughts with modern system ecology, and applied it to China's ecopolis development in different scales from community, county, city to province. Dr. Wang successfully co-Chaired the 3rd International EcoSummit in Beijing in 2007.

JIANHUI XUE

Jianhui Xue is vice president (2005-present) and Professor of forest ecology and restoration ecology (1995-present) at Nanjing Forestry University. He is also vice-chair of the Ecological Association of China (2009-present). He received a Ph.D in forest ecology from Nanjing Forestry University (1990), He is a also a member of the Biology Expert Committee of the Ministry of Education of China (2004-) and associate editor-in-chief of the Chinese Journal of Ecology (2009-). His research projects mostly focus on (1) the principles and practices of reforestation and ecological restoration for the degraded ecosystems in Karst areas of southwestern China; (2) habitat restoration of reintroduced David's deer population along coastal area of North Jiangsu province, China; (3) ecological benefits of agroforestry systems surrounding Taihu Lake watersheds, especially for the alleviation of non-point source pollution by forest buffers and shelterbelts.

MACIEJ ZALEWSKI

Maciej Zalewski is a Professor at Lodz University, Department of Applied Ecology, director of European Regional Centre for Ecohydrology, and founder of the ecohydrology concept under the framework of UNESCO-IHP program. Professor Zalewski's research interests evolved from fish bioenergetics towards river ecosystems ecology, to which he proposed a concept of abiotic-biotic hierarchy of factors determining water communities. Based on the scientific experience gained during his scholarship of the Canadian government and the work for UNESCO MAB programme he proposed a new paradigm in water related sciences – ecohydrology – based on the requirement for regulation of ecological and hydrological processes to reach sustainability. He works closely with the UNESCO-IHP, as well as other United Nations' and European Commission's programmes and institutions. Professor Zalewski is author and co-author of numerous scientific articles in prestigious scientific journals, as well as book chapters concerning the ecohydrology concept. He is devoted lecturer in national and international teaching programs, as well as chairman and keynote speaker of more than 70 international scientific conferences and symposia. He is also founder and editor-in-chief of international journal *Ecohydrology & Hydrobiology*, and a member of editorial board of *Ecological Engineering*, *Brazilian Journal of Biology*, *Wetlands Ecology and Management*, *Fisheries Management and Ecology*. Professor Zalewski is a member of environmental scientific committees of the Polish Academy of Sciences, and member of the Advisory Board of Ministry of Environment for water resources management. He served, among others, as national representative for Polish government in the OECD Export Credits and Environment treaty negotiations, as member of the Scientific Council of Regional Office for Science and Technology for Europe (ROSTE), chairman of the Working Group "Fish and Land/Inland Water Ecotones" of UNESCO MAB (Man and Biosphere), chairman of the Working Group "Physical Habitat Modification and Freshwater Fisheries" of FAO EIFAC (European Inland Fisheries Advisory Commission), member of the Council of the National Centre for Research and Development Poland, representative of Poland at the Thematic Working Group in Environment of the European Strategy Forum on Research Infrastructures (ESFRI ENV TWG), chairman of the Steering Committee of Programme "Ecohydrology" of the UNESCO-IHP (International Hydrological Programme) and a member of the drafting task force for the EU Joint Programming Initiative (JPI) for water and current UNESCO-IHP programmes.

Scientific Committee

Program at a glance

September 27-30, 2012 (Thursday-Sunday)

PRE-CONFERENCE ECOLOGY FIELD TRIPS

Field Trip 1:	**New York/New Jersey** Hackensack Meadowlands and Delaware Bay Salt Marsh Restorations, New Jersey
Field Trip 3:	**Washington DC** Chesapeake Bay Restoration and Anacostia River Urban Restoration, Maryland and Washington DC
Field Trip 4:	**Atlanta** Southern Appalachian Mountains Biodiversity/Smoky Mountains, Georgia, Tennessee, North Carolina
Field Trip 5:	**Miami** Everglades Restoration, Florida
Field Trip 7:	**Chicago** Laurentian Great Lakes Restoration and Ecological Succession Landmark (Indiana Dunes), Illinois and Indiana
Field Trip 8:	**Columbus** Western Appalachian Mountain Mineland Restoration and "The Wilds" Conservation Center, Ohio

Sunday, September 30, 2012

Sunday afternoon	**Conference Registration** Columbus Convention Center
Sunday evening	**Grand Welcome** Ohio Union, The Ohio State University

October 1-5, 2012 (Monday-Friday)

Conference program Columbus Convention Center

Monday, October 1, 2012

Morning	**Opening Plenary Session** **Symposia, Workshops and General Sessions**
Afternoon	**Opening of EcoExperience Exhibit Hall** **Plenary Session** **Symposia, Workshops and General Sessions**

Tuesday, October 2, 2012

Morning	Plenary Session
	Symposia, Workshops and General Sessions
Afternoon	Plenary Session
	Poster Session
Evening	Banquet

Wednesday, October 3, 2012

	Ecological field trips throughout Ohio (36 to choose from during web registration)
	MORPC Regional Environmental Summit – Green World Green Region

Thursday, October 4, 2012

Morning	Plenary Session
	Symposia, Workshops and General Sessions
Afternoon	Plenary Session
	Symposia, Workshops and General Sessions
	Poster Session

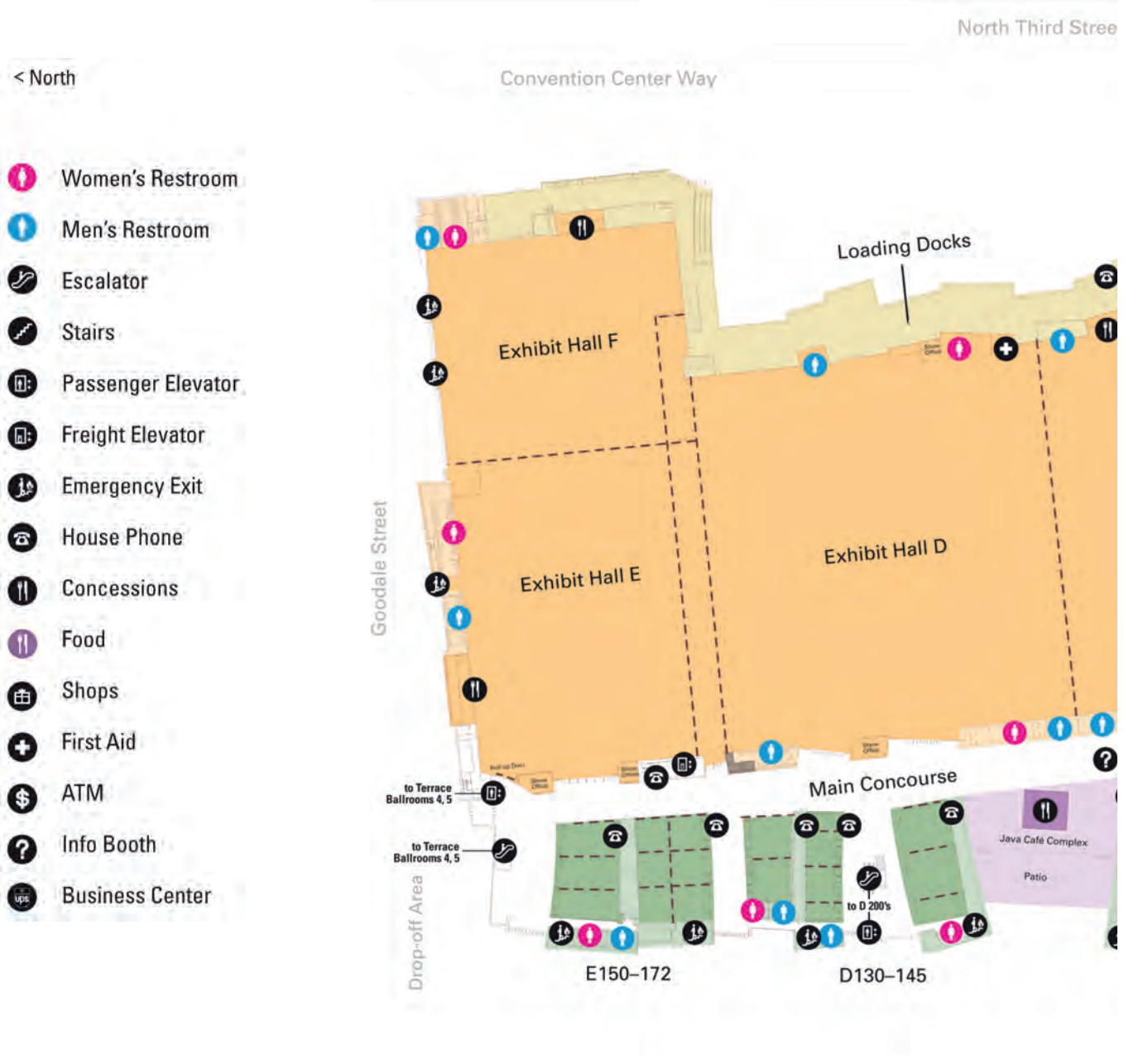
Friday, October 5, 2012

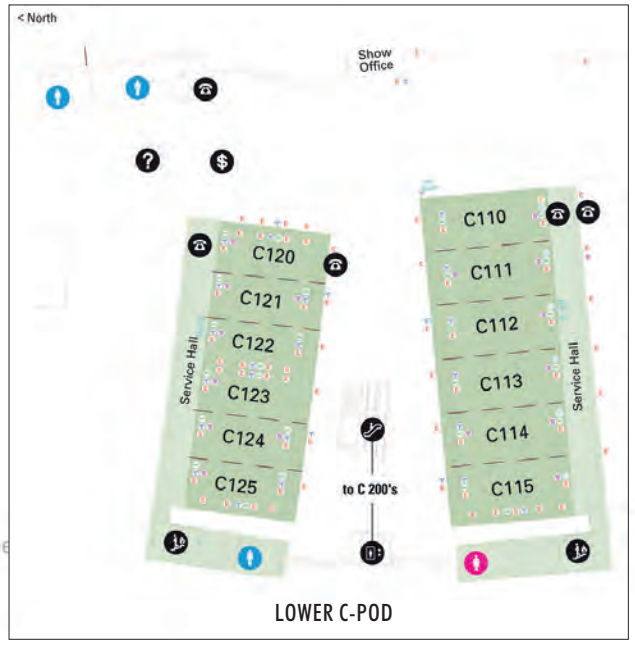
Morning	Plenary Session
	Symposia, Workshops and General Sessions
Afternoon	Closing ceremony

Greater Columbus Convention Center Venue Maps

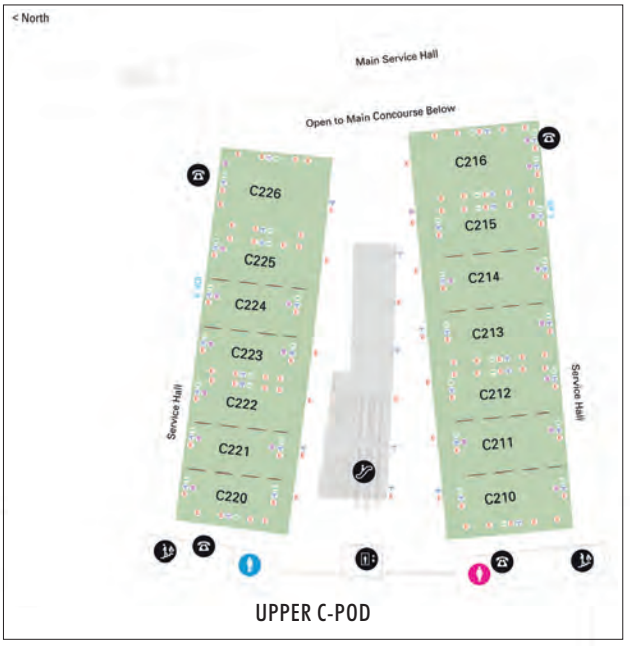
UPPER AND LOWER C-POD MAP KEY

- Women's Restroom
- Men's Restroom
- Escalator
- Passenger Elevator
- House Phone
- Emergency Exit
- ATM
- Information
- High Power Electric Hook-Up
- Internet Hook-up: 10Mbps
- Internet Hook-Up: 100Mbps
- Electric Hook-Up
- XLR Microphone Input
- Fiber Connection to MDF
- Sound Cabinet

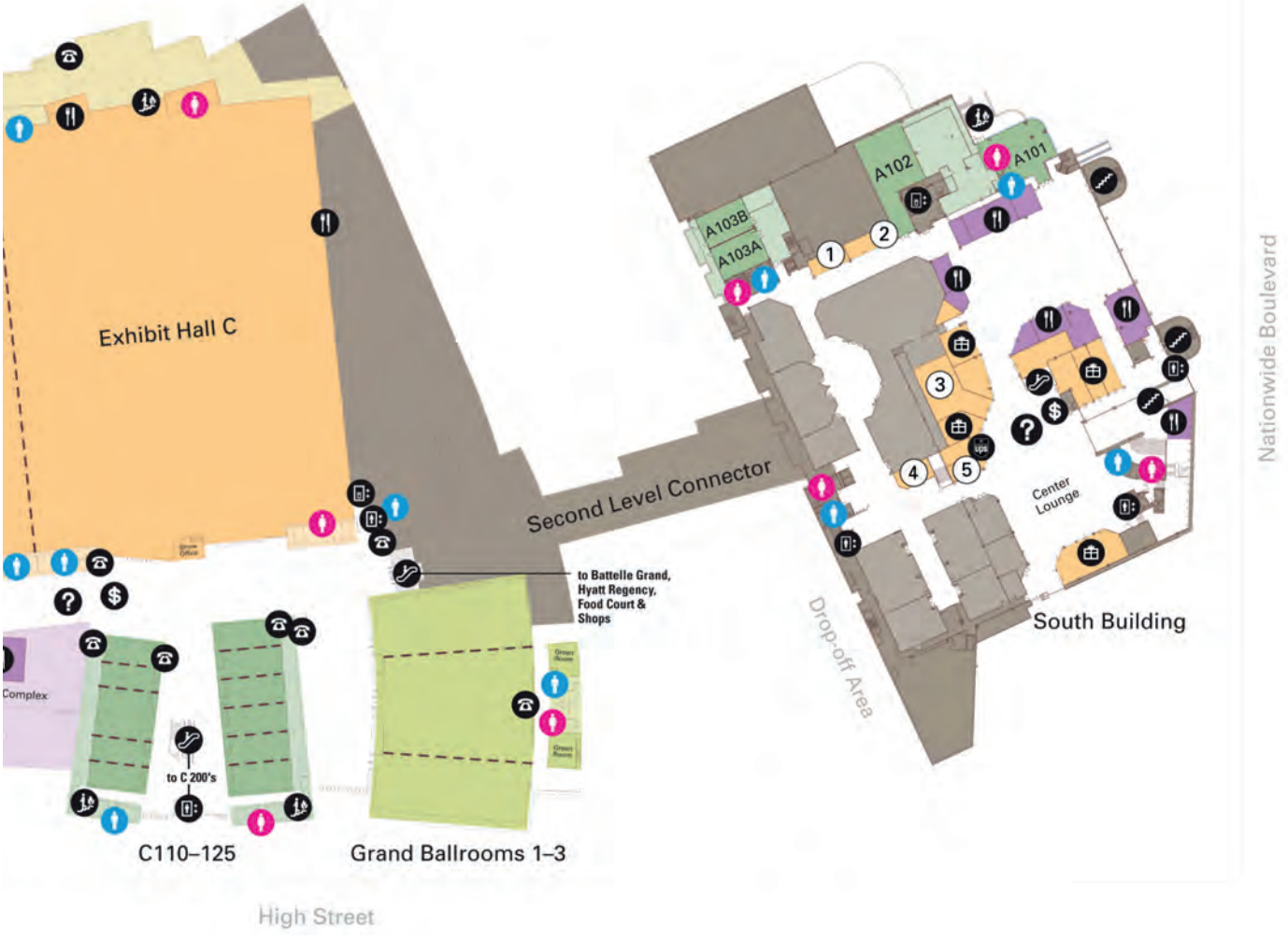




LOWER C-POD



UPPER C-POD



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Honda

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Hands on Central Ohio

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Rich Shank
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SGI Global Business Advisors

Paul Sipp
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Jason Smith
Columbus City Schools

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Clean Fuels Ohio

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City of Columbus

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The Ohio State University

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Belinda Taylor
Central Ohio Transit Authority

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Weisenbach Recycled Products

Joe Wakerman
Hocking College

Ellen Walker

John Watts
Metro Parks

Tom Wolber
Ohio Wesletan University

Nathan Wymer
Nationwide

Mary Yerina
The Ohio State University

Mid-Ohio Regional Planning Commission – EcoSummit Team ▼

From Left: (back row) Shari Saunders, Brandi Whetstone, Brian Williams, Kathy Werkmeister, Garth Weithman, Laura Koprowski, Shawn Hufstedler

(front row) Amanda McEldowney, Amy Lowe, Bernice Cage,

Not pictured: Sarah Criss McQuaide, Omri Gross, Robert Lawler

EcoSummit 2012 Sponsors

The EcoSummit 2012 Committee and hosts The Ohio State University, MORPC, the Ecological Society of America, INTECOL, and the Society for Ecological Restoration International wish to express our gratitude to the following organizations for key sponsorship support of EcoSummit 2012.

Their donations have contributed to the advancement of our local and global knowledge, practices and policies that enhance ecosystems and human well-being.

Each contribution plays a crucial role in restoration of ecosystems that we depend upon, thrive in and enjoy throughout our planet.

Thank you!

The Columbus Foundation

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Downtown Columbus Photo courtesy of Randall L. Schieber

Experience Columbus

On February 14, 2012, Columbus marked the 200th anniversary of its founding as Ohio's capital. 200Columbus the Bicentennial is a year-long series of special events, initiatives, promotions and educational programs that honor our city's past, celebrate Columbus today and envision its future. We're pleased to share one of 200Columbus' signature events with EcoSummit attendees during their visit.

200 COLUMBUS THE BICENTENNIAL

Created as a bicentennial celebration, ***idUS, A Celebration of Innovation & Design****, Sept. 28–Oct. 7, is about unleashing the creative spirit in all of us, and finding new ways to turn that spirit into a tangible product. Through interactive workshops, seminars and constructed exhibits, ideas become realities and collaborations come alive in ways that can only happen in a smart and open place like Columbus. For information and a schedule of events and activities, go to* ***idus.us***

idUS Innovate | Design | Columbus

Columbus has been preparing for your visit for 200 years

As Columbus celebrates 200 years of history in 2012, there's no better time for attendees of EcoSummit to experience all the city has become. Since its founding as Ohio's capital in 1812, Columbus has grown into the largest city in Ohio and the 15th largest in the nation. Here you'll find a vibrant arts scene, lively urban neighborhoods and an array of entertainment, sports, dining and shopping that is giving Columbus a reputation as a rising star.

EXPERIENCE COLUMBUS

With limited free time, it's lucky for you that there is so much to do and see – and eat and drink – just minutes from the Greater Columbus Convention Center. We've made some recommendations of nearby highlights you won't want to miss, including some events taking place while you're here. There's so much to experience in Columbus. We hope you enjoy your visit and our warm Midwest hospitality.

ARENA DISTRICT

Just cross High Street and you're in the **Arena District**, a popular entertainment destination that has sprung up since **Nationwide Arena** opened in 2000. When it's not being used by the **NHL Columbus Blue Jackets**, the arena hosts big-name concerts and touring productions

Columbus Commons Photo courtesy of Randall L. Schieber

North Market Photo courtesy of Randall L. Schieber

such as country sensation **Brad Paisley** who will perform there on Oct. 5. Numerous bars, restaurants and entertainment venues are here, including the **Arena Grand Movie Theater** and the new **Rodizio Grill – The Brazilian Steakhouse**. Here you'll also find **Huntington Park**, home of the **Columbus Clippers**, 2010 and 2011 Triple-A Baseball National Champions.

Nearby, the historic **North Market** has more than 30 vendors offering everything from fresh produce, flowers and gourmet cookware to pad Thai, Polish specialties and the #1 ice cream in America **Jeni's Splendid Ice Cream**.

THE SHORT NORTH

Head due north for the hip and always lively **Short North Arts District**. You'll know you've arrived when you see the arches that span High Street, alluding to those installed in the area in 1888 for a reunion of Civil War soldiers, after which city leaders proclaimed Columbus the "Arch City."
The Short North is heavily populated with art galleries, specialty shops, pubs, fashion boutiques, home décor retailers, nightclubs, and coffee houses. Many of its tightly packed brick buildings flaunt brightly painted murals. Dining here ranges from the sublime to the trendy. Check out **Rigsby's Kitchen**, a Short North favorite since 1986, for its inventive Northern Italian and Mediterranean cuisine; or **Surly Girl Saloon** for heaping helpings of comfort food served with a side of sass.

GERMAN VILLAGE AND THE BREWERY DISTRICT

If you like a dose of history and charm with your dining and entertainment, you'll want to go south of downtown to the brick-paved streets of **German Village**, a nationally recognized historic district. The village boasts some of the city's best fine dining restaurants – **Lindey's, G. Michael's** and **Barcelona** immediately spring to mind – along with **Schmidt's Restaurant und Sausage Haus**, a popular, fifth generation German establishment famous for its spicy Bahama Mama sausages; and the **Thurman Café**, whose giant "Thurmanator" burger has been featured on TV's *Man vs. Food*.

Shadowbox Dante Photo courtesy of Studio 66 Photography

Adjacent to German Village, the **Brewery District** lives up to its name with an appealing array of restaurants and bars, including **Columbus Brewing Company** for fabulous food and authentic Cap City brews. **World of Beers** serves up more than 500 beers and live local bands, while **Shadowbox Live** presents original sketch comedy, rock 'n' roll, food, beverages and more, now featuring productions of "Chicago" and "La Boheme."

DOWNTOWN ARTS AND ATTRACTIONS

COSI is Columbus' dynamic hands-on science center, featuring more than 300 interactive exhibitions and 100,000 square feet of exhibit space.

Short North Gallery Hop Photo courtesy of SNBA

A seven-story Giant Screen theater, outdoor science park, and the country's only high-wire unicycle add to the center's allure as the country's #1 science center for families. At the new **Columbus Historical Exhibit** space at COSI, "Celebrate Columbus' 200th Birthday" displays historical artifacts, a full-sized car made in Columbus, an interactive quiz/display, and more.

The **Santa Maria**, the worlds' most authentic, museum-quality replica of Christopher Columbus' flagship moored in downtown Columbus on the Scioto River, offers guided tours and a visitor center. Free tours are provided daily at the **Ohio Statehouse**, one of the oldest working statehouses in the United States. And just south of downtown, the **Grange Insurance Audubon**

Franklin Park Conservatory Photo courtesy of Franklin Park Conservatory

Franklin Park Conservatory and Botanical Gardens is a popular destination for visitors of all ages. Built in 1895, this botanical landmark two miles east of downtown showcases exotic plant collections, special exhibitions, and a signature collection of work by glass artist Dale Chihuly. Its current exhibit titled "Sacrifice + Bliss" will be of particular interest to EcoSummit attendees. Artist Aurora Robson is an advocate for plastic pollution awareness, and uses discarded materials, primarily plastic bottles and caps, to create intricate, energetic and vibrant art with a message.

Center features an outdoor observation deck and terrace, a nature store and the nation's largest free outdoor climbing wall.

Eastern Town Center Photo courtesy of Steve Brady

At the **Columbus Museum of Art**, enjoy an outstanding permanent collection of late nineteenth and early twentieth-century American and European modern art. A current exhibit is *Songs for the New Millennium*, a personal meditation richly illustrated with paper, paint, fabric and buttons by celebrated Columbus artist Aminah Robinson.

The **Wexner Center for the Arts** is an internationally recognized contemporary arts center at **The Ohio State University**. The building, a landmark of postmodern architecture, houses galleries, performance spaces, a film video theater, a store and a cafe. The Wex currently is devoting the entirety of its gallery space to *Annie Leibovitz*, a major presentation of more than 200 of photographs by the acclaimed artist.

SHOPPING SPREE

Columbus was named the #4 shopping destination in the nation by Yahoo.com, and the options are almost endless. Unique shops and eclectic boutiques can be found in the **Short North Arts District** and **German Village**, while the nearby suburbs of **Grandview Heights**, **Worthington** and **Westerville** all feature a variety of stores and restaurants. In 10 to 20 minutes you can drive to **Easton Town Center**, **Polaris Fashion Place** and the **Mall at Tuttle Crossing** with scores of department stores, specialty retailers and restaurants.

FOR MORE INFORMATION AND A COMPLETE CALENDAR OF EVENTS, call 614-221-6623, 800-354-2657 or go to experiencecolumbus.com

Downtown Restaurants and Key

ARENA DISTRICT

1. **89 Fish & Grill** 89 E. Nationwide Blvd., 586-4585. Fresh seafood flown in daily. $$$ L,D
2. **343 Front Street Tavern and Sports Bar** 343 N. Front St., 621-9453. Burgers, beer and sports. $$ L,D
3. **Bar Louie** 504 N. Park St., 220-0900. Casual restaurant & bar. $$ L,D
4. **BBR Columbus** 106 Vine St., 365-7625. Modern rock bar. $$ L,D
5. **bd's mongolian barbeque** 295 Marconi Blvd., 586-0077. Create your own stir-fry. $$ L,D
6. **Boston's The Gourmet Pizza** 191 W. Nationwide Blvd., 229-4275. Restaurant and sports bar. $$ L,D
7. **Buca di Beppo** 343 N. Front St., 621-EATS. Family style Italian. $$ L,D
8. **Callahan's Irish Tavern** 520 Park St., 223-1200. Irish pub. $ D. Closed Monday.
9. **Gordon Biersch Brewery Restaurant** 401 Front St., 246-2900. Upscale casual. Fresh-brewed lagers. $$$ L,D
10. **Max & Erma's** Crowne Plaza, 55 Nationwide Blvd., 228-5555. All-American favorites. $$ B,L,D
11. **North Market** 59 Spruce St., 463-9664. Public market food vendors including Jeni's Splendid Ice Creams and Taste of Belgium. $ B,L,D
12. **Park Street Patio** 533 Park St., 975-1363. Beers, burgers and bands. $ D Open Thursday-Saturday only.
13. **R Bar Arena** 413 N. Front St., 221-4950. Wings & sandwiches. $ L,D
14. **Sunny Street Cafe** 277 W. Nationwide Blvd., 222-3008. Great breakfast and lunch. $ B,L (Dinner on event nights at Nationwide Arena)
15. **The Three-Legged Mare** 401 N. Front St., 222-4950. Irish pub. $$ L,D

SHORT NORTH ARTS DISTRICT

16. **Barley's Brewing Company** 467 N. High St., 228-ALES. Handcrafted ales and contemporary fare. $$ L,D
17. **Basi Italia** 811 Highland St., 294-7383. Italian Mediterranean cuisine. $$$ D Closed Sunday and Monday.
18. **Bernard's Tavern** 630 N. High St., 223-9601. Microbrews & more. $$ L,D
19. **Betty's Fine Food & Spirits** 680 N. High St., 228-6191. Cozy bar and comfort food. $$ L,D
20. **Black Olive** 731 N. High St., 298-8750. Contemporary American. $$$ L,D
21. **Bodega** 1044 N. High St., 299-9399. Pub with craft beers. $$ L,D
22. **Convention Center** 400 N. High St., 645-5000. All American Hamburgers; Charley's Grilled Subs; Chicken 'n Eggs; Einstein Bros Bagels; Fame's Diner; Goodrich Ice Cream; JaVa's Cyber Espresso Bar; Mykonos Gyros; Noble Roman's; Siam; Subway; Tony J's Mexican Grill. $
23. **Cookie Cravings Bakery** 227 E. Third Ave., 725-0090. Hand-rolled cookies. $ B,L Closed Sunday.
24. **Cup O' Joe/MoJoe Lounge** 600 N. High St., 225-1563. Lounge/restaurant. $ B,L,D
25. **DeepWood** 511 N. High St., 221-5602. Both tavern and dining room settings. $$$ L,D Closed Sunday and Monday lunch.
26. **Eleven** 591 N. High St., 225-9611. Bar with small plates. $ D Closed Sunday.
27. **Haiku** 800 N. High St., 294-8168. Poetic food and art. $$$ L,D. Sunday dinner only.
28. **Hubbard Grille** 793 N. High St., 291-5000. Modern Americana. $$$ D Closed Monday.
29. **Hyde Park Prime Steakhouse**, 569 N. High St., 224-2204. Prime aged steaks. $$$$ D
30. **Japanese Steak House** 479 N. High St., 228-3030. American/Japanese cuisine. $$$ L,D Saturday dinner only. Closed Sunday.
31. **Jeni's Splendid Ice Creams** 714 N. High St., 294-5364. Award winning ice cream. $
32. **Katalina's Cafe Corner** 1105 Pennsylvania Ave., 294-2233. Gourmet sandwiches. $ B,L,D
33. **Knead** 505 N. High St., 228-6323. Urban diner. $$ L,D Sunday lunch only. Closed Monday.
34. **Lemongrass Fusion Bistro** 641 N. High St., 224-1414. Asian fusion cuisine. $$$ L,D
35. **Marcella's** 615 N. High St., 223-2100. Restaurant & wine bar. $$$ D
36. **Martini Modern Italian** 445 N. High St., 224-8259. Upscale Italian cuisine and martini menu. $$$ D
37. **Northstar Cafe** 951 N. High St., 298-9999. New American. $$ B,L,D
38. **Rigsby's Kitchen** 698 N. High St., 461-7888. American/Mediterranean cuisine. $$$ L,D Sunday dinner only.
39. **Spinelli's Deli** 767 Neil Ave., 280-1044. Neighborhood place for breakfast or lunch. $ B,L,D
40. **Surly Girl Saloon** 1126 N. High St., 294-4900. Comfort food. $ L,D
41. **Sushi Rock** 570 N. High St., 453-1585. Sushi and steaks. $$$ D
42. **Tasi Cafe** 680 N. Pearl St., 222-0788. Fresh seasonal menu. $$ B,L,D
43. **Two Fish Bistro/Red** 721 N. HIgh St., 221-8600. Fresh seafood and sushi. $$$ D Closed Sunday.
44. **White Castle** 965 N. High St., 291-9189. Hamburgers. $ B,L,D
45. **Wine on High** 789 N. High St. , 294-8466. A wine and craft brew bar. $
46. **zpizza** 945 N. High St., 299-3289. Healthy, creative pizza. $$ L,D

DOWNTOWN

47. **3 Babes & A Baker** On High Street between Long and Gay, 875-7711. Mobile gourmet cupcake truck. $ L
48. **Black Creek Bistro** 51 Parsons Ave., 246-9662. Fresh, local food. $$$$ L,D Closed Sunday and Saturday lunch.
49. **Cup O' Joe/MoJoe Lounge Downtown** 149 S. High St., 732-4899. Lounge/coffee house. $ B,L Dinner on Thursday-Friday. Closed weekends.
50. **Dirty Frank's Hot Dog Palace** 248 S. Fourth St., 824-4673. Gourmet hot dogs. $ L,D
51. **Due Amici** 65 E. Gay St., 224-9373. Old-World Italian. $$ L,D
52. **Elevator Brewery & Draught Haus** 161 N. High St., 228-0500. 1897 pool hall with brewery. $$$ L,D Saturday dinner only. Closed Sunday.
53. **Flatiron Bar & Diner** 129 E. Nationwide Blvd., 461-0033. American, BBQ Cajun/Creole cuisine. $ L,D Saturday dinner only. Closed Sunday.
54. **High Street Grill** inside The Westin Columbus, 310 S. High St., 220-7007. Classic American. $$ B,L,D
55. **Indian Oven** 427 E. Main St., 220-9390. Bengali and Indian cuisine. $$ L,D Sunday dinner only.
56. **Jury Room** 22 E. Mound St., 220-0964. City's oldest continuously operated downtown tavern. $$ L,D
57. **Latitude 41** inside the Columbus Renaissance, 50 N. Third St., 228-5050. Modern American cuisine. $$$ B,L,D
58. **Lexi's on Third** 100 E. Broad St., 229-5394. Deli and burgers. $ B,L,D Closed Saturday-Sunday.
59. **M** 2 Miranova Pl., 629-0000. Upscale and dramatic. $$$$ D Closed Sunday.
60. **Milestone 229** 229 S. Civic Center Dr., 427-0276. American comfort food with a twist. $$ L,D
61. **Mitchell's Steakhouse** 45 N. Third St., 621-2333. Upscale cosmopolitan steakhouse. $$$$ L,D Saturday-Sunday dinner only.
62. **The River Club at Confluence Park** 679 W. Long St., 469-0000. Skyline view. American cuisine. $$ D
63. **Sidebar 122** 122 E. Main St., 228-9041. South American inspired. $$ D Sunday brunch. Closed Monday.
64. **The Spaghetti Warehouse** 397 W. Broad St., 464-0143. Authentic Italian. $$ L,D
65. **Sugardaddy's Sumptuous Sweeties** 11 E. Gay St., 888-4491. Decadent desserts. $ L,D Closed Saturday-Sunday.
66. **Tip Top Kitchen and Cocktails** 73 E. Gay St., 221-8300. Neighborhood bar specializing in comfort food. $ L,D
67. **Tommy's Diner** 914 W. Broad St., 224-2422. Diner. $ B,L
68. **ZenCha Tea Salon** 19 E. Gay St., 218-9314. Specialty tea service. Opening soon. $$

GERMAN VILLAGE/ BREWERY DISTRICT

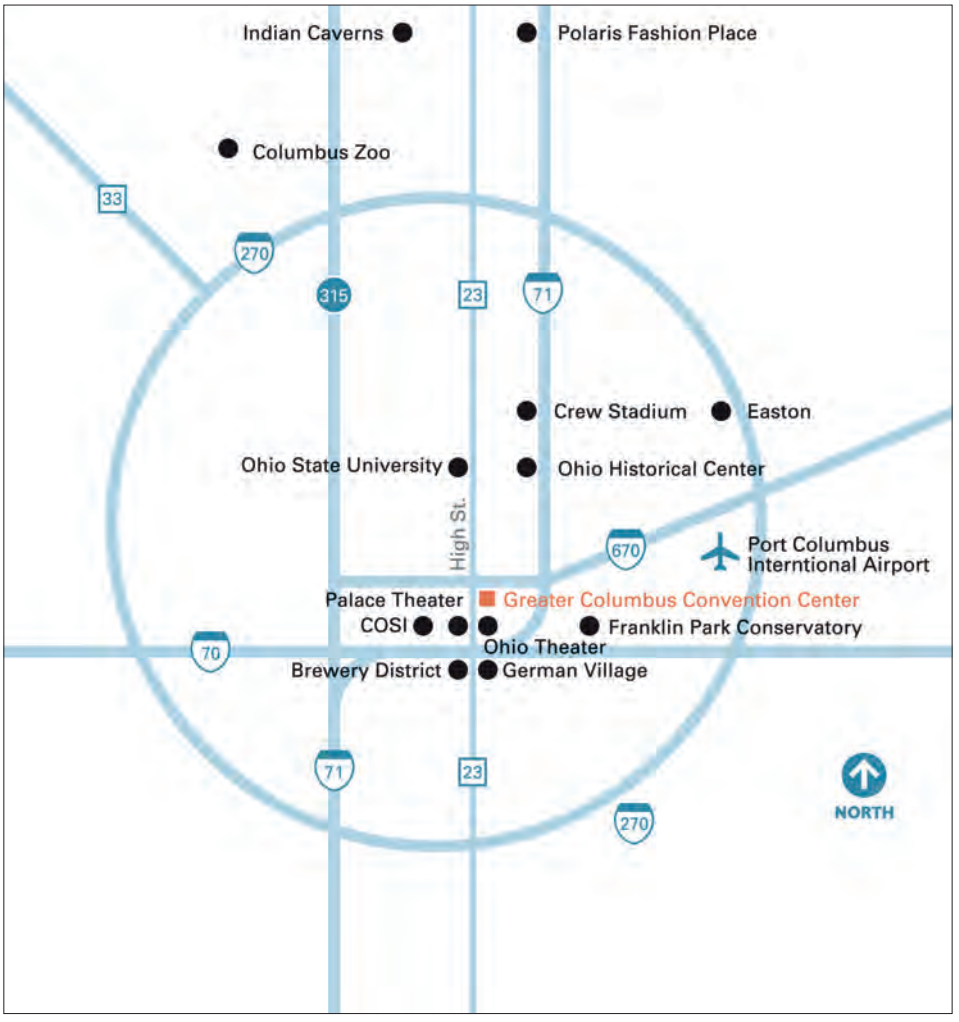
69. **Barcelona Restaurant** 263 E. Whittier St., 443-3699. Mediterranean cuisine. $$$ L,D Saturday-Sunday dinner only.
70. **Claddagh Irish Pub** 585 S. Front St., 224-1560. Authentic Irish pub. $$ L,D
71. **Columbus Brewing Company** 525 Short St., 464-BREW. Award winning food. $$ L,D Saturday dinner only. Closed Sunday.
72. **Cup O' Joe Coffee Dessert House** 627 S. Third St., 486-4476. Coffee house. $ B,L,D
73. **G. Michael's Italian-American Bistro & Bar**, 595 S. Third St., 464-0575. Upscale contemporary Italian. $$$$ D
74. **Gresso's** 961 S. High St., 444-0131. Pub and grill. $$ L,D Weekdays dinner only.
75. **Jeni's Splendid Ice Creams** 900 Mohawk St., 445-6513. Award winning ice cream. $
76. **Juergen's German Village Bakery and Restaurant** 525 S. Fourth St., 224-6858. Fine pastries and restaurant. $ B,L,D Closed Monday.
77. **Katzinger's Delicatessen** 475 S. Third St., 228-3354. One-of-a-kind deli. $ B,L,D
78. **Lindey's** 169 E. Beck St., 228-4343. American cuisine. $$$ L,D
79. **Olde Mohawk** 819 Mohawk St., 444-7204. Historic tavern. $$ L,D
80. **Pistacia Vera** 541 S. Third St., 220-9070. Distinctive desserts. $ B,L,D Closed Monday.
81. **Schmidt's Restaurant und Sausage Haus**, 240 E. Kossuth St., 444-6808. Authentic German/American food. $$ L,D

Area code is 614. Information is subject to change; please call ahead to confirm hours. For more information, visit experiencecolumbus.com or call 866-397-2657.

Average dinner entrée price: $ = under $10, $$ = $10-$15 $$$ = $15-$20, $$$$ = $20+ B= breakast; L= lunch; D= dinner

Updated June 20, 2012. To obtain the most recent version, contact visitorinfo@experiencecolumbus.com.

Regional and Area Maps



MAP KEY

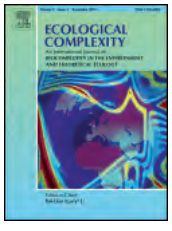
- Convention Center Restaurants
- Restaurants
- Bars and Entertainment
- Hotel
- Convention Center Parking
- Area Parking

Supporting Journals

Ecological Engineering

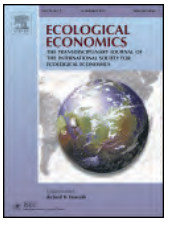
The journal is meant for ecologists who, because of their research interests or occupation, are involved in designing, monitoring, or constructing ecosystems. It is meant to serve as a bridge between ecologists and engineers, as ecotechnology is not wholly defined by either field. The journal will be read and contributed to by applied ecologists, environmental scientists and managers and regulators, natural resource specialists (e.g. foresters, fish and wildlife specialists), environmental and civil engineers, agroecologists, and landscape planners and designers. The journal is also for engineers who, as a result of training and/or experience in biological and/or ecological sciences, are involved in designing and building ecosystems. The journal is of particular interest to practising environmental managers due to its multidisciplinary approach to practical problems and opportunities.

Ecological Complexity



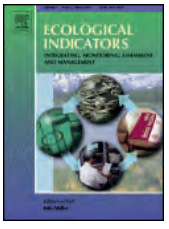
Ecological Complexity is an international journal devoted to the publication of high quality, peer-reviewed articles on all aspects of biocomplexity in the environment, theoretical ecology, and special issues on topics of current interest. The scope of the journal is wide and interdisciplinary with an integrated and quantitative approach. The journal particularly encourages submission of papers that integrate natural and social processes at appropriately broad spatio-temporal scales.

Ecological Economics



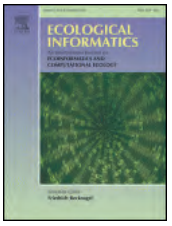
The journal is concerned with extending and integrating the study and management of "nature's household" (ecology) and "humankind's household" (economics). This integration is necessary because conceptual and professional isolation have led to economic and environmental policies which are mutually destructive rather than reinforcing in the long term. The journal is transdisciplinary in spirit and methodologically open.

Ecological Indicators



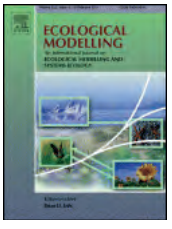
The ultimate aim of **Ecological Indicators** is to integrate the monitoring and assessment of ecological and environmental indicators with management practices. The journal provides a forum for the discussion of the applied scientific development and review of traditional indicator approaches as well as for theoretical, modelling and quantitative applications such as index development. Research into the following areas will be published.

Ecological Informatics



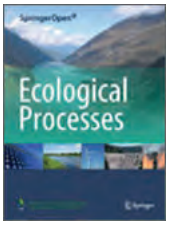
Ecological Informatics is devoted to the publication of high quality, peer-reviewed articles on all aspects of ecoinformatics, computational ecology and systems ecology, and special issues on topics of current interest. The scope of the journal includes ecogenomics, information processing and transfer in ecosystems, computational approaches to ecological scales and complexity, computer simulation and forecasting of ecosystem behaviour, computational ordination and clustering of ecological patterns at micro- and macroscales, management of ecological data. The nature of the journal is highly interdisciplinary publishing high quality papers in the frontier between genomics, biology, ecology, computer and information sciences.

Ecological Modelling



The journal is concerned with the use of mathematical models and systems analysis for the description of ecological processes and for the sustainable management of resources. Human activity and well-being are dependent on and integrated with the functioning of ecosystems and the services they provide. We aim to understand these basic ecosystem functions using mathematical and conceptual modelling, systems analysis, thermodynamics, computer simulations, and ecological theory. This leads to a preference for process-based models embedded in theory with explicit causative agents as opposed to strictly statistical or correlative descriptions. These modelling methods can be applied to a wide spectrum of issues ranging from basic ecology to human ecology to socio-ecological systems. The journal welcomes research articles, short communications, review articles, letters to the editor, book reviews, and other communications. The journal also supports the activities of the International Society of Ecological Modelling (ISEM).

Ecological Processes



Ecological Processes is an Open Access peer-reviewed international journal devoted to the publication of high quality research, with articles on all aspects of biological, chemical, physical, and hydrological processes of ecosystem and landscape dynamics across spatial and temporal scales, while highlighting topics of current interest in certain issues. Emphasis is placed on techniques, approaches, and concepts, including but not limited to: descriptive, comparative, experimental, mathematical, statistical, and interdisciplinary approaches.

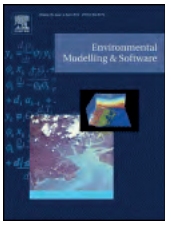
Ecohydrology and Hydrobiology

The international journal **Ecohydrology & Hydrobiology** has been created to promote the concept of Ecohydrology, which is defined as sub-discipline of sustainability sciences focused on evolutionary aspects of hydrological cycle especially "The study of the functional interrelations between hydrology and biota at the catchment scale" (Zalewski 2000 Ecological Engineering).

Ecosystem Services

Ecosystem Services, associated with the Ecosystem Services Partnership (ESP), is an international, interdisciplinary journal that deals with the science, policy and practice of Ecosystem Services in the following disciplines: ecology and economics, institutions, planning and decision making, economic sectors such as agriculture, forestry and outdoor recreation, and all types of ecosystems.

Environmental Modelling & Software



Environmental Modelling & Software publishes contributions, in the form of research articles, reviews, short communications as well as software and dawata news, on recent advances in environmental modelling and/or software. The aim is to improve our capacity to represent, understand, predict or manage the behaviour of environmental systems at all practical scales, and to communicate those improvements to a wide scientific and professional audience.

Restoration Ecology

Restoration Ecology fosters the exchange of ideas among the many disciplines involved in the process of ecological restoration. Addressing global concerns and communicating them to the international scientific community, the journal is at the forefront of a vital new direction in science and ecology. Original papers describe experimental, observational, and theoretical studies on terrestrial, marine, and freshwater systems, and are considered without taxonomic bias.

Solutions

Solutions is a nonprofit print and online, a hybrid peer-reviewed journal and popular magazine (think Nature meets the New Yorker), devoted to showcasing bold and innovative ideas for solving the world's integrated ecological, social, and economic problems. Solutions provides a forum for developing and discussing seriously creative ideas to solve society's most pressing problems in an integrated way.

The conference secretariat would like to thank the the following journals for their support of EcoSummit 2012.

Please watch for EcoSummit related post-conference publications and special issues in the coming months!

ESA family of journals

Ecosphere, the newest addition to the ESA family of journals, is an online-only, open-access alternative with a scope as broad as the science of ecology itself. The journal publishes submissions from all subdisciplines of ecological science, including theoretical, empirical, and applied ecology.

Ecology, the leading international journal in its field, publishes articles that report and interpret the results of original scientific research in basic and applied ecology.

Ecological Monographs, issued quarterly, publishes complex, multi-faceted studies that demand greater length than those published in Ecology or Ecological Applications. These are not merely long papers, but must tell a truly complicated scientific story with multiple components.

Ecological Applications, published eight times per year, contains ecological research and discussion papers that have specific relevance to environmental management and policy.

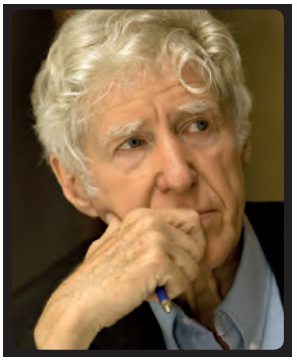
Frontiers in Ecology and the Environment, issued 10 times per year, consists of peer-reviewed, synthetic review articles on all aspects of ecology, the environment, and related disciplines, as well as short, high-impact research communications of broad interdisciplinary appeal.

The Bulletin of the Ecological Society of America, issued quarterly, contains announcements of meetings of the Society and related organizations, programs, awards, articles, and items of current interest to members.

Plenary Speakers

LESTER BROWN

Earth Policy Institute, Washington DC, USA



The *Washington Post* called Lester Brown "one of the world's most influential thinkers". The *Telegraph of Calcutta* refers to him as "the guru of the environmental movement". In 1986, the Library of Congress requested his personal papers, noting that his writings "have already strongly affected thinking about problems of world population and resources".

After earning a degree in agricultural science from Rutgers University in 1955, he spent six months living in rural India where he became intimately familiar with the food/population issue. In 1959, Brown joined the U.S. Department of Agriculture's Foreign Agricultural Service as an international agricultural analyst. Brown earned masters degrees in agricultural economics from the University of Maryland and in public administration from Harvard. In 1964, he became an adviser to Secretary of Agriculture Orville Freeman on foreign agricultural policy. In 1966, the Secretary appointed him Administrator of the department's International Agricultural Development Service. In early 1969, he left government to help establish the **Overseas Development Council**.

In 1974, with support of the Rockefeller Brothers Fund, Lester Brown founded the **Worldwatch Institute**, the first research institute devoted to the analysis of global environmental issues. While there he launched the *Worldwatch Papers*, the annual *State of the World* reports, *World Watch* magazine, a second annual entitled *Vital Signs: The Trends That are Shaping Our Future*, and the *Environmental Alert* book series. He founded the **Earth Policy Institute** in 2001 to provide a vision and a road map for achieving an environmentally sustainable economy.

Brown has authored or coauthored 50 books, including *Man, Land and Food, World Without Borders, Building a Sustainable Society, Who Will Feed China? and Eco-Economy: Building an Economy for the Earth, and World on the Edge: How to Prevent Environmental and Economic Collapse*.

He has received many prizes and awards, including 25 honorary degrees, a MacArthur Fellowship, the 1987 United Nations' Environment Prize, the 1989 World Wide Fund for Nature Gold Medal, and the 1994 Blue Planet Prize for his "exceptional contributions to solving global environmental problems." More recently, he was awarded the Borgström Prize by the Royal Swedish Academy of Agriculture and Forestry, and was selected one of Foreign Policy's Top Global Thinkers of 2010.

Plenary Speakers

ROBERT COSTANZA

Portland State University, Oregon, USA

Dr. Robert Costanza is Visiting Fellow, Crawford School of Public Policy, Australian National University, Canberra, Australia. Most recently he was University Professor of Sustainability and Director, Institute for Sustainable Solutions at Portland State University (www.pdx.edu/sustainability). Before moving to PSU in Sept. 2010, he was the Gund Professor of Ecological Economics and founding director of the **Gund Institute for Ecological Economics** at the University of Vermont. Before Vermont, he was on the faculties of the University of Maryland and Louisiana State University and a visiting scientist at the Beijer Institute in Sweden and the Illinois Natural History Survey. Dr. Costanza is currently a Distinguished Research Fellow at Ecological Economics Research Center New Zealand (EERNZ), Massey University, New Zealand, a Senior Fellow at the National Council on Science and the Environment, Washington, DC, and a Senior Fellow at the Stockholm Resilience Center, Stockholm, Sweden.

Dr. Costanza received B.A. and M.A. degrees in Architecture and a Ph.D. in Environmental Engineering Sciences (Systems Ecology with Economics minor) from the University of Florida. His transdisciplinary research integrates the study of humans and the rest of nature to address research, policy and management issues at multiple time and space scales, from small watersheds to the global system. He is co-founder and past president of the **International Society for Ecological Economics**, and was chief editor of the *Ecological Economics* from its inception in 1989 until 2002. He is founding co-editor (with Karin Limburg and Ida Kubiszewski) of *Reviews in Ecological Economics* and currently serves on the editorial board of ten other international academic journals. He is also founding editor-in-chief of Solutions, a new hybrid academic/popular journal.

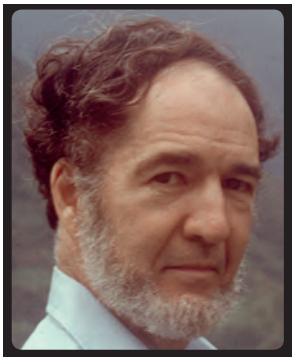
Dr. Costanza is the author or co-author of over 400 scientific papers and 22 books. His work has been cited in more than 7,000 scientific articles and he has been named one of ISI's Highly Cited Researchers since 2004. More than 200 interviews and reports on his work have appeared in various popular media.

His awards include a Kellogg National Fellowship, the Society for Conservation Biology Distinguished Achievement Award, a Pew Scholarship in Conservation and the Environment, the Kenneth Boulding Memorial Award for Outstanding Contributions in Ecological Economics, and honorary doctorates from Stockholm University and the Ecole Normale Supérieure de Lyon.

Plenary Speakers

JARED DIAMOND

UCLA, Los Angeles, California, USA



Known primarily for his research into the evolution of human societies from a biological and geographic point of view, Jared Mason Diamond was born on 10 September 1937 in Boston, Massachusetts. He earned an A.B. degree from Harvard University in 1958, and a Ph.D. in physiology from Cambridge University in 1961.

Diamond was a Junior Fellow at Harvard from 1962 to 1966, at which point he became a Professor of physiology at the UCLA Medical School. He developed a level of expertise at that time in the ecology and evolution of birds in New Guinea, making many trips to that island and region. In fact, his early books dealt with the subjects of ornithology, New Guinea, ecology and evolution.

By 1997 he had transferred to the UCLA Department of Geography, where he has focused on biogeography and human society. In that same year his landmark work was published – Guns, Germs, and Steel – for which he received the Pulitzer Prize. This major book dealt with the rise and fall of societies and was followed in 2005 by Collapse, which looked in more detail at the fall of societies, paying particular attention to the environmental contribution to these denouements. His broad interests have led him to write articles on a number of subjects, including the QWERTY typewriter keyboard system and ethnic differences.

Diamond is a member of the American Philosophical Society, the American Academy of Arts and Sciences, and the National Academy of Sciences. He is U.S. regional director of the World Wildlife Fund, and serves on the editorial board of Skeptic Magazine. Diamond has received many other professional awards in addition to the Pulitzer Prize, including a MacArthur Foundation "Genius" Grant in 1985. He speaks twelve languages, including English, Latin, French, Greek, German, Spanish, Russian, Finnish, Fore (spoken in New Guinea), New Melanesian, Indonesian and Italian.

Plenary Speakers

OLAFUR R. GRIMSSON

President, Republic of Iceland

Olafur Ragnar Grimsson (b. 1943) is the fifth President of the Republic of Iceland and was first elected President in 1996. He received his B.A. degree in economics and political science at the University of Manchester in 1965 and his Ph.D. thesis in political science five years later. He subsequently became the first Professor of Political Science at the University of Iceland. President Grimsson was elected to the Althingi, the legislative assembly, in 1978 and served as Iceland's Minister of Finance 1988-1991.

President Grimsson has been active in international venues for a long time. He was a member of the Parliamentary Assembly of the Council of Europe from 1981 to 1984 and 1995 to 1996 and was Chairman and later President of the international organization Parliamentarians for Global Action from 1984 to 1990, serving on its council until 1996.

In recent years the President has been very active in international dialog on renewable energy and climate change. Together with Professor Jeffrey Sachs, he initiated the **Global Roundtable on Climate Change**, which met both at Columbia University and in Iceland and included representatives of nearly one hundred European and American corporations, as well as experts, scientists, and opinion leaders. He has actively participated in the Clinton Global Initiative and has helped to further clean energy projects in Asia, Africa, the Middle East, Europe, and the United States. President Grimsson advocates the use of geothermal energy, as proven convincingly by the case of Iceland. In 2007, he was the patron and helped to organize an international forum on soils, society, and global change that was held to commemorate a century of organized soil conservation and land restoration in Iceland. He participated in dialogs in different parts of the world on restoration of land quality to battle climate change, combating desertification and revegetating eroded land.

President Grimsson has been a Board Member of the Special Olympics, and he played a major role in the international drug prevention campaign **Youth in Europe**, which now enjoys the participation of 19 European cities. He has also been active in promoting cooperation between Icelandic and foreign universities and has lectured at prominent American academic institutions, including Harvard, Columbia, Brown, and The Ohio State University. Among the many international awards he has received is the Indira Gandhi Peace Prize, which he received on behalf of PGA, and last year it was declared that he would receive the Jawaharlal Nehru Award for International Understanding. He was a member of the committee of the Peace Initiative of Six Heads of State in the years 1984-1989.

Plenary Speakers

SVEN E. JØRGENSEN

University of Copenhagen, Copenhagen, Denmark

Sven Erik Jørgensen received his Master of Chemical Engineering, DTU, Denmark, and Dr. Eng. In Environmental Engineering from Karlsruhe University, Germany, in 1990 and a Dr. Scientific (Ecological Modelling) from Copenhagen University. He is currently Professor Emeritus, University of Copenhagen. He was elected to the European Academy of Sciences and serves as head of the section for earth science and environmental sciences since 2009.

He has authored or co-authored 349 papers (235 in peer-reviewed international journals) and written or edited 70 scientific books on ecological modelling, systems ecology, ecological engineering, environmental science, and environmental management of aquatic systems. He has advised 30 Ph.D. students in environmental chemistry at the Royal Danish School of Pharmacy, University of Copenhagen.

Professor Jørgensen was founder and editor in chief (1975-2009) and is now honorary editor of *Ecological Modelling*. He has been President of **ISEM** (International Society of Ecological Modelling) for 1978-1994 and 2007–present. He was chairman of the scientific committee of **International Lake Environment Committee** 1994-2006.

His awards include medals from The Polish Institute of Meteorology and Water Quality (1984), the Soviet Academy of Science (1986), and Yugoslavia (1986) for research in ecological modelling, distinguished visiting Professor at Ohio State University (1991), a Japanese medal (1994) for international exchange between Japan and the rest of the world, the 1st Prigogine Prize (2004), the 2004 Stockholm Water Prize with co-laureate William J. Mitsch for outstanding contributions to the ecology of the world's lakes and wetlands, an Einstein Professorship from the Chinese Academy of Science (2005), the 2007 Blaise Pascal Medal by the European Academy of Sciences, the Santa Chiara Prize for Multidisciplinary Teaching, from Sienna University (2008 and 2010).

He was appointed honorary member of the Iberian Society of Limnology (2008) and has received honorary doctorates from Coimbra University, Portugal (2006), and Dar es Salaam University, Tanzania (2007).

Plenary Speakers

WOLFGANG JUNK

Max Planck Institute for Evolutionary Biology, Plön, Germany

Prof. Dr. Wolfgang Johannes Junk is retired leader of the Working Group of Tropical Ecology at Max Planck-Institute for Limnology, Plön, Germany, where he was since 1980, and is now scientific coordinator of the National Institute for Science and Technology in Wetlands (INCT-INAU), Cuiabá, Brazil, and a Visiting Professor at State University of Manaus (UEA) and Federal University of Mato Grosso, Cuiabá, Brazil. He is also a Professor at the University of Hamburg, Federal University of Mato Grosso (UFMT), Cuiabá, and Federal Universityof Amazonas / INPA, Manaus.

Professor Junk is an expert in ecology and sustainable management of floodplains and land-water interactions, and has a long distinguished career of research in the Amazon River and Pantanal Basins in South America. He has supervised about 35 M.Sc. and Ph.D. theses on floodplain ecology and fish biology at German and Brazilian universities and has written over 260 publications on ecology and sustainable management of floodplains and land-water interactions, including seminal works on his Flood Pulse Concept of river-floodplain systems.

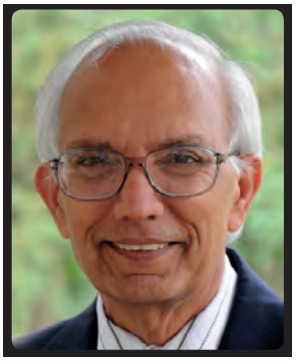
He is editor of *Amazoniana* and a member of the editorial boards of several other international journals. He is on scientific advisory board of the Argentinean National Limnological Institute (INALI) and the Center of Pantanal Research CPP.

Dr. Junk has received the Award of the Grande Cruz, (the highest distinction in Brazil) in 1998 for exceptional scientific performance, an International Fellow Award of the Society of Wetland Scientists in 1999, honorary diplomas of the Asociación Colombiana de Limnologia and the Universidad Nacional de Colombia, Sede Leticia in 2002, an Honorary Warwick Kerr Medal for relevant services for Post-Graduation in Amazonia in 2005, an honorary plaque of the Federal University of Mato Grosso UFMT for significant contributions to the university and environmental protection of wetlands, at the 8th INTECOL Wetland Conference in 2008, and the Cross of Merit first class of the Federal Republic of Germany in 2008.

Plenary Speakers

RATTAN LAL

The Ohio State University, Columbus, Ohio, USA



Rattan Lal, Ph.D., is Distinguished University Professor of Soil Science in the School of Environment and Natural Resources and Director of the Carbon Management and Sequestration Center at The Ohio State University. He has been an adjunct Professor at the University of Iceland since 2009.

He earned his B.S. from Punjab Agricultural University, an M.S. from Indian Agricultural Research Institute, and a Ph.D. from The Ohio State University. Prior to joining the International Institute of Tropical Agriculture (IITA) as a soil physicist in 1969, he worked with the University of Sydney, Australia, as a Senior Research Fellow. From 1969 to 1987 at the IITA, Ibadan, Nigeria, Professor Lal conducted long-term experiments on watershed management, water budget in relation to land use and land use change, erosion control, water conservation in the root zone, no-till farming, and agroforestry.

Since joining Ohio State University in 1987, he has worked on soil carbon sequestration, adaptation and mitigation of climate change, management of soil quality, drainage of agricultural lands, soil degradation and global food security. He has mentored 100 graduate students and 45 postdoctoral researchers and hosted 70 visiting scholars. He has authored and co-authored more than 1500 research publications, including 600 refereed journal articles, and in addition has written 13 books and edited or co-edited 45 books.

He is past president of the World Association of the Soil and Water Conservation, the International Soil Tillage Research Organization, and the SSSA (2005-2007). He was a member of the U.S. National Committee on Soil Science of the National Academy of Sciences (1998-2002, and 2007-2010) and lead author of IPCC (1998-2000), and was awarded a Nobel Peace Prize Certificate by IPCC in 2007. He has served on the Panel on Sustainable Agriculture and the Environment in the Humid Tropics of the National Academy of Sciences. He has served as consultant to FAO, World Bank, UNEP, GEF, UNDP, USAID, and many other international organizations.

Professor Lal is a fellow of the American Society of Agronomy (ASA), Soil Science Society of America (SSSA), Third World Academy of Sciences, American Association for the Advancement of Sciences (AAAS), Soil and Water Conservation Society (SWCS), and Indian Academy of Agricultural Sciences. He received several awards from the SSSA, the ASA, and the SWCS. In 2005, Professor Lal received the Borlaug Award and Liebig Award of the International Union of Soil Science, and in 2009, he received the M.S. Swaminathan Award (India) and COMLAND Award (Germany). He has received honorary degrees from Punjab Agricultural University, India (2001), the Norwegian University of Life Sciences, Aas, Norway (2005), and Alecu Russo Balti State University, Republic of Moldova (2010).

Plenary Speakers

SIMON A. LEVIN

Princeton University, New Jersey, USA

Professor Simon A. Levin received his B.A. from Johns Hopkins University and his Ph.D. in mathematics from the University of Maryland. At Cornell University 1965-1992, he was Chair of the Section of Ecology and Systematics, and then Director of the Ecosystems Research Center, the Center for Environmental Research and the Program on Theoretical and Computational Biology, as well as Charles A. Alexander Professor of Biological Sciences (1985-1992). Since 1992, he has been at Princeton University, where he is currently George M. Moffett Professor of Biology and Director of the Center for BioComplexity. He retains an adjunct Professorship at Cornell and is a Distinguished Visiting Professor at UC Irvine.

His research interests are in understanding how macroscopic patterns and processes are maintained at the level of ecosystems and the biosphere, in terms of ecological and evolutionary mechanisms that operate primarily at the level of organisms; in infectious diseases; in the interface between basic and applied ecology, especially sustainability; and most recently in exploring ecosystems and economic systems as complex adaptive systems, and the features that govern their robustness. Professor Levin has mentored more than 100 graduate students and postdoctoral fellows, and has published widely, including the popular book *Fragile Dominion*. He is the editor of the influential *Princeton Guide to Ecology* and the landmark *Encyclopedia of Biodiversity*.

He is a Fellow of the American Academy of Arts and Sciences and the American Association for the Advancement of Science, a Member of the National Academy of Sciences and the American Philosophical Society, and a Foreign Member of the Istituto Veneto. He is a University Fellow of Resources for the Future, a Fellow of the Beijer Institute of Ecological Economics, an Academic Fellow of the Strategy Institute of the Boston Consulting Group, and a Fellow of the Society for Industrial and Applied Mathematics.

Professor Levin chaired the Governing Council for IIASA for more than five years and is currently affiliated with the U.S. National Member Organization. He serves on the Science Board of the Santa Fe Institute; as Vice-Chair for Mathematics of the Committee of Concerned Scientists; and on the Scientific Advisory Board of the Moore Foundation. He is a former president of the Ecological Society of America and the Society for Mathematical Biology, and a past Chair of the Board of the Beijer Institute of Ecological Economics. Professor Levin won the MacArthur Award (1988), the Distinguished Service Citation (1998), and the Eminent Ecologist Award (2010) from the Ecological Society of America; the Okubo Award of the Society for Mathematical Biology and the Japanese Society for Theoretical Biology; and the Distinguished Scientist Award of the American Institute for Biological Sciences. He received the Dr. A.H. Heineken Prize for Environmental Sciences by the Royal Netherlands Academy of Arts and Sciences (2004), the Kyoto Prize in Basic Sciences (2005) by the Inamori Foundation, and the Margalef Prize (2010) of the Government of Catalonia. He received honorary doctorates from Eastern Michigan University, Whittier College, and Michigan State University.

Plenary Speakers

WILLIAM J. MITSCH

The Ohio State University, Columbus, Ohio, USA

William J. Mitsch is Distinguished Professor of Environment, Natural Resources, and Ecological Engineering and Director of the Olentangy River Wetland Research Park at The Ohio State University. He received his B.S. in engineering at the University of Notre Dame and a Ph.D. in systems ecology at the University of Florida. He taught at the Illinois Institute of Technology and the University of Louisville before coming to The Ohio State University in 1986.

Professor Mitsch's research and teaching have focused on wetland ecology and biogeochemistry, wetland creation and restoration, ecological engineering and ecosystem restoration, and ecosystem modeling. He has presented over 400 invited scientific presentations and short courses in the last 25 years throughout USA and in over 25 countries. He has authored or co-authored over 500 papers, reports, and other publications, and has co-authored or co-edited 17 books, including four editions of the reference book/textbook Wetlands and two versions of *Ecological Engineering*. He has advised over 70 graduate students and 10 post-docs and is founder and editor-in-chief of the international journal *Ecological Engineering*. His 20-ha **Olentangy River Wetland Research Park** at The Ohio State University, started in 1991, was declared the USA's 24th Ramsar Wetland of International Importance in 2008.

He has served on four National Research Council panels related to wetlands and water resources (1991-2004), committees under the U.S. Environmental Protection Agency Science Advisory Board (SAB) (2001-2011), a review team for the Swedish MISTRA (Foundation for Strategic Environmental Research; 1996-2000), and several advisory panels for the Louisiana Delta and Florida Everglades restorations (1997-present). During 1994-2002, he chaired a SCOPE committee on Ecological Engineering and Ecosystem Restoration and in 1997-2000, he chaired a national committee to determine solutions to the Gulf of Mexico hypoxia. He is past president of the **Society of Wetland Scientists** and is founder and past president of the **American Ecological Engineering Society**. He was General Chair of the 1992 INTECOL Wetland Conference and is General Chair of EcoSummit 2012, both held in Columbus, Ohio, USA.

Professor Mitsch has been a Fulbright Scholar to the University of Copenhagen, Denmark (1986), and to the Okavango Research Centre, Maun, Botswana (2007), and is a Fellow of the American Association for the Advancement of Science (AAAS) (1997). His awards include the U.S. EPA National Award for Wetland Research (1996), Distinguished Scholar Award at The Ohio State University (1998), Theodore M. Sperry Career Award from the Society of Ecological Restoration International (2005), Lifetime Achievement Award from the Society of Wetland Scientists (2007), and an Einstein Professorship from the Chinese Academy of Sciences (2010). He has received honorary degrees/Professorships from the University of Tartu, Estonia (2010), and Nanjing Forestry University (2011). Along with Sven Erk Jørgensen, he was awarded the 2004 Stockholm Water Prize for lifetime achievements in the modeling, management, and conservation of lakes and wetlands.

Elinor Ostrom, In Memoriam

ELINOR OSTROM

1933–2012

Indiana University Distinguished Professor Elinor Ostrom, the first woman to be awarded the Nobel Prize for Economic Sciences, passed on June 12, 2012, at the age of 78 after a battle with cancer.

She was senior research director of the Vincent and Elinor Ostrom Workshop in Political Theory and Policy Analysis, Distinguished Professor and Arthur F. Bentley Professor of Political Science in the College of Arts and Sciences, and Professor in the School of Public and Environmental Affairs.

Ostrom received the 2009 Nobel Prize in Economic Sciences for her groundbreaking research demonstrating that ordinary people are capable of creating rules and institutions that allow for the sustainable and equitable management of shared resources. She shared the prize with Oliver Williamson, a University of California economist.

The recipient of numerous international awards and honorary degrees, Ostrom was selected in April as one of the Time 100 for 2012, Time magazine's annual list of the world's 100 most influential people. In May, the IU Board of Trustees renamed the Workshop in Political Theory and Policy Analysis to honor Elinor Ostrom and her husband and colleague, Vincent Ostrom, who founded the center in 1973.

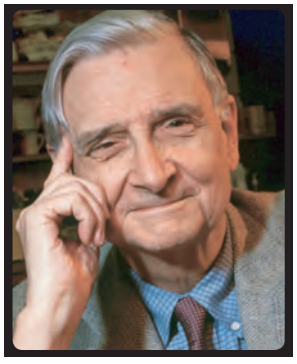
Vincent Ostrom died on June 29, 2012. The Ostroms are survived by an international extended family of colleagues, collaborators, staff and friends who worked closely with them during their extraordinary careers. – **Indiana University**

Please join us for a poignant memorial plenary dedicated to Elinor Ostrom at 8:00am on Thursday October 4th, 2012.

Plenary Speakers

EDWARD O. WILSON

Harvard University, Massachusetts, USA



Professor Edward O. Wilson was born on June 10, 1929, in Birmingham, Alabama, and grew up in a series of towns in Alabama and Florida as well as Washington, DC. After earning a B.S. and M.S. in biology at the University of Alabama, he joined the graduate program at the University of Tennessee for a year. He then transferred to Harvard University, where he earned a Ph.D. in 1955. From 1953 to 1956, he was a Junior Fellow in Harvard's Society of Fellows. During this period he commenced a series of research field trips that were to take him to many parts of the South Pacific and New World tropics. In 1956, he joined the Harvard faculty, where he is now Pellegrino University Professor Emeritus and Honorary Curator in Entomology.

Early in his career, Wilson conducted work on the classification and ecology of ants in New Guinea and other Pacific islands, and in the American tropics. In 1963, his work and his conception of species equilibrium led him to the theory of island biogeography, which he developed with the late Robert H. MacArthur of Princeton University. In their theory, immigration and extinction, the determinants of biodiversity at the species level, were tied to area (distance of islands from source regions) and the basic properties of ecology and demography. The work culminated in their 1967 book, The Theory of Island Biogeography, which has been a standard reference work ever since. The theory greatly influenced the discipline of ecology and became a cornerstone of conservation biology. Applied to "habitat islands," such as forests in a sea of agricultural land, it has influenced the planning and assessment of parks and reserves around the world. In the late 1960s Wilson, with Daniel Simberloff, conducted experiments in the Florida Keys that documented the basic principles of island biogeographic theory.

Professor Wilson is known for his career as a scientist, his advocacy for environmentalism, and his secular-humanist and deist ideas pertaining to religious and ethical matters. In his 1998 book Consilience: The Unity of Knowledge, he discusses methods that have been used to unite the sciences, and might be able to unite the sciences with the humanities.

He is a two-time winner of the Pulitzer Prize for General Non-Fiction for On Human Nature (1979) and The Ants (1991). He is a member of the National Academy of Sciences (1969), and received the U.S. National Medal of Science (1976), the Tyler Prize for Environmental Achievement (1984), the Crafoord Prize (1990), the International Prize for Biology (1993), the Lewis Thomas Prize for Writing about Science (2000), the Nierenberg Prize (2001), and the Addison Emery Verrill Medal from the Peabody Museum of Natural History (2007). He was named to Time Magazine's 25 Most Influential People in America list in 1995.

EcoSummit 2012 Program

Please note that some of the Symposia run over 2 or 3 sessions, if you don't see your presentation in the first part of the Symposia please look down through the program to check the other sessions marked with the same number and title followed by 'continued'.

Thursday 27 - Sunday 30 September 2012

Pre-Conference Field Trip 01 - New York/New Jersey - Hackensack Meadowlands and Delaware Bay Salt Marsh Restorations, New Jersey

Pre-Conference Field Trip 03 - Washington DC - Chesapeake Bay Restoration and Anacostia River Urban Restoration, Maryland and Washington DC

Pre-Conference Field Trip 04 - Atlanta - Southern Appalachian Mountains Biodiversity/Smoky Mountains, Georgia, Tennessee, North Carolina

Pre-Conference Field Trip 05 - Miami - Everglades Restoration, Florida

Pre-Conference Field Trip 07 - Chicago - Laurentian Great Lakes Restoration and Ecological Succession Landmark (Indiana Dunes), Illinois and Indiana

Pre-Conference Field Trip 08 - Columbus - Western Appalachian Mountain Mineland Restoration and "The Wilds" Conservation Center, Ohio

Sunday 30 September 2012

12:00-6:00 Foyer of C Pod, Columbus Convention Center, 400 N. High Street, Columbus, Ohio 43215	REGISTRATION
5:30-9:30	**Welcome Reception** Ohio Union, The Ohio State University, 1739 N. High Street, Columbus, Ohio 43210
5:30-10:00	Complimentary transportation will be available from and to the Greater Columbus Convention Centre
5:30	**Networking begins** Ohio Union
6:00	**Buffet and beverages start** Ohio Union
6:00-9:30	Cash bar
7:00 Chair: Moderator: C. Whitacre, Vice-President for Research, The Ohio State University, USA	Ohio Union

Monday 1 October 2012

08:00-09:45 Grand Ballroom Chair: W.J. Mitsch, Ohio State University, USA	PLENARY SESSION 1 **Appalachia: an American treasurehouse of biodiversity** *E.O. Wilson**
	Ecological lessons from past societies *J. Diamond**
09:45-10:30 Main Lobby, Columbus Convention Center	REFRESHMENT BREAK

10:30-12:30
Room C112
Chair: D. Brooks & P. Gleick

SYMPOSIUM 01

Water soft paths: balancing ecological protection and human needs for fresh water

Soft path concepts were originally developed for energy, but are now being explored by researchers in Canada and the United States for application to fresh water. Soft paths are sharply distinguished from today's conventional supply-based approach to water and also from narrow water demand management, which generally focuses largely if not entirely on efficiency in water delivery and use. Instead, the soft path invokes broader criteria of sustainability and adopts a number of analytical techniques that allow for greater changes in water systems than are permitted by efficiency improvements alone. Typically, water demand management is the initial component of a soft path, which then goes on to seek a triple bottom line (efficiency, equity, sustainability) as well as greater public participation in decisions about water. Soft paths typically include three broad components: a vision, an analytical method, and a planning process. This Symposia will incorporate elements of all three but with emphasis on vision and analytical method, and on the strengths and weaknesses of water soft paths from the perspective of the researcher or the planner. The session will also seek to explore the opportunities and difficulties of delivering water soft paths in regions and communities of North America, and possibly to come up some general rules about what to do and what not to do. More broadly, the Symposia will seek to widen recognition of the power of water soft paths as a basis for water planning that can move fresh water governance and management toward economically efficient, ecologically sustainable, and socially equitable results.

S1.1 **The soft path for water: concept and application**
*P.H. Gleick**

S1.2 **From soft energy paths to water soft paths**
*D. Brooks**

S1.3 **How far can efficiency alone take us?**
*M.A. Dickinson**

S1.4 **Learning to think like a watershed – ecological governance and the soft path for water**
*O.M. Brandes**

S1.5 **Engaging primary producers and processing industries in achieving balanced watershed outcomes – a water stewardship approach. Recent case studies**
*M. Spencer**

10:30-12:30
Room C114
Chair: D.J. Bruggeman & S. Whitten

SYMPOSIUM 03

Landscape-scale tradable credit systems for biodiversity

Tradable credit systems are increasingly being used as a means for engaging society in conservation. Tradable credit systems are used to mediate conflicts between the provisioning of private benefits (i.e., agricultural or real estate development) and pure public services (e.g., protection of biodiversity). Due to the pure public service nature of biodiversity, specifically the benefits of biodiversity are nonexcludable and nonrival unlike commodities (e.g., coffee), it is critical that we recognize that "markets" in the traditional sense will be inadequate for defining currencies, prices, and rules for interaction. Tradable credit systems, to date, have been criticized from both ecological and economic perspectives as being unable to prevent the net loss of biodiversity in a cost-effective manner. From an ecological perspective, it is critical to predict changes in biodiversity that will result from trades, yet we lack a general theory useful for predicting biodiversity in dynamic landscapes. From an economic perspective, it is critical to keep transaction costs low while establishing rules for sharing information and enforcing management guidelines. This Symposia will outline challenges to developing these policy tools at a landscape-scale in an ecologically and economically rigorous fashion and highlight recent progress being made in the U.S., Australia, and Europe.

S03.1 **Application of decision analysis to landscape-scale biodiversity credits systems**
*D.J. Bruggeman**

S03.2 **A flexible framework for modeling cumulative impacts of local management actions on biodiversity persistence at whole-landscape scale**
*S. Ferrier**

S03.3 **Offsets and tradable permits for biodiversity conservation - including the landscape perspective**
F. Hartig, K. Johst, M. Drechsler*

S03.4 **Development by design: blending landscape conservation planning and the mitigation hierarchy**
*B.A. McKenney**

S03.5 **Tradeoffs in offset metric design: thoroughbred only or horses for courses?**
A. Reeson, S.M. Whitten, A. Coggan*

10:30-12:30
Room C125
Chair: K. Goodell & T. Roulston

SYMPOSIUM 05

Biological basis for pollinator habitat manipulations: population regulation and plant restoration

Pollinators and pollination services have become a prominent focus of research in the fields of restoration and management of agricultural and natural lands as researchers and practitioners seek to understand how modifications of natural and cultivated landscapes influence beneficial insects and the services they provide. In this Symposia we draw together ecologists who have studied landscapes altered to promote pollinators. We aim to synthesize the results of these studies from the perspective of the underlying ecology of the interactions between pollinators and their habitat and extend them to recommendations for future modifications, looking for patterns, trends and singularities across different systems. Invited speakers differ in the spatial and temporal scale of their research, habitat type, pollinator guild, and landscape context. The speakers will address how pollinators respond to management of a variety of systems including to restoration and constructed habitats, hedge rows and field margin plantings in agriculture, control of invasive species in natural habitats, and urban habitat enhancement. They will also present a range of field techniques and analytical approaches.

S05.1 **Evaluating habitat restoration for pollinators on a reclaimed mine using plant-pollinator network metrics**
S.J. Cusser, K. Goodell*

S05.2 **Landscape-scale approaches to bumblebee conservation**
*D. Goulson**

S05.3 **Studying pollinator services at landscape scales: citizen science and the Great Sunflower Project**
G. LeBuhn, S. Hiatt*

S05.4 **Landscape perspectives on bee diversity and crop pollination**
*T. Tscharntke**

S05.5 **A synthesis of what we need to know to conserve bees and how to communicate it to land managers**
*M. Vaughan**

S05.6 **The assembly of pollinator communities and pollination interactions in targeted and non-targeted restoration**
*N.M. Williams**

10:30-12:30
Room C124
Chair: P. Jaffe

SYMPOSIUM 06

Sediment chemistry and dynamics of natural and restored wetlands

Sedimentation is an important process in both natural and restored wetlands. It is the process that leads to significant water quality services of wetlands. Yes excessive sedimentation leads to wetland fill in and loss of many ecosystem functions. Sediment chemistry is also an important consideration in the creation and restoration of wetlands.

S06.1 **Wetland vegetation and soil chemistry zonation: cause and effect, or two sides of the same coin?**
K.B. Moffett, J. Dittmar, A.L. Seyfferth, S. Fendorf, S.M. Gorelick*

S06.2 **Surface sediment quality upon metal contamination and its inconsistency of risk assessments in the Yangtze River Delta** *S. Yu*, Y. Liu, G.B. Yu, H.B. Li*

S06.3 **Estimating sedimentation in riverine wetlands over 15 years**
*W.J. Mitsch, S.M. Nedrich**

S06.4 **Inorganic N transformation rates and controlling factors in tributary sediments of the Santa Fe River**
H. Kim, K.R. Reddy, A. Ogram*

S06.5 **Trace metal immobilization in tidal brackish marshes: comparing newly constructed and naturally established sediments**
H. ElBishlawi, P. Jaffe, J.Y. Shin*

10:30-12:30
Room C123
Chair: W. Sadinski & A. Gallant

There will be a 30 minute discussion at the end of this session

SYMPOSIUM 07

Moving integration forward in assessing impacts of global change across scales and processes

The scientific assessments necessary to inform society of the extent of global change and its impacts on essential ecosystem services are not easy and largely still lacking. This is especially true across spatial scales and over the long term, which requires approaches broad in scope, yet sufficiently parsimonious in concept and application to be practical and effective. Given the need to understand dynamic biotic and abiotic processes and patterns at different scales, new ways of integrating measurements across disciplines and methods are fundamental to moving forward. How has the international scientific community been pushing this envelope of integration to assess the impacts of global change? How are new technologies complementing more established technologies and enabling more meaningful assessments? What are the challenges to executing and sustaining successful broad-scale and long-term assessments? Speakers in this Symposia will address such questions in the context of innovative, multidisciplinary research that uses data from sky-, ground-, and water-based sensors and field measurements to assess relationships between drivers and impacts of global change across scales.

S07.1 Integrated approaches for assessing carbon stocks in tropical forests
*G.P. Asner**

S07.2 Sustainable land-use practices in the european alps under global change - ecosystem dynamics, socio-economic impacts and policy implications
A. Rigling, R. Huber, P. Bebi, H. Bugmann, A. Buttler, B. Lehmann, et al*

S07.3 Using an integrated assessment model to understand tradeoffs in ecosystem services: energy, water, and land
*A.C. Janetos**

S07.4 GEO BON: a voluntary partnership to link biodiversity observing systems
*B.C. Reed**

S07.5 Assessing impacts of global change in wetland-upland landscape matrices along North American environmental gradients
W. Sadinski, A. Gallant*

S07.6 Can other forms of capital substitute for natural capital?
*S. Polasky**

10:30-12:30
Room C122
Chair: D. Wenny, C.J. Whelan & C.H. Sekercioglu

SYMPOSIUM 08
Why do birds matter? Birds' ecological functions and ecosystem services

Birds are involved in many important ecosystem functions yet few have been quantified or studied directly as ecosystem services. The functions and services provided by birds are crucial to understanding the importance of birds for ecosystems and for the people that benefit from them. With understanding and valuing bird services we may assess the environmental consequences of bird declines and extinctions and communicate these findings to the public. Both participating authors and topics covered give the Symposia global breadth. Topics include methods of biodiversity valuation relevant to birds; trophic cascades and pest control; seed dispersal by waterfowl and by corvids; scavenging by birds; and the ecology of avian extinction on oceanic islands. The presentations will demonstrate a scientific basis for ecosystem valuation as an integrated conservation strategy. Valuation of bird ecosystem services is complex because most services arise indirectly through foraging behavior. Understanding bird ecosystem services necessitates reviewing relevant natural history and much past research. Although we present concrete examples of valuation of select bird ecosystem services, a major goal is to elucidate challenges and provide guidance for valuation of other bird ecosystem services.

S08.1 Why birds matter economically: values, markets, and policies
M.D. Johnson, S. Hackett*

S08.2 A review of ecosystem services provided by scavenging birds
*T.L. DeVault**

S08.3 Seed dispersal by corvids
*D.F. Tomback**

S08.4 Seed dispersal by waterfowl
*A.J. Green**

S08.5 The impact of total bird loss on the forests of Guam
H.S. Rogers, J.J. Tewksbury, R. Miller, J. Hille Ris Lambers*

S08.6 Trophic interaction networks and ecosystem services
C.J. Whelan, D.F. Tomaback, D. Kelly, M.D. Johnson*

10:30-12:30
Room C121
Chair: M. Wu, K. Schafer & M. Weinstein

SYMPOSIUM 09
Restoration of the Hackensack Meadowlands in northern New Jersey

Restoration success of wetlands may rely on various factors including but is not limited to minimizing radiative forcing impact while maintaining water quality improvement and other ecosystem services and functions. Consequently, newly created and restored wetland ecosystems services are of crucial importance and the evaluation of ecosystem function. Wetlands in particular, pose an interesting case in point, as section 404 in the Clean Water Act mandates no net loss of wetlands. Therefore, wetland construction and mitigation will remain a major component of US environmental management. In this context, it is conceivable that through ecologically sound engineering and management of wetlands, biodiversity could be maximized and greenhouse gas efflux could be minimized while maintaining desired ecosystem services. Half of the world's population lives in coastal areas, and thus the ecosystem services they provide are crucial. Particularly the Hackensack Meadowlands in New Jersey, which is located in one of the most populated and built-up states in the United States, management for ecosystem services are crucial and thus restoration success.

S09.1 Restoration and monitoring of an urban estuary in northern New Jersey
F.J. Artigas, R.M Feltes*

S09.2 **Clonal diversity and resistance to invasion in urban, remnant salt marsh patches**
C. Holzapfel, E.G. Kirby, T.M. Wu, K. Plank, S. Wadhwa*

S09.3 **Management of biodiversity in the New Jersey Meadowlands**
*E. Kiviat**

S09.4 **Effect of restoration on the carbon balance in the Meadowlands of New Jersey**
K.V.R. Schafer, G. Bohrer*

S09.5 **Ecosystem services provided by the invasive reed, phragmites australis, in the hackensack meadowlands**
J.S. Weis, L. Windham, P. Weis*

S09.6 **Contaminants in fish in a recovering urban estuary**
P. Weis, J. Ashley, A. Candelmo, J. Weis*

10:30-12:30
Room C215
Chair: W. Wende

SYMPOSIUM 10
Green City Lab – bringing the Ecosystem Services approach to the City

In recent years, the incorporation of the Ecosystem Services Concept (ESS) into legal frameworks and planning instruments has received increasing attention. But what is needed to integrate the ecosystem services approach, particularly into the urban planning context? Experts from the USA, Europe and Asia will present methods for valuation and indicators, as well as urban ESS types and the relationships between urban ESS supply and demand. They will in particular address biodiversity issues. The Symposia, a "Green City Lab", will discuss the challenges both in terms of theoretical foundations and practical applications. The presented case studies from Portland, Salzburg, Singapore, and the two sister-cities Columbus/Dresden, could be seen as "experimental city lab" examples, which focus on the protection and development of ESS, and address urban growth and shrinkage. The Symposia will show the development of methodological frameworks, and will also focus on such instruments as urban zoning, urban land use planning, urban nature conservation, and the extent to which these instruments could incorporate ESS and biodiversity issues.

S10.1 **Ecosystem services in urban contexts**
*R. Costanza**

S10.2 **Darby accord: joint planning and implementation in a critical watershed**
*V. Papsidero AICP**

S10.3 **A dynamic model on urban sprawl and sustainability of Mediterranean traditional irrigated lands: the case of Huerta de Murcia (Southeastern Spain)**
J. Martinez-Fernandez, M.A. Esteve-Selma, I. Baños, M.F. Carreño, A. Moreno*

S10.4 **Ecosystem-based valuation and biodiversity in German urban areas**
S. Roessler, W. Wende*

S10.5 **Benchmarking biodiversity in the city: proposed framework for a multi-dimensional approach in the context of sustainable urban growth**
L.C. Malone-Lee, C.K. Heng, A.R. Abdul Hamid, I. Shams*

S10.6 **Compact city in an ecological network - the Dresden example**
C. Korndörfer, T. Geyer*

10:30-12:30
Room C214
Chair: A. Stokes

SYMPOSIUM 11
Protecting and restoring severely degraded terrestrial ecosystems

Over the last 50 years, modifications in land use coupled with the consequences of climate change have led to severe degradation of terrestrial ecosystems around the world. Urgent solutions are thus required to rehabilitate and ensure the ecological integrity of vulnerable terrestrial ecosystems exposed to natural or anthropogenic disturbance. In this Symposia, we will discuss the causes and consequences of ecological disturbance, together with protection measures and mitigation strategies for restoration in drastically disturbed sites.

S11.1 **Hydrogeomorphic processes in mountainous terrain: effects of land management and implications for sustainability and hazards**
*R.C. Sidle**

S11.2 **Plant ecosystem services for soil protection and restoration**
*A. Stokes**

S11.3 **Self-organized, landscape-scale vegetation patterns are 'sentinels' at the verge of deserts: lessons from 50 years of large scale monitoring**
N. Barbier, V. Deblauwe, P. Couteron*

S11.4 **Restoration of severely disturbed habitats: from theory to practice**
*L.R. Walker**

S11.5 The use of natural processes for the restoration of drastically disturbed sites
*D. Polster**

S11.6 Potential and ecological value of restoring degraded and isolated urban habitats
C. Kaunzinger, S. Handel*

10:30-12:30
Room C213
Chair: W. Lyons

SYMPOSIUM 12
Ecosystem change in polar and alpine environments
Polar and alpine regions of our planet are undergoing rapid climate change. The rapid loss of glacier ice, sea ice, snowpack and permafrost is a major consequence of the changing climatic conditions. This global cryospheric loss has major ramifications for both natural and human-dominated ecosystems. This Symposia will address this topic by examining the impact of warming on ecosystem change in both polar and alpine regions of the Earth. The speakers will discuss the manifestations of change in both marine and terrestrial systems and they will provide a perspective on how current and future warming will impact the function and structure of these ecosystems.

S12.1 Global cryospheric loss: an overview of the issue
E. Mosley-Thompson, L.G. Thompson*

S12.2 Hydrologic transformation and human resilience to climate change in the Peruvian Andes
*B.G. Mark**

S12.3 Polar amplification and consequences for soil carbon cycling
R.A. Virginia, J.I. Bradley-Cook*

S12.4 Soils, biodiversity and climate change in polar regions
*D.H. Wall**

S12.5 Accelerated ecosystem change in the Canadian Arctic
*W.F. Vincent**

S12.6 Geophysical and ecological responses to rapid regional warming along the Antarctic Peninsula: the LTER Perspective
H. Ducklow, S. Doney, B. Fraser, K. Gorman, D. Martinson, S. Sailley, O. Schofield, S. Stammerjohn, D. Steinberg*

10:30-12:30
Room C212
Chair: J. Lu & G. Ziv

SYMPOSIUM 13
Ecological problems on basins and estuaries of big rivers
Ecological problems such as habitat loss of migratory fish, biodiversity loss, environmental pollution, marine desertification and so on coursed by industrialization, urbanization, and hydropower dam building on big rivers of the world have an important influent on human life of more than 1/3 of total population of the world. How to find a win-win way to balance natural service function and economical development? This Symposia will focus on this question.

S13.1 Restoring floodplain and tidal wetlands along a freshwater-estuarine gradient in the Lower Columbia River and Estuary (LCRE)
R. Thom, G. Johnson, H.L. Diefenderfer, A. Borde, C. Roegner*

S13.2 An ecosystem based approach for developing nutrient concentration standard in an estuary, Southeast China
X.H. Wan, W.Z. Cao, H.X. Sheng*

S13.3 A comparison study on economics and nature conservation on estuarine regions of Yangtze River, China and Mississippi River, USA
F. Wang, J. Lu*

S13.4 A model of two ecological engineering species dynamics in an expanding estuarine wetland
Q. Wang, S. Jorgensen, J. Lu*

S13.5 Ecological restoration of littoral wetland on the Three Gorges Reservoir, China
X.Z. Yuan, H. Liu, B. Li, R. Sun, Q. Wan, W. Deng, et al*

S13.6 Trading-off fish biodiversity, food security and hydropower in the Mekong river basin
G. Ziv, E. Baran, S. Nam, I. Rodríguez-Iturbe, S. Levin*

10:30-12:30
Room C211
Chair: J. Cavender-Bares

SYMPOSIUM 14

Applying an analytical framework for sustainability science across contrasting biophysical, cultural, and institutional contexts

Meeting human needs while sustaining the planet's life support systems is the fundamental challenge of our time. What role sustenance of biodiversity and contrasting ecosystem services should play in achieving a sustainable future varies along philosophical, cultural, institutional, societal and governmental divisions. Contrasting biophysical constraints and perspectives on human well-being arise both within and across countries that span the tropics and temperate zone. From direct sustenance of livelihoods from ecosystem services in East Africa to complex and diverse relationships with the land in Mexico and to the highly monetary based economy of the U.S. where citizens are often only remotely aware of their dependence on ecosystems, the valuation of biodiversity and ecosystem services meets contrasting challenges. Lack of understanding of the contrasting context in which valuation occurs creates impediments to collective global efforts to sustain the earth's life support systems. While theoretical notions of the goals of sustainability science seek a unified path forward, realities on the ground present challenges. This Symposia seeks to provide both an analytical framework and a series of case studies that illuminate impediments posed to sustainability by contrasting biophysical constraints and perspectives on what should be sustained. In doing so, the contributors aim to clarify the trade-offs posed to human welfare in sustaining biodiversity and ecosystem services. Our goal is to provide novel insights on how sustainability can be achieved internationally through a rigorous exploration of constraints and trade-offs examined at multiple scales, and across geographic regions from a range of cultural perspectives.

S14.1 **Links and trade-offs between ecosystem services: an analytical framework**
J. Cavender-Bares, S. Polasky, P. Balvanera, E. King, T. Mwampamba*

S14.2 **Kenyan pastoralist societies in transition: varying perceptions of the value of ecosystem services**
E.G. King, E. Kaye-Zwiebel*

S14.3 **What formal rules and informal terms of use of natural resources can tell us about cross-organizational valuation of biodiversity and ecosystem services: the case of forest management bylaws in Tanzania**
T.H. Mwampamba, M. Skutsch*

S14.4 **Trade-offs between ecosystem services in a tropical pasture - dry forest mosaic**
F. Mora, J. Trilleras, M.J. Martínez, S. Quijas, P. Balvanera*

S14.5 **Describing sustainability through essential tradeoffs in two contrasting Mexican agroecosystems**
M. Cadena, M. Astier, M. Gavito, C. Gonzalez-Esquivel, O. Masera, P. Balvanera*

S14.6 **Can other forms of capital substitute for natural capital?**
*S. Polasky**

10:30-12:30
Room C210
Chair: J. Fiksel & H. Fredrickson

SYMPOSIUM 15

Ecological systems and sustainable development: current research at the U.S. EPA

The U.S. EPA Office of Research and Development (ORD) is re-orienting its R&D programs around the unifying concept of sustainability, and pursuing integrated transdisciplinary research to develop sustainable solutions for today's complex environmental challenges. Research leaders from ORD will describe advanced methods and tools that are being used to investigate sustainability issues such as climate and energy policy, water resource management, community well being, and chemical safety. A fundamental precept is the application of systems thinking to account for the intricate linkages among environmental media, human health, ecology, and economic activities, and thus avoid unintended consequences. This requires an understanding of the flow of ecosystem services into the economy and the transformation of materials and energy during the life cycle of a product or service. In order to evaluate the benefits of alternative solution strategies, advanced dynamic modelling methods are needed. These methods are being put into practice through focused engagements with stakeholders, including government agencies and the business community.

S15.1 **The future Midwest North American landscape**
R.J.F. Bruins, E.R. Smith, M. Mehaffey, H.A. Sander, L. Tran, L. Wainger, et al*

S15.2 **Navigating the path forward: systems thinking for sustainable solutions**
*J. Fiksel**

S15.3 **Eco-efficiency analysis of green infrastructure based watershed management: a case study of rainwater harvesting in the Albemarle-Pamlico Basins**
S.R. Ghimire, J.M. Johnston*

S15.4 **Accounting for non-traditional participants in a water quality trading program: the case of the east fork watershed**
H.W. Thurston, C.T. Nietch, M.T. Heberling*

10:30-12:30
Room C224
Chair: K. Havens-Young & P. Olwell

SYMPOSIUM 16

The use of native plants for large scale restoration in a changing world

In 2001 the United States Congress directed the Bureau of Land Management and Forest Service "to develop a long-term program to manage and supply native plant materials for various Federal land management restoration and rehabilitation needs." The core of this government Native Plant Materials Development Program is a national public/private partnership to collect, bank, and use native seeds called "Seeds of Success (SOS)." SOS now engages over 60 seed collecting teams nationwide. SOS provides seeds to growers and researchers to develop native plant materials for use in restoration of public lands, including those affected by wildfire. The goal of this Symposia is to discuss this model for native plant materials development, including collection and storage protocols, the delineation of seed transfer zones, the evaluation of plant materials for use in regional restoration projects, and how genetic guidelines may change as the climate changes. We seek input from Symposia attendees so this program can inform, and be informed by, similar efforts in other countries. Moving forward, the U.S. program will rely, in part, on partnerships with private industry to develop, bulk, and sell plant materials for restoration, as well as potentially serve the restoration needs of industry.

S16.1 **The national interagency native plant materials development program: creating options for an uncertain future**
*P. Olwell**

S16.2 **Planning for the use of native plants in a changing climate**
*K. Havens-Young**

S16.3 **The great basin native plant selection and increase project**
*N.L. Shaw**

S16.4 **Use of native plants in large scale restoration**
*P. Olwell, N. Shaw, K. Havens, P. Krabacher**

S16.5 **From restoration to resilience ecology**
*D.A. Falk**

10:30-12:30
Room C225
Chair: T.X. Yue & F. Herzog

SYMPOSIUM 17

Modelling farmland at various scales under climate change: from concept to application

According to FAO, about one third of the earth's land surface is used for agricultural production. This share should not be further expanded in order to maintain the ecological functions of forests, wetlands, etc. With constant land resources, increasing human population and accelerated climate change, agriculture faces the challenge of increasing productivity without (further) damaging natural resources including soil, water, biodiversity. The Symposia will offer a platform to studies around the world which simulate agricultural productivity and its effects on natural resources at various scales (farm, landscape, region, continent) at medium time scales (e.g. 10 to 30 years). Conceptual models are welcome, which test new modelling approaches and techniques. At the same time we want to learn about applications such as quantitative scenario studies and examples from applications in e.g. policy advice, farm advice & extension.

S17.1 **Measuring European farmland biodiversity**
F. Herzog, M. Arndorfer, D. Bailey, K. Balazs, P. Dennis, T. Dyman, et al*

S17.2 **Analysis of the land desertification trend with climate change based on the enormous regional model**
Q. Jin, X.Z. Deng*

S17.3 **Global distribution of irrigated agricultural area: a spatio-temporal modelling approach**
J. Schüngel, F. Wimmer, E. Kynast, R. Schaldach*

S17.4 **Carbon budget of steppe ecosystem in northern china from 1980's to 2000's**
*X.P. Xin**

S17.5 **Modeling food security of China**
T-X. Yue, C-L. Wang, Q. Wang*

S17.6 **Model investigation of the rice growth in Asia driven by future climate projections and the biogeophysical influence of rice paddies' evapotranspiration on local and regional climate**
*A.Y. Yurova**

10:30-12:30
Grand Ballroom
Chair: P.M. DeMarco

FORUM 1

Lessons from Silent Spring at 50: an environmental ethic for the 21st century

V. Hartkopf, E.J. Beckman, N. Gift, E.O. Wilson, et al*

2012 marks the 50th anniversary of the publication of Rachel Carson's seminal book, **Silent Spring**. As we enter the second decade of the 21st century, we see evidence of the unintended consequences of human actions on the living biosphere. Environmental policies initiated in the 1970's have shifted since Silent Spring catalyzed action. Most of the environmental damage accumulated over the last fifty years derives from fossil fuel combustion for energy and transportation, and the bioaccumulation of toxic synthetic chemicals. Environmental policies consistent with natural laws can be derived from principles set out in Rachel Carson's writing. Her principles, as an environmental ethic, offer guidance for a transition to a sustainable economy that preserves a viable human habitat while protecting the life support system all living things share – clean air, pure water, fertile ground and the biodiversity of species. An environmental ethic based on sound understanding of the interconnectedness of living systems helps to neutralize divisive politics and focus attention on the long term viability of all living species, including humans.

This forum will discuss Rachel Carson's environmental ethic in the context of fifty years' experience since the publication of **Silent Spring**. We will examine three areas of opportunity to apply Rachel Carson's principles in the 21st century to improve the global interconnected ecosystems of the living biosphere: sustainable energy use; green chemistry; and sustainable agro-ecosystems. We will reflect on the critical role of human behavior in sustaining the global biodiversity of species.

10:30-12:30
Room C113
Chair: C. Jenkins

FORUM 2

Food, water and the environment part 1

Panel 1: Environmental change, food security and health

B. Piperata, D. Sui, C. Larson, K. Schmeer*

This forum addresses the complex interactions between human societies and environmental change and the implications these have for socioeconomic and political security. One panel addresses the question of how environmental changes are affecting food security and health in various parts of the developing world. The second panel examines methods for measuring and regulating water supply, ways to create water security and the biodiversity impact of drug trafficking. The third panel looks at population and climate change as these influence economic security and civil conflict. The panel draws on interdisciplinary perspectives across the sciences and studies that engage multiple parts of the contemporary world.

10:30-12:30
Room C216
Chair: S. Bastianoni

WORKSHOP 01

Modelling unsustainability reduction in the current century: indicators and policies

S. Bastianoni, F.M. Pulselli, R. Ulanowicz, F. Mueller, M. Wackernagel, S.E. Joergensen, B. Bakshi, D. Campbell, D. Tilley, S. Borghesi, R. Costanza, T. Jackson*

10:30-12:30
Room C222
Chair: S. Weber

WORKSHOP 02

Weinland Park in Columbus, USA: one neighbourhood's perspective on developing ecotechniques for stormwater management

S. Weber, S. Frey, L. Fay, E. VanTil, C. Girves, M. Dilley*

10:30-12:30
Room C223
Chair: A. Rosenthal

WORKSHOP 03

Let's bundle in the jungle: the role of ecosystem service stacking in conservation

A. Rosenthal, J. Funk, L. Olander, T. Herbert, J. Goldstein, E. McLellan*

10:30-12:30
Room C220
Chair: J.S. Brooks

GS01

Biodiversity & biological conservation

GS01.1 **Using biodiversity principles in China for a more sustainable agriculture**
L. Vasseur, M. You*

GS01.2 **Decadal changes in oyster reefs in the Big Bend of Florida's Gulf Coast**
J. Seavey, W. Pine, P. Frederick, L. Sturmer, M. Berrigan*

GS01.3 **Human cultural diversity enhances species diversity: the case of the Israeli-Jordanian border**
*U. Shanas**

GS01.4 **Study on phytoplankton shift of mainstream of three georges reservoir**
China *Y.C. Wang*, S.S. Chen, S. Hu, Y.B. Liu, Y.L. Wu, H.H. Zhuo, et al*

GS01.5 **Using te rongoā (maori traditional medicine) to encourage biodiversity on farms**
*M. Johnson**

GS01.6 **Managing for ecological and cultural resilience across the australian continent: Green infrastructure as design strategy**
*S. Kilbane**

GS01.7 Synergies, tradeoffs, and the effect of national socio-political context on community-based conservation outcomes
J.S. Brooks, K. Waylen, M. Borgerhoff Mulder*

10:30-12:30
Room C221
Chair: F.A. Comin

GS02
Ecohydrology, watersheds & the coast

GS02.1 Threatened vegetations biodiversity in two ramsar site wetlands in Egypt
*M-G. Ghobrial**

GS02.2 An ecological compensation system to resolve the water pollution conflicts in large, interjurisdictional lake basins in China
L.J. Zhao, W. Huang, Y. Hu, T. Ma*

GS02.3 Watershed management in Mexico: some experiences
H. Cotler, G. Caire*

GS02.4 Spatial and temporal distribution patterns of macronutrients, heavy metals, pesticides and pathogens in butrinti lagoon ecosystem in Albania
S. Sulce, J. Malltezi, F. Harizaj, A. Maci*

GS02.5 Designing of watershed eco-compensation mechanism in Dongjiang River based on the key ecological function zone
G-H. Liu, T-T. Jin, Y-H. Wen, H-G. Hao, H-Y. Zhang*

GS02.6 Saltcedar and willows: an ecohydrological perspective on water salvage from removal along streams in the United States and Australia
T. Doody, P. Nagler, E. Glenn*

GS02.7 Ecological responses to altered flow regimes: systematic analysis of the literature in eco evidence to inform environmental science and management
K.A. Miller, J.A. Webb, S.C. de Little, E.L. King, M.J. Stewardson, N.L. Poff*

GS02.8 Soil moisture dynamics under different tillage pratices in cassava-sorghum based cropping systems in eastern Uganda
R. Mulebeke, G. Kironchi, M.M. Tenywa*

10:30-12:30
Room D230
Chair: S. Ludsin

GS03
Biological invasions

GS03.1 The resistance of restored habitats to amur honeysuckle reinvasion
K.N. Hopfensperger, A. Weber, R.L. Boyce*

GS03.2 Two approaches for distinguishing diffusion vs. long-distance dispersal in plant invasions
D.L. Gorchov, S.M. Castellano, N. Angeli*

GS03.3 Ecological and evolutionary consequences of socioecological networks to wildlife in urban environments
*A.D. Rodewald**

GS03.4 Forest understory response to emerald ash borer-induced ash mortality
W.S. Klooster, C.P. Herms, D.A. Herms, J. Cardina*

GS03.5 Emerald ash borer induced ash mortality impacts forest floor invertebrates and litter decomposition rates
K.I. Perry, R.K. Walker, D.A. Herms*

GS03.6 Cascading ecological impacts of the emerald ash borer invasion: effects of ash mortality on forest bird communities
L.C. Long, K.S. Knight, D.A. Herms*

GS03.7 Seasonal and habitat-associated patterns of Bd infection in green frogs (Lithobates clamitans) and bullfrogs (L. catesbeianus) in central Ohio
C.A. Korfel, T.E. Hetherington*

GS03.8 Infestation of European freshwater bivalves (Unionidae) by the invasive zebra mussel (Dreissena polymorpha)
R. Sousa, F. Pilotto, D.C. Aldridge*

10:30-12:30
Room D231
Chair: A.P. Covich

GS04
Ecosystem services: Aquatic

GS04.1 Soil organic carbon stocks under forest and pasture in the atlantic forest biome of Southeast Brazil
M.R. Coelho, A. Fontana, J.M.G. Monteiro, K.T. Fonseca, M.M. Costa*

GS04.2 A livelihood analysis of payments for ecosystem services benefits and distribution in Tanzania
*E.J. Kwayu**

GS04.3 Ecosystem services and ecological status improvement: determinants of willingness-to-pay values for water quality and its role for decision-making
R. Pinto, et al*

GS04.4 Microalgae - bacterial complex as a strategy for carbon dioxide mitigation in waste stabilization ponds
S. Lahiri(Ganguly), D. Sarkar(Paria), B.B. Jana*

GS04.5 Lake Erie's public health-related ecosystem services: vulnerability and value for Ohioans
L.M. Seryak, T.J. Buckley*

GS04.6 Potential contribution of ecosystem services associated with altered management activities in the Wabash River watershed to sustainable water management in the Ohio River Basin
E.P.H. Best, G. Yang*

GS04.7 Carbon storage and ecosystem services in the Okefenokee National Wildlife Refuge, Georgia, USA
A.P. Covich, D.A. Patton, J.C. Bergstrom, R.L. Moore*

GS04.8 Predicting the impacts of saltwater intrusion and sea level rise on landscape change and ecosystem dynamics in the tidal freshwater wetlands of coastal Georgia, USA
E.R. Herbert, J.M. Marton, M. Jun, E.R. Elswick, C.B. Craft*

10:30-12:30
Room D232
Chair: D. DeGroot

GS05
Ecosystem services: Terrestrial

GS05.1 Forest systems and Gaia theory
*H-B. Rinker**

GS05.2 Trees in cities: growth conditions and cooling
M.A. Rahman, A.R. Ennos*

GS05.3 Land use change affects spider community structure in the urban ecosystem of Cleveland, Ohio
C.E. Burkman, M.M. Gardiner*

GS05.4 Forest ecosystem functioning in highly human-altered landscapes: an opportunity for targeted restoration
M.E. Gerken, J.R. Thompson, C.M. Mabry, R.K. Kolka*

GS05.5 Compensation for ecosystem services: an evaluation of efforts to achieve conservation and development in Ecuadorian Páramo Grasslands
K.A. Farley, L.L. Bremer, W.G. Anderson, C.P. Harden*

GS05.6 How to foster collective innovation for the provision of ecosystem services at a landscape scale?
E.T.A. Berthet, B. Segrestin, V. Bretagnolle*

GS05.7 Urban soil organic carbon storage: an unappreciated ecosystem service in densely urbanised Western Europe
J.L. Edmondson, N. McHugh, Z.G. Davies, K.J. Gaston, J.R. Leake*

GS05.8 Landscape structure affects ecosystem service provision and biodiversity in an agricultural landscape
M.G.E. Mitchell, E.M. Bennett, A. Gonzalez*

10:30-12:30
Room D233
Chair: L.C. Braat

GS06
Ecosystem services: Methods

GS06.1 Valuing ecosystem functions and services using CHAP
T.A.O. O'Neill, K.H.O. O'Neill*

GS06.2 Can payment solve the problem of undersupply of environmental services?
N. Robert, A. Stenger*

GS06.3 The elements of human well-being with an emphasis on the contribution of ecosystem services
J.K. Summers, L.M. Smith*

GS06.4 Bridging the local-global modeling divide: intelligent modeling to support ecosystem services mapping and quantification
K.J. Bagstad, F. Villa, B. Voigt, G. Johnson*

GS06.5 Stacking ecosystem services
M.M. Robertson, T. BenDor, R. Lave, J.A. Riggsbee, J.B. Ruhl, M.W. Doyle*

GS06.6 Implementing the ecosystem approach in land use decision-making
R.W. Brooker, H. Black, M. Coull, A. Hester, J. Irvine, A. McVittie*

GS06.7 **Identifying nature's benefits, deficits, and opportunities for equitable distribution in populated places: a high-resolution component of the national atlas for sustainability**
L.E. Jackson, A.C. Neale, A.N. Pilant, T.G. Wade*

12:30-2:00 LUNCH
Please be advised that lunch is not included in the delegate registration rate but there are plenty of cafés and restaurants in the area

2:00-2:45 PLENARY SESSION 2
Grand Ballroom
Chair: L. Li
Ecosystem services and the challenge of sustainability in a global commons
*S.A. Levin**

2:45-3:15 REFRESHMENT BREAK
Main Lobby, Columbus Convention Center

3:15-4:15 SYMPOSIUM 19
Room C112
continues at 4:45
Chair: W. de Boef, A. Subedi & S.P. Neopane
Community resilience: strategies for empowerment in agrobiodiversity management and adaptation

The Convention on Biological Diversity and International Treaty on Plant Genetic Resources for Food and Agriculture both acknowledge the importance of in situ conservation. Community biodiversity management (CBM) is increasingly recognized as a process that contributes to in situ conservation through the management of landscape, species and genetic diversity. Since the 1992 Rio Earth Summit, conservation and development organizations elaborated the CBM approach. To achieve in situ conservation, CBM aims contributing to the empowerment of farming communities to manage their agrobiodiversity collectively and intentionally, thereby seeking sustainability in conservation. CBM offers several opportunities to enhance resilience in a context of ecological sustainability. Relevant attributes of resilience are strengthening capacities in learning and innovation; enhancing social capital; increasing the use of agrobiodiversity; enhancing access to knowledge, resources, information, markets and financial products. The Symposia shares and discusses efforts used in a global project funded by the FAO Benefit-sharing Fund. The project uses a participatory learning and action approach to design strategic action plans supporting CBM and resilience in 12 countries. Academics from Brazil, Ecuador, Ethiopia, India and Nepal explore ways to improve the CBM approach enhancing community resilience in a context of agrobiodiversity management and adaptation.

S19.1 **Designing community based conservation and adaptation strategies through participatory learning and action research**
*S. Sthapit, W.S. de Boef, P. Chaudhary**

S19.2 **Resilience, empowerment of tribal peoples and access to markets in the context of community biodiversity management in Kolli hills, India**
*E.D.I. Oliver King**

S19.3 **Resilience, genetic diversity and livelihoods in Tigray, Ethiopia**
*F. Abay**

3:15-4:15 SYMPOSIUM 21
Room C114
continues at 4:45
Chair: D. Campbell & D.R. Tilley
Emergy evaluation of sustainability: Quantifying ecosystem services, environmental debt and ecosystem restoration

Perhaps the most pressing question facing humanity in the twenty-first century is, "How do we assign fair value to the work that the environment does to support ecosystems and civilization, so that these systems can be sustained now and in the future?" Historically, this question has been difficult to answer, because the work of the environment is done outside the market mechanisms used to determine value. Current research focused on assigning monetary value to ecosystem services is an attempt to remedy this situation by bringing some of the work of the environment within the global market system. Energy Systems Theory (EST) provides an alternative objective method for determining the value of work. This method is based on a quantity called emergy defined as all the available energy of one kind (e.g. solar joules) used-up directly and indirectly to make a product or service. Emergy methods express the work of the economy within the larger context of the energy, material, and information flows of the biosphere determining value from the perspective of the larger global system rather than from a subjective evaluation determined by the willingness to pay or receive payment established in a market. This Symposia examines the problem of sustainability through valuing the work contributions of ecosystems and socioeconomic activities on a common basis using emergy. The papers presented here use emergy methods to develop an alternative vision of the value of the environment that may help us better understand what is sustainable by examining the relationship of the economy and society to the larger environmental system within which they are contained.

S21.1 **Integrating biophysical and economic values**
*M.T. Brown**

S21.2 **Life cycle assessment using emergy to quantify sustainability**
*W.W. Ingwersen**

S21.3 **Emergy – LCA synthesis for built environment: challenges and opportunities**
R. Srinivasan, D. Campbell, W. Wei*

3:15-4:15
Room C115
continues at 4:45
Chair: E. Glenn

SYMPOSIUM 22
Cienega de Santa Clara: creating a sustainable future for an anthropogenic wetland in the Sonoran Desert

Cienega de Santa Clara is a man-made wetland created by the disposal of agricultural drain water from the U.S. to the intertidal mudflats of the Colorado River Delta in Mexico. Created in 1976, the Cienega covers 5600 ha and is now the largest emergent wetland in the Sonoran Desert. It supports rare and endangered bird and fish species and is a nesting and feeding area for marshbirds and shorebirds on the Pacific Flyway. It is an ideal study area for wetland hydrology and biology, because it is supported by a point source of measured inflows and is isolated from surrounding habitats. In 2010 it was subjected to a reduction in flows and increase in salinity due to test operation of the Yuma Desalting Plant. As part of the test run, a large team of Mexican and U.S. scientists were asked to conduct studies on all aspects of the Cienega for two years prior to the test run, during the test run, and in the year following. This Symposia will present the scientific findings on the hydrology, ecology and ecosystem services of this unique wetland, and present models on how to sustain the ecological functions of such engineered wetlands into the future.

S22.1 **From accident to management: the Ciénega de Santa Clara, a wetland sustained by U.S. and Mexican water**
Y. Carrillo-Guerro, K. Flessa, O. Hinojosa-Huerta, L. Lopez-Hoffman*

S22.2 **Water quality effects on flora and fauna in a brackish desert wetland**
J. Garcia, E.P. Glenn, K. Flessa*

S22.3 **Evapotranspiration in relation to inflows and outflows in cienega de santa clara, an anthropgenic wetalnd in the delta of the colorado river, Mexico**
E.P. Glenn, J. Garcia-Hernandez, L. Mexicano*

3:15-4:15
Room C125
continues at 4:45
Chair: E.K. Espeland

SYMPOSIUM 23
Evolutionary processes and restoration: managing for long-term success

In order for managed populations to persist in the long-term, they must be capable of adapting to new selective pressures: new invasive species, climate change, and altered disturbance regimes are all challenges that populations will face in the years ahead. What are the tools being developed to assess the likelihood that these populations will be able to overcome new evolutionary hurdles? What are the ecosystem benefits of populations that are capable of evolution? What evidence is there that managed populations are currently responding to natural selection? Factors contributing to evolutionary capacity and the effects of this capacity will be discussed using multiple approaches on a variety of ecological scales

S23.1 **Ecological and maternal effects on effective population size**
*E.K. Espeland**

S23.2 **Managing microevolution: ecological specialization and the evolution of distribution patterns**
*N.C. Emery**

S23.3 **Project baseline: a living genome bank for the study of evolution**
J.R. Etterson, S. Franks, S. Mazer, R.G. Shaw*

3:15-4:15
Room C124
continues at 4:45
Chair: P. Qin, J. Teal & B. Li

SYMPOSIUM 24
Salt marshes: ecology, disturbance and restoration

Salt marshes play an important role in nutrient cycling, sediment accretion, pollution filtration, and erosion control in the world. In addition, they are known for their distinctive flora and rich spectrum of wildlife, especially waterfowl, which makes them more valuable and more prone to human impact than other ecosystems. However, only a small portion of the original salt marshes remain around the world after over two centuries of intensive development. With so many salt marshes lost, it seems that there are many opportunities for salt marsh restoration along coastlines. So the conservation, restoration, and sustainable use of salt marshes have been the important issues that attract attention not only from scientists but also from engineers and stakeholders. The presenters of the Symposia come from different countries where salt marshes have been extensively studied. The presentations will focus on the following issues: structure and functions of salt marshes; human impact on salt marsh degradation; salt marsh invasions by Spartina and other exotic plants; conservation and ecological restoration of salt marshes.

S24.1 **The effect of conservation management on saltmarsh biodiversity and ecosystem functioning**
A. Garbutt, H. Ford, R. Kingham, E. Sharps, M.W. Skov*

S24.2 **Could Spartina alterniflora flourish in freshwater wetlands of China?**
J.E. liu, G.X. Wang, L.J. Ren, Q. Chang, G. Wang*

S24.3 **The role of marsh crabs in resilience of southeastern US salt marshes to sea level rise**
S.C. Pennings, H. Vu*

3:15-4:15
Room C122
continues at 4:45
Chair: P.S. Bourgeron
& R.R. Chowdhury

SYMPOSIUM 26
Interactions among ecosystem services and human behavior: thresholds, stable states, and trade-offs in response to climate and anthropogenic change

Understanding and forecasting changes in social-ecological systems (SES), and subsequently in ecosystem services (ES), presents significant challenges, as they are likely to display non-linear responses, i.e., they are more easily "tipped" across critical thresholds. The development of general theories of SES and ensuing linkages between research-based knowledge and action requires long term, multiscaled monitoring and analysis. This Symposia presents examples of Long-Term Ecological Research investigations into ecosystem responses to climate and human-induced changes and associated changes in ES. It bridges major gaps in our understanding of generalities in the interactions between ES and trends; generalities in the interactions between thresholds among domains and scales; the conditions under which management and conservation policies backfire as multiple thresholds are breached; and the role of socio-cultural thresholds in ES management. Topics presented include: an integrative and iterative conceptual framework for SES research that links social-economic and ecological disciplines via a series of broad questions; the circumstances under which crossing a single threshold between alternative regimes often leads to a "cascading effect" in which multiple thresholds across spatio-temporal and social scales and across ecological, social, and economic domains may be breached; and the interactions among ES as a result of management for individual ES.

S26.1 **Landscape patterns and ecosystems services in agricultural landscapes in Western Europe: causes and consequences**
J. Baudry, F. Burel, L. Hubert-Moy, A. Langlais, D. Marguerie, V. Viaud, et al*

S26.2 **The international long term ecological research ecosystem services assessment initiative: a comparative study of interactions and tradeoffs among services across the globe**
*P.S. Bourgeron**

S26.3 **Ecosystem services of tropical dry forests: long term ecological and social research on the pacific coast of Mexico**
*M. Maass**

3:15-4:15
Room C121
continues at 4:45
Chair: R. Yam, Y-P. Lin, P. Verburg
& H-L. Yu

SYMPOSIUM 27
Ecosystem services in the changing world

As ecosystem dynamics are strongly influenced by natural and human-induced disturbances, such changes can have direct and cascading effects on the spatial and temporal variations in the composition, structure, and processes of ecosystems. A large number of assessment methods (both single-species and community approaches) have been developed in the last century to quantify multiple ecological responses to disturbances. The concept of ecosystem services was introduced to aid our quantitative understanding of the use and management of natural resources. The Millennium Ecosystem Assessment Report divides ecosystem services into four categories: supporting services (ecosystem and population processes); provisioning services (food, water, wood, fuel); regulating services (regulation of climate, water, disease, and disturbance regimes); and cultural services (aesthetic and spiritual benefits, cultural identity, and recreation/tourism). Based on this classification, ecosystem services can be used to develop an integrated approach that quantifies ecosystem responses to various disturbances and the post-disturbance resilience. The results will help in designing management policies and assessing management effectiveness. In this Symposia, we will invite speakers to present their research on ways to address the impacts of natural and human-induced disturbances on ecosystem services across multiple spatial and temporal scales. The key objective is to improve our understanding of the sensitivities, response regimes and resilience of different categories of ecosystem services in response to various disturbances on multiple scales; and thereby facilitate the prediction and management of ecosystem change.

27.1 **Carbon budgets of tropical seagrass beds**
H-J. Lin, Y-H. Huang, S-H. Chiu, C-L. Lee*

27.2 **Understanding how multiple subsequence physical disturbances influence the provision of ecosystem services in a mountainous watershed in Taiwan**
Y-P. Lin, T. Huang, C-F. Wu*

27.3 **Response of aquatic biodiversity and ecosystem services to land-use at multiple spatial and temporal scales in subtropical streams**
R.S.W. Yam, C.F. Wu*

3:15-4:15
Room C216
continues at 4:45
Chair: C.J. Browning &
M.A. Wilson

SYMPOSIUM 28

SER Symposia - Uncovering hidden ecosystem values to promote watershed restoration & climate change adaptation

Adaptation to climate change is requiring new approaches and thoughtful, preventive actions to protect watersheds and reduce the vulnerability of the ecosystem services they provide. Healthy, functioning watersheds provide meaningful values to society, yet these values often remain hidden because they are not easily recognized or captured in market transactions. As the climate changes, many of these values will also change. Identifying, documenting and capturing hidden values may provide a pathway to build public and political support for watershed-based climate adaptation efforts worldwide. This Symposia discusses how holistic watershed planning and restoration design can be leveraged to increase ecosystem resilience and adaptive capacity in the face of climate change. Panelists will present challenges and opportunities associated with linking ecosystem services to climate change adaptation in order to capture hidden values and promote protection of ecosystem services. Innovative analytical methods from the field of ecological economics will be presented to identify ecosystem services, focusing on recognizing values as climate change continues. Challenges associated with leveraging ecosystem markets to actively promote cost effective adaptation will be examined and a global map of degraded ecosystems will be showcased to illustrate the potential of restoration for delivering key ecosystem services under changing climate conditions. Case studies will be presented to demonstrate how watershed adaptation can be achieved, and the Symposia will conclude with a discussion on how ecosystem service values can be identified and leveraged to promote effective adaptation into the future.

S28.1 **A framework for uncovering and capturing the value of ecosystem goods and services through watershed restoration**
*M.A. Wilson**

S28.2 **Leveraging ecosystem service markets to support watershed restoration**
*E. Bloomgarden**

S28.3 **The paradigm shift from reactive ecosystem restoration to proactive climate change adaptation**
*C.J. Browning**

3:15-4:15
Room C215
continues at 4:45
Chair: I. Douglas

SYMPOSIUM 29

Tropical rain forest field stations and long-term ecological research

Tropical rain forests play a major role in the earth's climate system, are crucial for terrestrial biodiversity, provide key ecosystem services and supply major natural resources. Countries in the tropics have a long tradition of having field stations that are bases for education, research and long-term environmental monitoring in rain forests. Field stations can influence commercial forestry practices, promoting reduced impact logging, encouraging sustainable timber production and the use of non-timber products. A pioneering meeting during the 2010 Commonwealth Forestry Conference in Edinburgh recognised that although the international scientists make frequent visits and some spend long periods in residence, the local managers and their staff are essential in the success of long-term research. Yet few of the local managers and scientific support staff of those stations have the opportunity to meet each other and to learn from each other's experience. The workshop will examine successful long-term rain forest research and how good practice can be better shared among existing scientists and managers. It will examine both research outcomes and field station management issues and will seek to identify new research challenges.

S29.1 **Towards an understanding of ecosystem services in the rainforest of Iwokrama, Guyana, South America**
C.I. Bovolo, D. Gobin*

S29.2 **Tropical forest diversity and dynamics. Results from a global network of large-scale forest plots**
*S.J. Davies, D. Kenfack**

S29.3 **Tropical field stations in the Commonwealth**
*I. Douglas**

3:15-4:15
Room C214
continues at 4:45
Chair: R. Borden, R. Dyball

SYMPOSIUM 30

Human ecology: synergistic approaches to human-environmental challenges

No simple statement can sum up the many meanings of human ecology. Yet for nearly a century it has been applied to a diverse family of scientific and speculative lines of thought. Its academic origins, dating back to the 1920s, lie in various mono-disciplinary adoptions of ecological thinking by many sub-fields of social science, human studies and applied fields. By the 1970s an ecological perspective, in some form or other, had reached across virtually all academic divisions. Since then human ecology has reshaped itself and taken form through numerous inter-disciplinary and trans-disciplinary initiatives worldwide. As the prominent ecologist Paul Sears noted a half-century ago: "The advantage of human ecology as a label ... (is) … the encouragement it offers to workers in seemingly unrelated fields to become better aware of one another and of common interests and responsibilities". This Symposia brings together a team of international leaders of contemporary human ecology, from five continents, who have contributed substantially to development of the field. Their presentations will review recent advances in multiple areas: from education and environmental health to resource management, food systems and urban ecology. A final portion of the session will be dedicated to collaborative exploration of what Sears considered the central problem of human ecology – 'the problem of synthesis'.

S30.1 **From global food security to local job security: understanding the local consequences of large scale policy directions**
R. Dyball, C. Wyborn*

S30.2 **Human ecological approaches to fishery management in tropical waters**
*A. Begossi**

S30.3 **Blood pressure and hypertension among fishermen in southeast Brazil**
*B.O. Begossi, M.P. Cavichiolo, C.B.F.M. Gurgel, A. Begossi**

3:15-4:15
Room C213
continues at 4:45
Chair: R. Seppelt & T. Jakeman

SYMPOSIUM 31

Integrated modelling for ecosystem services

The ecosystem services concept enables development of policies that integrate social, economic, and ecological perspectives. Integrated environmental modelling is essential to support this concept in a way that systematizes, integrates and shares knowledge to analyze trade-offs and assess policy options utilizing fitting stakeholder engagement. In this session we seek insightful examples of integrative modelling studies that address ecosystem service provisioning. Studies may focus on abiotic (eg water provisioning, regulation, soil protection) and/or biotic processes (eg crop production, pollination, biocontrol). Examples that examine modelling approaches of different types and/or complexity are especially welcome. Secondly, we seek investigations that specifically analyze trade-offs that may be spatial, temporal, socioeconomic and/or environmental, and that include off-site effects. Thirdly, we seek lessons as to how the work benefitted from a stakeholder engagement process and what methods were utilized to gain trust, share knowledge and perspectives and discuss trade-offs. We expect to get excellent examples of these issues in order to stimulate consistency and creativity in approaching future ecosystem services studies. Young scientists are especially encouraged to submit to this session.

S31.1 **Improving decision-making for environmental flows in regulated catchments**
E.J. Barbour, G.A. Kuczera, C.A. Pollino, A.J. Jakeman*

S31.2 **An integrated modeling framework forecasting ecosystem services-application to the Albemarle Pamlico Basins, NC and VA (USA) and beyond**
J.M. Johnston, M.C. Barber, G. Laniak, J. Babendreier, D.J. McGarvey*

S31.3 **Quantifying functional trade-offs between bioenergy production, food production, water quality and water quantity aspects in a regional case study**
S. Lautenbach, M. Volk, M. Strauch, G. Whittaker, R. Seppelt*

3:15-4:15
Room C212
continues at 4:45
Chair: F. Recknagel & B. Michener

SYMPOSIUM 32

Ecoinformatics tools assisting in sustainable ecosystem management

Advanced acquisition and monitoring technologies are vastly increasing the amount of data collected for both terrestrial and aquatic environments. The field of ecoinformatics proposes new tools and methods to extract information from this data that can be used to inform scientists and decision-makers on the state of the Earth's ecosystems. Such information is essential to assess and monitor the success of international efforts to achieve sustainability. The Symposia covers novel research and tools in ecoinformatics for: œ ecological data acquisition by GIS and remote sensing, œ ecological data management using metadata, ontology and workflow concepts, œ ecological data analysis and synthesis by bio-inspired computation and hybrid models, œ understanding ecological information processing by eco-evolutionary dynamics and ecogenomics. These ecoinformatics tools connect the massive amounts of data that are being accumulated on our environment with the modelling and analysis software employed to use this data to further ecological understanding and the sustainable management of the Earth's ecosystems.

S32.1 **Assessing the effect of urban expansion on ecosystem function, using NASA/HyspIRI surface reflectance and emissivity**
*P.K.E. Campbell**

S32.3 **Combined field and remote sensing measurements to evaluate wetland ecosystem state and processes over big areas**
J. Chormanski, T. Berezowski, S. Szporak, S. Ignar*

3:15-4:15
Room C211
continues at 4:45
Chair: Dr. Duran & E. Andersson

SYMPOSIUM 33
Urban demand and environmental requirements for ecosystem services

The concept of ecosystem services has proven useful in describing how biodiversity and ecosystems are linked to human well-being. Cities provide a range of critical ES that are enjoyed by most urban residents. These include regulating services (benefits obtained from regulation of ecosystem processes like air and water filtration); and cultural services (nonmaterial benefits obtained from ecosystems, like spiritual enrichment, cognitive development, recreation, and aesthetic experiences). Compelling theoretical knowledge about essential connections between ecosystem service generation, biodiversity, and resilience in social-ecological systems already exists; however, we still, to a great extent, lack spatially explicit quantitative assessments for translating this theoretical knowledge into practice. Different areas fill different functions in an urban landscape, and to different segments of the citizens. Understanding the potential supply of ecosystem services in cities is only half an answer, the second half is making sure they are accessible. With increasing pressure from urbanisation there is a growing awareness of the necessity to safeguard urban green areas and one common response is to establish nature protected areas in cities. This, however, can never be enough. Cities also are connected to and dependent on their hinterlands not least for food and water.

Drawing on the experiences from several cities we highlight how a spatially explicit social-ecological systems perspective can help us understand and plan for the continued supply of ecosystem services to cities.

S33.1 **Introduction to social-ecological studies in Stockholm**
*T. Elmqvist**

S33.2 **Urban mosaics and ecosystem services**
*E. Andersson**

S33.3 **Perspectives on urban nature conservation**
*S. Borgström**

3:15-4:15
Room C210
continues at 4:45
Chair: J. Boyle & J. McArdle

SYMPOSIUM 34
Watershed approach: managing water quality from headwaters to the coast

Coastal pollution is the consequence of a variety of upstream activities. Management tools such as TMDLs (total maximum daily loads) are intended to limit the amount of pollution entering a waterbody through conventional point sources. However, the health of the receiving waterbody is dependent on a range of actions and activities at various locations across the watershed, including land use and development, pollution, water withdrawal, overharvesting and overexploitation, and invasive species. Treating conventional, emerging and nutrient pollution at the source offers the best solution for reducing coastal impairment. This type of watershed management requires a combination of best management practices, understanding of ecosystem trade-offs and ecological value, advanced technologies and measurement tools and a robust monitoring program to provide feedback. Battelle scientists will provide case studies and lessons learned at each of these contact points to show how an integrated approach can influence resulting pollutant loads and related consequences.

S34.1 **Emerging contaminants in coastal systems**
*M.J. Benotti**

S34.2 **Strategies to improve watershed scale impacts and environmental sustainability in agricultural river basins**
I. Chaubey, S. Brouder, B. Engel, J. Frankenberger, Y. Her, R. Cibin, et al*

S34.3 **Offshore water quality monitoring for the Massachusetts Water Resources Authority (MWRA) - regulatory compliance, characterization of conditions, and assessment of impacts**
*P.S. Libby**

3:15-4:15
Room C225
continues at 4:45
Chair: J. Cronk & S. Fennessy

SYMPOSIUM 35
Ecosystem sustainability from the Olentangy to the Yangtze

River and wetland ecosystems are subjected to external pressures from urban, industrial and agricultural uses. These speakers draw from their research experience at Ohio State University to apply ecological engineering solutions to water quality and aquatic habitat issues around the world. This Symposia will present investigations of ecosystem response to anthropogenic disturbance, and solutions based in the principles of ecological engineering.

S35.1 **Soil physicochemical properties predict plant community development of mitigation wetlands created in the Virginia piedmont, USA**
C-A. Ahn, S-D. Dee*

S35.2 **Land use effects on headwater wetland functions in coastal Alabama, USA**
C.J. Anderson, W.F. Barksdale, D. Alix*

S35.3 **The importance of the China connection to both the science of ecological engineering and OSU wetlands**
R.J.F. Bruins, J.K. Cronk, X.B. Wu*

3:15-4:15
Room C226
continues at 4:45
Chair: W.J. Mitsch & R.K. Reddy

SYMPOSIUM 36
Restoring the Florida Everglades

South Florida, from the Kissimmee River to Lake Okeechobee southward to the Florida Bay, harbours one of the unique regional wetlands in the world. The region encompasses three major types of wetlands in its 34,000-km2 area: the Everglades "river of grass," the Big Cypress Swamp, coastal mangroves, and Florida Bay. The Everglades marshes, dominated by sawgrass (Cladium jamaicense) and flooded by up to a meter of water in the wet season (summer) and burned in a fire in the dry season (winter/spring), are interspersed with deeper water sloughs and tree islands, or hammocks, that support a vast diversity of tropical and subtropical plants, including hardwood trees, palms, and orchids. The Big Cypress Swamp is dominated by Taxodium (cypress) swamps, interspersed with pine (Pinus) flatwoods. The southern coastline of the Everglades includes mangrove island swamps in the to the SW and Florida Bay to the S. About half of the original Everglades has been lost to agriculture in the north and urban development in the east. The Everglades is currently the site of one of the largest wetland restoration efforts in the United States. The comprehensive restoration blueprint includes plans for improving the water quality as it leaves the agricultural areas and for modifying the hydrology to conserve and restore habitat for declining populations of wading birds.

S36.1 **Macroelemental cycling in subtropical wetland ecosystems: the Everglades as a case example**
*K.R. Reddy**

S36.2 **Protecting the Everglades wetlands with wetlands: temporal patterns and mesocosm experiments related to stormwater treatment**
W.J. Mitsch, K. Song*

S36.3 **Diffuse methane emissions from four different wetland plant communities in the Big Cypress Swamp**
J.A. Villa, W.J. Mitsch*

3:15-4:15
Room C113
Chair: C. Jenkins
continues at 4:45

FORUM 2 continued
Food, water and the environment part 2
Panel 2: Water Security and Environmental Change
C.K. Shum, B. Mark, R. Moore, K. McSweeney

3:15-4:15
Grand Ballroom
Chair: Michael Daniels

FORUM 3
Bioprospecting and preservation of ecosystem pharmacological services
T. Lovejoy, C. Hernandez Herrero*

Among the services provided by ecosystems that are of greatest interest to humans are pharmacological and related services – provisioning of regulated pharmaceuticals, over-the-counter remedies, medicinal products used in indigenous medicine, and related products such as insect repellents, skin balms and cosmetics. Rainforests, for example, provide sources for one-fourth of today's medicines, and 70 percent of the plants found to have anticancer properties are found only in the rainforest. Almost 90 percent of people in developing countries still rely on traditional medicines, based largely on different species of plants and animals, for their health care. The need to preserve pharmacological and related services can therefore present a powerful argument for the steps needed to protect the Earth's ecosystems, one that can appeal to a broad and powerful constituency. Bioprospecting, for example, has become a giant industry in which more than 100 pharmaceutical companies are involved; these companies have significant political clout and therefore the potential to be effective advocates of ecosystem preservation. Our panel will explore how business can work with government at both the global and regional levels to ensure that the vast pharmacological potential of the Earth's natural systems can be preserved and even enhanced through innovative restoration techniques and policies.

3:15-4:15
Room C222
Chair: J. Mantilla-Contreras
continues at 4:45

WORKSHOP 04
Restoration of open landscape habitats in Europe
J. Mantilla-Contreras, S. Zerbe, S. Stiegel, E. Remke, J. Schirmel, M. Entling, A. Koch, A. Piernik, A. Garbutt, I. Möller*

3:15-4:15
Room C223
Chair: J. Firestone
continues at 4:45

WORKSHOP 05
Training conservation scientists and practitioners for 21st century global challenges
J. Blickley, K. Deiner, J. Firestone, M. Meek, T. Rickets, T.M. Brooks, S. Khan, E. Sterling*

3:15-4:15
Room C224
Chair: M. Bethel
continues at 4:45

WORKSHOP 06
Merging traditional ecological knowledge with science for ecosystem restoration decision making
M. Bethel, H. Buras, M. Gremillion, C. Miller, R. Philippe, L. Brien, S. Laska, K. Peterson*

3:15-4:15
Room C220
Chair: J.S. Brooks

GS01
Biodiversity & biological conservation

GS01.8 **Structure composition and biodiversity of the riparian vegetation in the moctezuma river, queretaro, Mexico**
H. Suzán-Azpiri, O. Gacía-Rubio, G. Malda-Barrera, A. Estrada-Alvarez*

GS01.9 **How recent advances in molecular ecology make generalist predators' faeces information package**
S. Boyer, S.D. Wratten*

GS01.10 **Ecology of mixed-species flocks in shaded monocultures and silvopastures in the Colombian Andes**
M.E. McDermott, A.D. Rodewald*

GS01.11 **Characteristics of temporal and spatial variation of nonstructural carbohydrates in Thalassia hemprichii and its response to shading**
Z. Jiang, X. Huang, J. Zhang*

3:15-4:15
Room C221
Chair: M. Zaleski

GS02
Ecohydrology, watersheds & the coast

GS02.9 **Transport of contaminants in agricultural catchments during snowmelt: buffer strips vs. preferential flow paths**
P. Banaszuk, M. Krasowska, A. Kamocki*

GS02.10 **N, P pollutants control in agricultural runoff by riparian buffer strips with different vegetation and slopes**
S. Huang, J. Wu, M. Wang, Q. Wang, C. Sha*

GS02.11 **The impact of shipping vessels' pressure wakes of contaminant redistribution in coastal zones**
J. Rapaglia, H. Bokuniewicz, L. Zaggia, M. Gelinas, A. Vafeidis*

GS02.12 **Territorial and landscape changes along Guanabara and Sepetiba bays coastal areas in Rio de Janeiro/Brasil**
J.M.P. Silva, V.R. Tângari, R.C.M. Montezuma*

3:15-4:15
Room D230
Chair: S. Klotz

GS03
Biological invasions

GS03.9 **Canopy gaps may exacerbate the negative impact of invasive Alliaria petiolata**
L.M. Smith, H.L. Reynolds*

GS03.10 **Japanese knotweed inhibits the growth of tree species cuttings: Allelopathic interference in river bank restoration**
F. Dommanget, M. Imbert, T. Spiegelberger, A. Evette*

GS03.11 **Applying remote sensing for invasive Tamarix study in the Lower Colorado River Basin**
X. Wei, S.I. Sritharan, R. Kandiah, J. Osterberg*

GS03.12 **Cascading ecological impacts of emerald ash borer: tritrophic interactions between prickly ash, giant swallowtail butterfly larvae and larval predators**
K.B. Rice, D.A. Herms*

3:15-4:15
Room D231
Chair: A.P. Covich

GS04
Ecosystem services: Aquatic

GS04.9 **Valuing ecosystem goods and services on Southwest Florida water management district lands**
D. MacNair, S. Norvell, S. Shaikh, J. Yingling, R. Childs*

GS04.10 **The role of biodiversity and drainage network structure in sustaining freshwater ecosystem services in headwater stream of the Luquillo Mountains, Puerto Rico, USA**
T.A. Crowl, A.P. Covich*

GS04.11 **Metabolism of dominant macrophyte species in created riverine wetlands using open system flow through chambers**
K.C. Stefanik, W.J. Mitsch*

GS04.12 Coastal ecosystem services and sea level rise in Florida: understanding public perceptions and values
*L.A. Racevskis**

3:15-4:15
Room D232
Chair: D. DeGroot

GS05
Ecosystem services: Terrestrial

GS05.9 Modelling temporal and spatial flows of ecosystem service in the Northern Forest Region of Vermont
B. Voigt, F. Villa, G. Johnson*

GS05.10 Use of beta diversity indices to measure how environmental disturbances affect ecosystem services
L-C. Chiang, Y-P. Lin*

GS05.11 Validating a social value-transfer methodology with the application of Social Values for Ecosystem Services (SolVES) to national forests in Colorado and Wyoming
*B.C. Sherrouse, D.J. Semmens**

GS05.12 To bee an ecosystem service or not to bee? A review of the inclusion of domesticated insect species as pollination ecosystem services and its implications
A.P. Melathopoulos, P. Tyedmers*

3:15-4:15
Room D233
Chair: L.C. Braat

GS06
Ecosystem services: Methods

GS06.8 Public utilities as local ecosystem services marketplace drivers
S. Lurie, D. Bennett, H. Fischler, S. Duncan*

GS06.9 Constructing virtual conservation communities of practice: what does it take?
J.M. Risien, R.P. Fiegener*

GS06.10 An ecosystem services approach for valuing the investment in ecological infrastructure for soil conservation in New Zealand hill country pastures
E. Dominati, A. Mackay, S. Green, M. Patterson*

GS06.11 Payments for ecosystem services and accumulation of negative effects
*I. Glazyrina**

4:15-4:45
Main Lobby, Columbus Convention Center

REFRESHMENT BREAK

4:45-6:45
Room C112

SYMPOSIUM 19
continued - please see 3:15 for details
Community resilience: strategies for empowerment in agrobiodiversity management and adaptation

S19.4 Resilience, biodiversity and landscapes: opportunities for sustainable development reserves in Brasil
N. Peroni, N. Hanazaki*

S19.5 Resilience, conservation and adaptation strategies
B.R. Sthapit, P. Chaudhary*

S19.6 Participatory learning and action research for designing multi-level strategic action plans
A. Subedi, M.H. Thijssen*

4:45-6:45
Room C114

SYMPOSIUM 21
continued - please see 3:15 for details
Emergy evaluation of sustainability: quantifying ecosystem services, environmental debt and ecosystem restoration

S21.5 Emergy and biodiversity
E.T. Campbell, D.R. Tilley*

S21.6 Emergy basis for paying land stewards to produce ecosystem services
D.R. Tilley, E.T. Campbell*

S21.7 Emergy accounting, environmental debt, and sustainability
*D.E. Campbell**

S21.8 What we can learn about sustainability from emergy evaluations of indigenous cultures and local management
*S.A.W. Diemont**

4:45-6:45
Room C115

SYMPOSIUM 22
continued - please see 3:15 for details
Cienega de Santa Clara: creating a sustainable future for an anthropogenic wetland in the Sonoran Desert

S22.4 Vegetation dynamics in response to wateri inflow rates and fire in a brackish Typha domingensis (Pers) marsh in the delta of the Colorado River, Mexico
*L. Mexicano, P. Nagler, E.P. Glenn**

S22.5 Planning a sustainable future for the Cienega de Santa Clara based on shorebird and marsh bird habitat requirements
M. Gomez-Sapiens, O. Hinojosa-Huerta, E. Glenn*

S22.6 Habitat requirements of marshbirds and shorebirds in the Ciénega de Santa Clara
O. Hinojosa-Huerta, M.M. Gómez-Sapiens, E. Soto-Montoya*

S22.7 Delta dynamics: effects of tides, river flows and a major earthquake on Ciénega de Santa Clara in the Colorado River Delta
S.M. Nelson, E. Fielding, F. Zamora-Arroyo, K. Flessa*

4:45-6:45 Room C125 **SYMPOSIUM 23**
continued - please see 3:15 for details
Evolutionary processes and restoration: managing for long-term success

S23.4 Applying community genetics research to restoration practice - scaling issues and research needs
K.M. Kettenring, K.L. Mercer, J. Hines, C. Reinhardt Adams*

S23.5 Relict populations of foundation species as natural labs for predicting the community and ecosystem consequences of climate change
S.A. Woolbright, C.M. Sthultz, J.K. Bailey, G.J. Allan, C.A. Gehring, T.G. Whitham*

S23.6 Patterns of adaptive variation in landrace crops: implications for climate change
K.L. Mercer, H.R. Perales*

S23.7 The role of humans in the on-farm management of crop biodiversity
*P. Gepts**

S23.8 Utilization of global agrobiodiversity for local agricultural development and stability on the Olympic Peninsula
*L.R. Lewis**

4:45-6:45 Room C124 **SYMPOSIUM 24**
continued - please see 3:15 for details
Salt marshes: ecology, disturbance and restoration

S24.5 The allelopathy involved in the substitution of Spartina alterniflora by Phragmites australis
*F. Zhao, P. Qin**

S24.6 Zonation between spartina alterniflora and phragmites australis determined by sulphuric and saline conditions in coastal salt marshes
C. Zhou, T. Sun, H. Wang, S. Yang, D. Dai*

S24.7 The study on biogas exploitation with Spartina biomass in China
*H.G. Zhu**

4:45-6:45 Room C122 **SYMPOSIUM 26**
continued - please see 3:15 for details
Interactions among ecosystem services and human behavior: thresholds, stable states, and trade-offs in response to climate and anthropogenic change

S26.4 Consequences of climate and land use change for ecosystems and ecosystem services in New Hampshire
*W.H. McDowell**

S26.5 The socio-ecological structure of urban residential landscapes in the USA: a comparative study
R. Roy Chowdhury, J.M. Grove, C. Polsky, K. Larson, L. Ogden, J. Onsted, et al*

S26.6 Critical review of ecosystem service management practices and policy changes based on long-term monitoring data in China
X.B. YU, B.J. Fu, J. Pittock, L.G. Jiang*

4:45-6:45 Room C121 **SYMPOSIUM 27**
continued - please see 3:15 for details
Ecosystem services in the changing world

27.4 Impacts of human land management and land use change on ecosystem services
P.H. Verburg, J. Stuerck, D. van Berkel*

27.5 Stabilising the degradation of representative natural forests in Pakistan: lessons from assisted ecosystem recovery
A-U. Khan, J. Gratzfeld, Z. Siddiq, F. Sharif, M-U. Hayyat*

27.6 The spatial patterns of ecosystem services and problems in Huaihe River Basin in China
Q. Wang, X.H. Liu, T.X. Yue*

4:45-6:45 Room C216
SYMPOSIUM 28
continued - please see 3:15 for details
SER Symposia - uncovering hidden ecosystem values to promote watershed restoration & climate change adaptation

S28.5 Reducing global loss of biodiversity and ecosystem functions by combining solutions for agriculture, forestry, energy and climate change and large-scale watershed restoration
*B. Ten Brink**

S28.6 The role of high-precision and high-resolution data in ecosystem service-based watershed management
A. Troy, D. Saah*

S28.7 A comparative approach for the restoration of semiarid watersheds used for agriculture and mining
F.A. Comín, M.L. Trabucchi*

4:45-6:45 Room C215
SYMPOSIUM 29
continued - please see 3:15 for details
Tropical rain forest field stations and long-term ecological research

S29.4 Research and societal benefits of the Makerere University Biological Field Station, Kibale, Uganda
*J.S. Lwanga**

S29.5 Las Cuevas Researh Station, Belize
*C. Minty**

S29.6 The Yayasan Sabah field stations in Sabah Malaysia
*W. Sinun**

S29.7 Understanding changing tropical ecosystems: long-term research at three contrasting field stations in Costa Rica
*R.A. Zahawi**

4:45-6:45 Room C214
SYMPOSIUM 30
continued - please see 3:15 for details
Human ecology: synergistic approaches to human-environmental challenges

S30.4 Thinking health in various time scales
*C. Watanabe**

S30.5 Human ecology of urban sustainability in cities of less than one million population
*I. Douglas**

S30.6 Eco-integration in China's eco-civilization campaign
R.S. Wang, J.L. Huang, Y.L. Xue*

S30.7 Education for a human ecology perspective: models and methods for interdisciplinary, problem-centered learning
R.J. Borden, K.E. Hill*

4:45-6:45 Room C213
SYMPOSIUM 31
continued - please see 3:15 for details
Integrated modelling for ecosystem services

S31.4 Exploring ecological outcomes in hydro-ecological systems within an ecosystem services framework: a case study in the Murray Darling Basin, Australia
*C.A. Pollino**

S31.5 Ecosystem service tradeoff analysis for stakeholder-led marine spatial planning: an example from Belize
A. Rosenthal, K. Arkema, C. Clark, S. Rosado, G. Verutes, S. Wood*

S31.6 Recent needs and perspectives for model based ecosystem service assessments
R. Seppelt, T. Jakeman*

S31.7 Combining land use modelling and environmental psychology: modelling the change in ecosystem services by future land use transitions in the German state Hesse
J. Volland, R. Schaldach*

S31.8 Multi-scale modelling of ecosystem services - a case study in Luanhe catchment, China
C.Y. Zhang, S.C. Li*

4:45-6:45 Room C212
SYMPOSIUM 32
continued - please see 3:15 for details
Ecoinformatics tools assisting in sustainable ecosystem management

S32.4 Transforming ecological research through data, information, and knowledge management
*W.K. Michener**

S32.5 Hybrid ecological models to inform management and conservation decisions in landscapes inhabited by endangered species
L. Parrott, P. Girard, G. Latombe, C. Chion, C. Martins*

S32.6 Ecological data sharing prerequisite for generic and operational models in ecology
F.A. Recknagel, H. Cao, Q. Chen, X. Zhang, I. Ostrovski, P. Orr*

S32.7 Ecogenomic tools for the detection of environmental toxicity: annotation of microarray platforms for transcriptome analysis of non-model organisms
*M.A. Thomas**

4:45-6:45
Room C211

SYMPOSIUM 33
continued - please see 3:15 for details
Urban demand and environmental requirements for ecosystem services

S33.4 Ecosystem services in the São Paulo Metropolitan Region
J. Galizia Tundisi, T. Matsumura-Tundisi, D. Seije Abe*

S33.5 Quantifying biodiversity and ecosystem service generation for building resilience in urban landscapes
A.E.M. Jansson, S. Polasky*

S33.6 Ecosystem service costs to treat Mexico city's wastewater
B. Jimenez-Cisneros, Dr. Duran*

S33.7 Non-economic ecosystem services assessment of urban land in the New York City social-ecological system
P.T. McPhearson, P. Kremer, Z. Hamstead*

4:45-6:45
Room C210

SYMPOSIUM 34
continued - please see 3:15 for details
Watershed approach: managing water quality from headwaters to the coast

S34.4 Intercepting nitrogen delivery to coastal waters in the Gulf of Maine
M. Liebman, T. Stover*

S34.5 Aging water infrastructure: impact on water quality and innovative solutions for improvement
*J.C. Matthews**

S34.6 Ecosystem restoration with guerilla tactics: restoration of Grand Lake St. Marys ecosystem through economic development
*J.J.P. Pfeiffer, Jr**

S34.7 New strategies for controlling non-point contamination in urban streams
F.W. Schwartz, U. Solpuker, Y. Kim, G. Liu, E. Lee*

S34.8 Ecosystem valuation: case study at Grand Lake Saint Marys (OH)
*H.J. Stone**

4:45-6:45
Room C225

SYMPOSIUM 35
continued - please see 3:15 for details
Ecosystem sustainability from the Olentangy to the Yangtze

S35.4 Nitrogen and carbon biogeochemistry in temperate and tropical freshwater wetlands
M.E. Hernandez, J.L. Marin-Muñiz, M. Vidal-Alvarez*

S35.5 Greenhouse gas fluxes in constructed wetlands
U. Mander, M. Maddison, K. Soosaar, K. Kasak, J. Laht, et al*

S35.6 Using soil isotopes as an indicator of denitrification in wetlands
A.M. Nahlik, M.E. Kentula, W.J. Mitsch, M.E. Hernández, K. Song*

S35.7 Ecological engineering to restore drastically disturbed watersheds: from Superfund to 16,000 feet
R.W. Nairn, K.A. Strevett, J.A. LaBar, W.H. Strosnider, F.S. Llanos Lopez, L.R. Oxenford*

S35.8 Genesis of wetland ecology research at the Ohio State University
B.C. Reeder, M.S. Fennessy, J.K. Cronk, X. Wu*

4:45-6:45
Room C226

SYMPOSIUM 36
continued - please see 3:15 for details
Restoring the Florida Everglades

S36.4 Marine ecosystem goals reconciled to everglades restoration: can the tail wag the dog?
J.N. Boyer, P. Ortner, C. Kelble, W. Nuttle*

S36.5 Picayune Strand and the Ten Thousand Islands: a collaborative planning process to restore a drained 70,000-hectare Southwest Florida wetland ecosystem
M. Savarese, M. Duever, A. Nath, A. Volety, K. Dryden, P. Goodman, et al*

S36.6 Canaries in the coal mine: utilizing oyster Crassostrea virginica responses for freshwater inflow management and restoration of the Caloosahatchee Estuary, Southwest Florida
A. Volety, L. Haynes, P. Goodman, P. Gorman, P. Doering*

4:45-5:45
Room C113
Chair: C. Jenkins

FORUM 2 continued
Food, water and the environment part 3
Panel 3: Population, Environmental Stress and Conflict
J. Field, A.J. Willow, B. Jones, E. Mattiacci

4:45-6:45
Room C222

WORKSHOP 04
continued - please see 3:15 for details
Restoration of open landscape habitats in Europe

4:45-6:45
Room C223
Chair: J. Firestone

WORKSHOP 05
continued - please see 3:15 for details
Training conservation scientists and practitioners for 21st century global challenges

4:45-6:45
Room C224

WORKSHOP 06
continued - please see 3:15 for details
Merging traditional ecological knowledge with science for ecosystem restoration decision making

4:45-6:45
Grand Ballroom C
Chair: M. Daniels

WORKSHOP 14
What is green in THIS century? A discussion with Stewart Brand

4:45-6:45
Room D230
Chair: S. Klotz

GS03
Biological invasions

GS03.13 Equilibrium or not? Modelling potential distribution of invasive species in different stages of invasion
T. Vaclavik, R.K. Meentemeyer*

GS03.14 Is invasion of deforested Amazonia by the earthworm Pontoscolex corethrurus driven by soil texture and chemical properties?
R. Marichal, M. Grimaldi, J. Mathieu, G.G. Brown, T. Desjardins, M. Lopes da Silva J., P. Lavelle, et al*

GS03.15 Regenerating forests in a changing world: novel forests of Castilla elastica
*J. Fonseca-da Silva**

GS03.16 The impact of alien species: do we really know the consequences for ecosystem functions and services in a changing world?
*S. Klotz**

4:45-6:45
Room D233
Chair: L.C. Braat

GS06
Ecosystem services: Methods

GS06.13 Ecosystem services: a way to improve ecological risk assessment and sustainable decision making
A.W. Rea, W.R. Munns, Jr.*

GS06.14 Importance of spatial scale for generation and management of multiple ecosystem services
R. Lindborg, L. Gordon, R. Malinga, H. Smith, et al*

GS06.15 A framework to quantify Ecosystem Services using biophysical models
I. Chaubey, R. Logsdon*

GS06.16 Ecosystem services programs in the US: case studies and indicators of success
A. Van de Bogert, L. Olander, T. O'Shea, D. Cooley*

Tuesday 2 October 2012

08:00-08:45
Grand Ballroom
Chair: F. Comin

PLENARY SESSION 3
Global change impacts and mitigation challenges in large floodplains: examples from Brazil
*W.J. Junk**

08:45-09:15
Main Lobby, Columbus Convention Center

REFRESHMENT BREAK

09:15-10:30
Room B200
Chair: M. Stevens, T. Horner, D. Kelly & J. Kneitel

SYMPOSIUM 18
Hima Mesopotamia: Restoring the ancient system of story, place and culture in the Tigris Euphrates Watershed

The biodiversity and cultural integrity of the Tigris- Euphrates River Basin is jeopardized by water scarcity, inequitable allocation of water rights, and high risk of desertification. Participants representing Turkey, Iraq and Kuwait will discuss the long term implications for sustaining ecosystem health, biodiversity and cultural integrity. Over 1700 proposed dams and other upstream water diversions, recent drought years, and climate change have resulted in water scarcity and impaired water quality in the Twin Rivers watershed. Terrestrial and aquatic biodiversity is declining from lack of available sweet water. The Mesopotamian Marshes are a culturalized landscape, consisting of a reciprocal relationship formed over thousands of years between Marsh Arab cultures and the marshes through both agriculture and traditional resource management. The Ma'dan are now becoming environmental refugees without land tenure, attempting to eke out an existence with their water buffalo (cultural indicators of marsh health). Further complication is added by large reservoirs of oil. In an era of increasingly limited water resources and increase demands on limited water, will the marshes survive? Several innovative solutions are presented to promote the survival of the Tigris Euphrates environmental integrity and biodiversity, to sustain human well-being and socioeconomic stability, and to preserve this world heritage site.

S18.1 **Sacred Waters in Mesopotamia: Eco-cultural restoration of biodiversity, culture and sustainable development in the Tigris Euphrates Watershed**
*M.L. Stevens**

S18.2 **A story of biodiversity conservation in the upper Tigris River basin where ecological, cultural diversity and means were merged**
*G. Eken**

S18.3 **Impacts of reduced flows and impaired water quality in the Shat al Arab to fish productivity, biodiversity and socio-economics in the Northern Gulf**
*F. Al-Yamani**

09:15-10:30
Room C112
continues at 11:00
Chair: K. Hedlund & W. van der Putten

SYMPOSIUM 37
Can we use above and belowground ecosystem services to promote sustainable production of food, biofuels and biodiversity in agriculture?

Biodiversity in agricultural landscapes is pivotal for delivering food, fiber and biofuels and carbon storage. However, the demand for goods is greater than the amount of land available, as production of biofuels competes with areas for food production and nature. This intensified land use and reduces biodiversity and the resulting ecosystem services. This Symposia will show a number of studies that have quantified ecosystem services and valued the services in order to influence decision of agricultural policies in Europe. Economic and ecological modelling are combined to value ecosystem services and to predict how different agricultural policies and governance regimes will affect future land use and ecosystem services, under different scenarios about the future. The ecosystem services include several supportive and regulating services, above and below ground. The talks also embrace services as biodiversity for conservation purposes where management of agriculture is integrated with conservation on a landscape scale.

S37.1 **Land use transitions from a combined above ground-below ground perspective and consequences for restoring biodiversity, ecosystem functions and services**
*W.H. van der Putten**

S37.2 **Multifunctional agricultural landscapes - how to handle trade-offs between ecosystem services**
H.G. Smith, J. Ekroos, R. Lindborg, O. Olsson, M. Rundlöf, F. Wätzold*

S37.3 **Scale dependent biological control: global, regional and within field spatial interactions between natural enemies and cereal aphids**
*K. Birkhofer**

S37.4 **Soil ecology meets scenarios - estimating belowground effects of land use change on ecosystem service provision**
S. Hotes, B. Aue, F. Peter, R. Lange, V. Wolters*

09:15-10:30
Room C113
continues at 11:00
Chair: N. Cavender, R. Rose & J. Bauman

SYMPOSIUM 38
Contributions of zoos and conservation centers for global biodiversity solutions

Zoological institutions have gone through a long-term evolution – from pure collection acquisition to one of scientific contribution and conservation. Zoos have become active forces in finding solutions for global biodiversity issues through education, research, reintroduction and fundraising efforts. Worldwide, members of the World Association of Zoos and Aquariums collectively spend – $350 million per year on conservation actions in the wild, which makes them the third major contributor to conservation worldwide. Many wildlife species are close to the brink of extinction and efforts to save these animals by the usual conservation methods and the usual conservation agencies have proven largely ineffective. It has become clear that an expertise beyond the "usual" is needed to address some of the ecological problems. This Symposia focuses on programs and research supported and/or administered through zoos and conservation centers. Presentations illustrate efforts to find solutions for global ecological issues including conserving species in situ, reintroducing and translocating critically endangered species, forming networks to preserve and restore imperative habitat, and contributing to the scientific study of sustaining wild populations and ecosystems.

S38.1 **Solutions for species survival through zoological partnerships: research, management and recovery**
R.D. Sawyer, D.E. Wildt, K. Snodgrass, D. Beetem, R. Wiese, S. Shurter*

S38.2 **Partnering with zoos to conserve the okapi and wildlife of the Ituri Forest, DR Congo**
*S.R. Shurter**

S38.3 **Creating, enhancing, and restoring ecosystem function for biodiversity at The Wilds, a zoological and ecological conservation center**
S.M. Byrd, N.D. Cavender, J.M. Bauman*

S38.4 **Landscaping for biodiversity at the Helsinki Zoo**
*O.M. Salminen**

09:15-10:30
Room C114
continues at 11:00
Chair: J. Martin & M. Brown

SYMPOSIUM 39
The prosperous way down

Consider the future with less fossil fuel and limited energy sources. Those concerned about this scenario question how to meet the needs an expanding population as the carrying capacity of earth's finite resources is surpassed. While history records the collapse of civilisations, some societies have managed to descend in orderly ways, reduce demands and save what is most critical. This Symposia will provide guidance during a future where we live with less and will chart paths for our modern society to descend to sustainable levels. The authors will make recommendations for the future, with specific suggestions based upon their evaluations of trends in energy, economy, ecology, agriculture and coastal and urban systems.

S39.1 **Predicting national sustainability: the convergence of energetic, economic and environmental realities**
*M.T. Brown**

S39.2 **Ecology in times of scarcity**
*J.W. Day**

S39.3 **Eutrophication and nutrient management in an uncertain future**
E.D. Roy, J.R. White, M. Seibert, J. Carney, B.E. Cantrell, L. Zhang*

09:15-10:30
Room C115
continues at 11:00
Chair: S.M. Emery & J. Rudgers

SYMPOSIUM 40
A day at the beach: restoration of the ecosystems services provided by sand dunes

Sand dunes throughout the world provide a variety of ecosystem functions and services including coastal protection, erosion control, carbon sequestration, water purification, habitat for endemic plant and animal species, and tourism. Dune vegetation plays a key role in stabilizing soil, and will be an important factor in mediating the negative impacts of global climate change, including rising sea levels, severe storms, and drought. However, these fragile systems are subject to both natural and human-caused threats such as storm blowouts, mining efforts, development, and invasive species. Because of the economic and environmental importance of stabilizing sand, restoration of dunes has become a common practice. This Symposia will review the ecosystem services and functions provided by sand dune habitat, address some of the current threats to dunes systems, and highlight some recent efforts to restore sand dune habitats around the world.

S40.1 **The value of ecosystem services provided by sand dunes**
*S.D. Hacker**

S40.2 **The dark side of the dune: weed invasion along Australian beaches**
*K. French**

S40.3 **Long term recovery of dune systems following pine invasion and management**
L.M. Leege, J.S. Kilgore*

S40.4 On using long-term census data to inform conservation and restoration of coastal sand-dune habitats in the northern Gulf of Mexico
*T.E. Miller**

09:15-10:30
Room C125
continues at 11:00
Chair: L.J. Da

SYMPOSIUM 41
Ecosystem responses to global change and restoration of natural and urban areas in warm-temperate/subtropical regions

The warm-temperate and subtropical region had suffered great impact of human activities for thousands years. In last century, climate change and urbanization caused landscape fragment, environment pollution, biodiversity loss and biology invasion, which accelerate the degradation of natural ecosystem, such as forest, wetland, and river. Although all this problems have attracted attentions by scientists and governments, the patterns of ecosystem response to these changes are not well compared at regional and global scale and the underline mechanisms are not clear. Restoration of degraded ecosystem is an essential eco-issue to support so high population density in this eco-region. Understanding the process of ecosystem responded to global change and find out effective methods to restore the degraded ecosystem are very helpful to sustainable development.

S41.1 Ecological consequences of rapid urban expansion and near-natural restoration applications in Shanghai, China
*L.J. Da**

S41.2 Impact analysis for climate change on ecological land use structure in Guangdong
*Q.O. Jiang, X.Z. Deng**

S41.3 Restoration and maintenance of multifunctional coastal pine forests
M. Fujihara, S. Maeda*

S41.4 Recovery dynamics of simulated disturbed evergreen broad-leaved forests during eight years, in east China
K. Song, M.M. Kang, L.J. Da*

09:15-10:30
Room C124
continues at 11:00
Chair: M. Kaye & F. Valladares

SYMPOSIUM 42
Forest regeneration and climate change

Climate change is predicted to have dramatic effects on forest composition over the next century. Changes in tree species composition will have cascading effects on forest ecosystem services, including terrestrial-atmosphere gas exchange, improved water quality, biodiversity, wood products, and recreational opportunities. Many predictions of climate change impacts on forest composition are based on models linking current species distributions with global change models, where steady state forest inventory data and climate averages are the norm. However, climate can rapidly and abruptly influence the timing and composition of tree regeneration, resulting in long-term changes in forest composition. Our ability to predict future forest composition with changing climate relies on in-depth information of the relationship between climate and tree regeneration. Insight into this nuanced relationship can be gained through a diversity of approaches, including observations of regeneration across natural climate gradients and within climate change experiments, the use of paleoecological reconstructions, and the development of empirical models. We have organized a Symposia that brings together experts using these approaches to present their most current perspectives on how climate change influences forest regeneration.

S42.1 The role of facilitation in forest regeneration under a changing climate
R.W. Brooker, L. Gomez-Aparicio*

S42.2 Predicting fire-climate feedbacks and changing forest composition in the Appalachian Mountains, USA
E.A. Crisfield, E.A.H. Smithwick*

S42.3 Simulations of future snow cover regimes affect the survival of early life stages of cold-temperate tree species
M. Drescher, S.C. Thomas*

S42.4 Influence of cross-scale interactions on forest response to climate change, past and future
*S.T. Jackson**

09:15-10:30
Room C123
continues at 11:00
Chair: B.D. Fath & D.A. Fiscus

SYMPOSIUM 43
Using ecological modelling and systems ecology to understand and promote sustained life

Ecosystems are the minimum ecological – environmental units that sustain life. As evidenced by the observations around us, and as amplified in the theme of the conference, the planet's ecosystem services are being degraded at a pace that exceeds their regenerative capacity. It is imperative to find appropriate approaches to manage and restore these vital functions. The fields of ecological modelling and systems theory have a long and successful tradition of not only addressing complex adaptive systems, but also delivering cutting edge concepts such as eco-exergy, autocatalysis, network analysis, resilience, adaptive management, and ecological holism. Specifically, in terms of holism, we focus here on "sustained life" as a necessary complement to "discrete life", where sustained life emphasizes the level of obligate interaction of interdependent parts and processes (e.g., producer/consumer, uplift/erosion, precipitation/evapotranspiration, etc.). The goal of this session is to highlight the latest research in the area of ecological modelling and systems ecology, and how a new paradigm toward "sustained life" could contribute to the needed restoration. At this level of organization, it may be possible to identify (quantitatively and formally) positive, win-win situations for human-ecosystem interactions.

S43.1 **Ecological Accounting for coupled human-natural ecosystems**
*B. Chen**

S43.2 Sustainable systems are closed to efficient cause
B.D. Fath, D.A. Fiscus*

S43.3 **A tri-modal nature of life applied for actualizing a win-win human-environmental relation and sustainability**
D.A. Fiscus, B.D. Fath, S.J. Goerner*

S43.4 **Assessment of sustainability by application of systems ecology and ecological modelling**
*S.E. Jørgensen**

09:15-10:30
Room C122
continues at 11:00
Chair: A. Townsend-Small & I. Buffam

SYMPOSIUM 44
Biogeochemistry of green infrastructure in the urban environment

Urban green infrastructure, including vegetated roofs and other green spaces, can provide valuable ecosystem services in urban areas, including shade, mitigation of stormwater runoff, and increased evapotranspiration and cooling. However, few studies have addressed the possible impacts of these areas on urban water, carbon, and nutrient cycles. These are all emerging environmental concerns in an urbanizing world, with the majority of the population now living in cities. The purpose of this Symposia will be to present research on impacts of green space and green roofs on urban biogeochemistry, including carbon dioxide uptake, runoff water quality, and greenhouse gas emissions. We include presentations from scientists who are engaged in research in the emerging field of urban ecosystems, with the ultimate goal of summarizing the state of our knowledge and emerging topics for study.

S44.1 **Cycling water in urban core area neighborhoods - some prospects for management (Cleveland OH)**
*W.D. Shuster, A.S. Garmestani, L.K. Rhea, O. Green**

S44.2 **Greening the skyline - biogeochemical services and disservices provided by green roof ecosystems**
I. Buffam, A. Townsend-Small, D.L. Boccelli, V.L. Russell, R.D. Durtsche*

S44.3 **Runoff quality from a green roof and its changes during a decade**
*J. Czemiel Berndtsson**

S44.4 **Nutrient cycling in urban ecosystems: from roof to river**
*J.A. Aitkenhead-Peterson**

09:15-10:30
Room C121
continues at 11:00
Chair: M. Sullivan & G. Brierley

SYMPOSIUM 45
Ecogeomorphology: a biophysical framework for river science

Despite the long-standing recognition of fluvial geomorphology as a physical driver of rivers, explicit exploration and quantification of relationships between the form and physical processes of rivers and their associated biological patterns has received significant attention only in recent years, and has led to an "ecogeomorphic" perspective. Advances in ecogeomorphology have expanded our understanding of how river systems are naturally regulated and promoted the application of these concepts within a broader ecosystem context to better manage and conserve river resources. Given these new developments and the significant potential benefits of merging physical and ecological integrity, it is time to further explore the support for current conceptual models and how they might be improved to understand the drivers and fluxes that regulate riverine ecosystem function. This Symposia provides a forum for research that addresses the development and testing of general theory related to the ecogeomorphology of rivers, as well as applications of these concepts to advance river conservation, management, and rehabilitation. In particular, we anticipate that such research will be enhanced by approaches that emphasize cross-disciplinary perspectives, build on a landscape template, and link science and management. Prospective applications of geodiversity for geoconservation and geoheritage issues will also be assessed.

S45.1 **Morpho-hydrodynamic conditions along meander bends control the distribution of benthic fauna in a large river (Paraguay River, Argentina-Paraguay)**
M.C.M. Blettler, I. Ezcurra de Drago, M.L. Amsler, E.E. Drago*

S45.2 **How to use geomorphic knowledge to effectively guide the conservation of geoheritage sites? - The case of Zhangjiajie Global Geopark**
H.Q. Huang, X. Xiang, X. Zhang, et al*

S45.3 **Characterizing fluvial features at the network-scale: methodological approaches and examples in the Rhône Basin (France)**
H. Piegay, A. Alber, B. Belletti, M. Bertrand, S. Dufour, E. Wiederkehr*

S45.4 **A political geoecological framework for the conservation and management of Africa's riverine ecosystems**
*K.M. Rowntree**

09:15-10:30
Room C216
continues at 11:00
Chair: S. Pickett

SYMPOSIUM 46
ESA Symposia - connecting the science of ecology to practice: opportunities for facilitating Earth stewardship

Human activities affect Earth's life support systems so profoundly as to threaten many of the ecological services that are essential to society. To address this challenge, an improved science agenda is needed that integrates people with the rest of nature. Such an agenda can help chart a more sustainable trajectory for the relationship between society and the biosphere. This Symposia describes Earth Stewardship, an initiative of the Ecological Society of America (ESA) to engage multiple disciplines and professions in strengthening the scientific basis for actively shaping social-ecological change that enhances both ecosystem resilience and human well-being. This Symposia also highlights the contributions of various professional practices to Earth Stewardship and explores how to improve partnerships between them and ecological science. ESA, an association of ecological researchers, educators, and practitioners representing 87 countries, has a history of concern with the application of ecological knowledge in the public sphere. Earth Stewardship aims both to educate the membership of ESA to improve the contribution of their own science and to leverage the interest and activities of other scholarly and practical disciplines to the benefit of both human society and the resilience of Earth's human-natural system.

S46.1 **Invitation to dialog: Earth stewardship and the Ecological Society of America**
F.S. Chapin III, S.T.A. Pickett, M.E. Power, S. Collins, C. Duke*

S46.2 **Ecological urban design: a global opportunity**
*K.E. Hill**

S46.3 **Integrating economics into land use change models to simulate policy scenarios and assess sustainability**
E.G. Irwin, D. Wrenn, J.M. Grove, H.A. Klaiber, D. Newburn, C. Towe*

S46.4 **Ecological science and practice: a complex history**
*S. Kingsland**

09:15-10:30
Room C226
continues at 11:00
Chair: J. Teal, S. Peterson & L. Weishar

SYMPOSIUM 47
Large-scale wetlands restoration

Large-scale wetlands restoration and preservation projects are vital to the future of salt water wetlands. Sea level rise, the increase in eutrophication within our bays and estuaries, and the encroachment of urban areas into wetlands reduce both the acreage and the function of these coastal systems. Successful large scale wetlands restoration requires interdisciplinary collaboration among engineers, natural scientists and social scientists. The proposed Symposia is in two sessions. Session 1 examines large-scale restoration projects from a global perspective and presents examples that illustrate the concepts put forth. Session 2 concentrates on implementing a large-scale restoration project and presents data, case studies, and examples using the PSEG Delaware Bay Estuary Enhancement Program. The combination of the two sessions provides an informative road map for implementing large-scale wetlands restoration projects that begins by establishing concepts, goals, objectives, and success criteria. The session will take the audience through the development of stakeholder outreach programs, construction of the project, adaptive management program, and finally monitoring of the restoration sites to track progress toward the success criteria.

S47.1 **Sea level rise and climate change: the importance of large-scale restoration projects in maintaining wetlands**
W.J. Mitsch, J.W. Day, J. Teal, R.R. Lewis*

S47.2 **Success criteria in wetlands restoration**
*M.P. Weinstein**

S47.3 **Large-scale wetlands restoration in the UK**
*A. Garbutt**

S47.4 **Techniques for mapping and quantifying geomorphologic development of drainage systems within large-scale wetlands restoration projects**
R.L. Hinkle, B.Q. Evans*

09:15-10:30
Grand Ballroom
Chair: D. Fitzgerald

FORUM 4
Business leaders forum

Businesses around the world rely on and impact the services that ecosystems provide, such as water purification, pollination, natural hazard protection, and carbon sequestration. Businesses are therefore at risk when ecosystem services are degraded. At the same time, restoration of ecosystem services can become an opportunity for business growth. Our forum will feature senior officers from some of the world's largest corporations that are actively engaged in restoring ecosystem services, discussing what businesses, conservation organizations, financial institutions and governments can and must do to ensure the uninterrupted provision of ecosystem services, and how the need for restoration of ecosystem services can provide unparalleled business opportunities.
R. Schostek, C. Phillips, M. Weick, D. Fitzgerald, et al*

09:15-10:30
Room C215
continues at 11:00
Chair: D. Altland

WORKSHOP 07
Assessing stream and floodplain restoration in the Eastern USA as a stormwater management best management practice (BMP)
D. Altland, J. Hartranft, P. Mayer, W. Oberholtzer, A. Parola, Jr., W. Stack*

09:15-10:30
Room C214
continues at 11:00
Chair: A. Hopkins

WORKSHOP 08
Urban ecological restoration: techniques and practices applied to public commons, school sites and library sites
A. Hopkins, L. Novick, O. Oluduro, S. Mahmood, N. Ibuki, L. Novick*

09:15-10:30
Room C224
continues at 11:00
Chair: G. Benjamin

WORKSHOP 09
Mississippi River ecological restoration: on-the-ground and scaling up to integrated river basin management
D.J. Somma, P. Laterra, M.E. Zaccagnini, A. Lara, L.A. Nahuelhal*

09:15-10:30
Room C225
continues at 11:00
Chair: D.J. Somma

WORKSHOP 10
Challenges for the conservation of ecosystem services in agroecosystems of the Southern Cone of South America
D.J. Somma, P. Laterra, M.E. Zaccagnini, D. Ceballos, L. Seghezzo, J.P. Metzger, J. Paruelo, A.L. Aguilar, D. Salas*

09:15-10:30
Room C213
continues at 11:00
Chair: T. Lohner

WORKSHOP 11
Making sustainability decisions in the electric power industry
T. Lohner, D. Fitzgerald, T. Maki, R. Linthurst, J. Fox, S. Benson, J. Boyd, S. Hounsell, L. Verdier*

09:15-10:30
Room C220
Chair: S. Ludsin

GS01
Biodiversity & biological conservation

GS01.12 **Impact of Edaphic Heterogeneity on plant communities in semi-deciduous forests within the Congo Basin**
*C.A. Amani**

GS01.13 **Conservation planning as a transdisciplinary process: framework for reflecting on broad accountability**
D.J. Roux, J.L. Nel, R.J. Stirzaker, C.M. Breen*

GS01.14 **Genetic connectivity and diversity of walleye (Sander vitreus) spawning across the Huron-Erie Corridor pre- and post-restoration**
A.E. Haponski, C.A. Stepien*

GS01.15 **Interspecies interaction and overyielding in intercropping**
L. Li, L. Zhang, F. Zhang*

GS01.16 **Landscape factors affecting native bee diversity and abundance in mixed agricultural and natural lands**
E.C. Evans, M.S. Spivak*

09:15-10:30
Room C221
Chair: F.A. Comin

GS02
Ecohydrology, watersheds & the coast

GS02.13 **Ecologies of sustainability in Alaska fisheries**
*P.A. Loring**

GS02.14 **Developing a behavioral model of farmer decision making: understanding best nutrient management practices in an agricultural watershed**
R.S. Wilson, T. Ritter, B. Roe, E. Irwin, A. Konar*

GS02.15 Sustainable aquaculture as a dual tool for conservation of the world's largest mangrove forest and for growth of export-oriented aqua farming sector as an expanding livelihood option in Indian Sundarbans, a World Heritage site: evaluation and recommendations
R. Banerji, I. Guha*

GS02.16 Ecohydrology of hardpan vernal pools in the central valley of california and the response of native vernal pool plants to climate change
N.F. McCarten, M.C. Christman*

09:15-10:30
Room D230
Chair: L.M. Pintor

GS03
Biological invasions

GS03.17 Meta-analysis reveals positive effects of non-native prey on native predators and suggests an additive nature of invasions
L.M. Pintor, J.E. Byers*

GS03.18 Cross-habitat and cross-kingdom biodiversity effects: riparian forest invasion regulates aquatic macroinvertebrate and microbial communities
R.W. McEwan, M.E. Benbow, R.E. Barker*

GS03.19 Can we thwart a community of exotic species? Lessons from genetics of Great Lakes invasions
*C.A. Stepien**

GS03.20 Evaluation of soil-mulch amendments as a tool for limiting rhamnus cathartica (European buckthorn) reinvasion
B.V. Iannone III, L.G. Umek, L. Heneghan, D.H. Wise*

09:15-10:30
Room D231
Chair: F. Recknagel

GS04
Ecosystem services: Aquatic

GS04.13 Rethinking water quality as an ecosystem service: a framework for integrated biophysical assessment and economic valuation
B.L. Keeler, S. Polasky*

GS04.14 Conserve first, restore later: a summary of ongoing wetland loss in the prairies and implications for incentive programs and carbon credits
P.H.J. Badiou, T.S. Gabor, L. Boychuk, W. Yang, J. Pattison*

GS04.15 It's the hydrology, stupid: landscape-scale solutions to algal blooms and dead zones caused by nutrient loading in major watersheds
E. McLellan, K. Chapman, D. Smith, M. Tomer*

GS04.16 Impacts of post-fire nutrients on sawgrass and cattail in an altered landscape of the Florida Everglades
Y. Wu, K. Rutchey, S. Newman, S. Miao, F.H. Sklar, W.H. Orem*

09:15-10:30
Room D232
Chair: A. Stokes

GS05
Ecosystem services: Terrestrial

GS05.13 Urban ecology and health: the role of green space in promoting physical activity among senior citizens in New York City
Z.A. Hamstead, W. Gallo, P.T. McPhearson, P. Kremer*

GS05.14 Urban ecosystems and human health: expanding considerations of cultural services
*K.L. Wolf**

GS05.15 Integrated modelling and spatio-temporal optimization of ecosystem services and renewable resource harvest: a framework and application
*S. Binder**

GS05.16 Ecosystem services in arboreal bioenergy
A-S. Liman, P. Dalin, C. Björkman*

09:15-10:30
Room D233
Chair: K. Stefanik

GS06
Ecosystem services: Methods

GS06.12 Social-ecological urban ecosystem valuation - a non-monetary evaluation methodology for vacant lots in New York City
P. Kremer, Z. Hamstead, P.T. McPhearson*

GS06.13 A value network analysis for information and technologies supporting ecosystem services
*K.A. Garrett**

GS06.14 Promise and peril on restoring ecosystem services: the case from China
W.Y. Yang, W.L. Liu, A.V. Viña, J.L. Luo, Z.O. Ouyang, J.L. Liu*

GS06.15 Tackling the spatial scale problem in ecosystem service modelling: hierarchies, information, and performance
G.W. Johnson, R.R. Snapp*

GS06.16 Estimation of ecosystem services using habitat equivalency analysis to resolve a natural resource damage claim: a case study
T. Barber, J. Lyndall*

09:15-10:30
Room C222
Chair: J. Fiksel

GS07
Sustainability & resilience

GS07.1 Biological integrity as a condition for efficient intergenerational welfare: a bioeconomic approach to sustainable development
G. Mavrommati, K. Bithas*

GS07.2 In search of authenticity and sustainability: Goethe and the tradition of natural law
*T. Wolber**

GS07.3 Coupling pattern-based and process-based thresholds: feedback mechanisms underlying threshold response of vegetation to grazing in a Mongolian shrubland
T. Sasaki, A. Koyama, T. Ohkuro*

GS07.4 Socio-ecological planning for urban food production in shrinking cities
T. Carter, G. Fillipelli, G. Liu, A. Hostetter, S. Wiehe*

GS07.5 Making sustainable, ecosystem-based environmental management decisions
D.F. Ludwig, T.J. Iannuzzi*

09:15-10:30
Room C223
Chair: P. DeMarco

GS08
Ecological economics & environmental policy

GS08.1 Environmental policy for the 21st century based on Rachel Carson's environmental ethic
*P. DeMarco**

GS08.2 Proposing a new system of global governance for agricultural trade
*W. Moon**

GS08.3 Environmental sustainability: an analysis of relationships marketing strategy and the environmental performance of brazilian companies
T. Cabral, A. Dias*

GS08.4 Conservation of vaquita marina, what fishermen participate?
S. Avila-Forcada, A.L. Martinez-Cruz, C. Muñoz-Piña*

GS08.5 The nexus of energy and water policy
*B.A. Schuelke-Leech**

09:15-10:30
Room C210
Chair: T. Jakeman

GS09
Ecological modelling

GS09.1 Preparing for a post fossil fuels era based on Earth's biophysical limits to sustain life
*P. Harizaj**

GS09.2 A topological approach to quantify trophic impacts in food web network
H.W. Chen, W.C. Liu*

GS09.3 Reconsidering the cascading effect of dam constructions on a river ecosystem: a multi-scale ecological network perspective
S.Q. Chen, B. Chen, S.Y. Zhou, M.M. Jiang*

GS09.4 Ecological accounting of household biogas project in rural China
J. Yang, B. Chen, S.Y. Zhou, Y.Y. Li*

GS09.5 Modelling of carbon cycling from mangrove litter to the adjacent Hooghly estuary, India
S. Ray, J. Mukherjee*

09:15-10:30 Room C211 Chair: K. Song	GS10 **Climate & global change**
GS10.1	Interactions between climate, fire, and forest composition are a key driver of resilience in the boreal forest *J. Johnstone*, F. Chapin, S. Rupp*
GS10.2	Community perceptions on climate change in Gilgit-Baltistan, Pakistan *F. Shah**
GS10.3	Implications of global change on carbon and nitrogen export from land to sea via rivers *A. Townsend-Small**
GS10.4	Greenhouse gases in the garden: examining the mitigation effects of organic fertilizer and biochar *R.A. Wight*, A. Schneider, A. Townsend-Small, R. Smolenski*
09:15-10:30 Room C212 Chair: R. Kaur	GS11 **Ecosystem restoration & ecological engineering**
GS11.1	Leveraging geospatial information for natural resource stewardship at the ecosystem, campus, and community scales *L. Ramey, N. Turek**
GS11.2	Forest ecosystem restoration due to a national conservation plan in China *D.Y. Yu*, P.J. Shi, G.Y. Han, W.Q. Zhu, S.Q. Du, B. Xun*
GS11.3	Self-forming stream design: stream restoration by ecological succession and channel evolution *D-E. Mecklenburg, J-D. Witter**
GS11.4	Floodplain restoration with flood control: fish habitat value of levee borrow pits *F.D. Shields, JR., S.S. Knight**
GS11.5	Nutrient and trace metal removal efficiency of small scale (batch fed) vertical flow municipal wastewater treatment wetlands *R. Kaur*, G. Dheer, G. Laishram, D. Ningthoujam, P. Kumar*
10:30-11:00 Main Lobby, Columbus Convention Center	REFRESHMENT BREAK
11:00-12:30 Room B200	SYMPOSIUM 18 continued - please see 9:15 for details **Hima Mesopotamia: Restoring the ancient system of story, place and culture in the Tigris Euphrates Watershed**
S18.4	The potential for reclaiming soils to sustainable agriculture in the Mesopotamian marshlands: ecological restoration and agroecological values *D.B. Kelley**
S18.5	Socioeconomic status of Huweza marsh inhabitants, southern Iraq problems and solutions *N.A.S. Abo-Tubikh, J.L. Ullman**
S18.6	Solutions to optimizing water in a living landscape: eco-cultural restoration of the biodiversity and cultures of the Mesopotamian Marshes *J. Al-Asadi**
11:00-12:30 Room C112	SYMPOSIUM 37 continued - please see 9:15 for details **Can we use above and belowground ecosystem services to promote sustainable production of food, biofuels and biodiversity in agriculture?**
S37.5	Soil carbon stock and plant biodiversity of northern Italian irrigated permanent grasslands *C. Gardi, M. Tomaselli, A. Petraglia, K. Hedlund**
S37.6	A model for biodiversity in mosaic landscapes - ecology meets economics *O. Olsson*, H.G. Smith, M. Brady*
S37.7	Promoting multiple soil ecosystem services in agriculture: the optimal policy response *L. Hemerik**
S37.8	Soil ecosystem services and farmers' economy: is our future natural capital at risk? *M.V. Brady*, K. Hedlund, L. Hemerik, R. Cong*

11:00-12:30 Room C113 — **SYMPOSIUM 38**
continued - please see 9:15 for details
Contributions of zoos and conservation centers for global biodiversity solutions

S38.5 Strategies for saving imperiled native freshwater mussels
*G.T. Watters**

S38.6 Protecting orang-utan and other wildlife species in human-made landscapes in Borneo
M. Ancrenaz, I. Lackman, L. Ambu*

S38.7 Dinosaurs among us: saving the last sea turtles
*K.L. Eckert**

11:00-12:30 Room C114 — **SYMPOSIUM 39**
continued - please see 9:15 for details
The prosperous way down

S39.4 The vitality of ecotechnological fundamentalism for prosperity
*D.R. Tilley**

S39.6 An energy systems perspective on sustainability and the "Prosperous Way Down"
*D.E. Campbell**

11:00-12:30 Room C115 — **SYMPOSIUM 40**
continued - please see 9:15 for details
A day at the beach: restoration of the ecosystems services provided by sand dunes

S40.5 Restoration of sub-arctic coastal sand dune ecosystems
*S. Greipsson**

S40.6 Nurturing succession to restore degraded coastal dune forests in South Africa
*R.J. van Aarde, R.A.R. Guldemond**

S40.7 Can microbial symbionts mediate effects of climate change for dune vegetation in the Great Lakes region?
S.M. Emery, J.A. Rudgers*

S40.8 Coastal foredunes around the world: plant-soil biodiversity interactions as a key to restore habitats, ecosystem functions and services
*W.H. van der Putten**

11:00-12:30 Room C125 — **SYMPOSIUM 41**
continued - please see 9:15 for details
Ecosystem responses to global change and restoration of natural and urban areas in warm-temperate/subtropical regions

S41.5 137Cs inventories and soil organic carbon content in soils of three typical terrestrial ecosystems
X.Y. Tang, D.S. Guan*

S41.6 Effect of nitrogen fertilization on litter decomposition and related soil enzyme activities in a subtropical forest
X. Tian, C. Wang, P. Guo, G. Han, Y. Jia, X. Feng*

S41.7 Response of coastal forests to tsunami damage in Sendai Bay, Japan
M. Tomita, Y. Hirabuki, H. Kanno, K. Hara*

S41.8 Differentiation of Tertiary relict deciduous forests along micro-topographic gradient on Mt. Tianmushan, Eastern China
*S. Kankan**

11:00-12:30 Room C124 — **SYMPOSIUM 42**
continued - please see 9:15 for details
Forest regeneration and climate change

S42.5 Cascading effects of simulated climate change on an early-successional forest ecosystem
M.W. Kaye, R.J. Wagner, M.D. McDaniel, C.R. Rollinson, J.P. Kaye*

S42.6 Forest response to climatic change: coupling demographic dynamics and regeneration with the expected changes on habitat suitability. The case of Tetraclinis articulata
I. Hernandez, M.A. Esteve-Selma, J. Martinez-Fernandez, J. Miñano*

S42.7 Episodic recruitment at regional and sub-continental scales in gap dynamic forests
N. Pederson, J.M. Dyer, R.W. McEwan, A.E. Hessl, C.J. Mock, D.A. Orwig, et al*

S42.8 Relative influence of climate on the regeneration of European forests
F. Valladares, S.G. Rabasa, R. Benavides*

11:00-12:30 Room C123

SYMPOSIUM 43
continued - please see 9:15 for details
Using ecological modelling and systems ecology to understand and promote sustained life

S43.6 Matrices and graphs in systems ecology: analytical tools and quantitative indicators
*D.O. Logofet**

S43.7 Link tracking: environs as implicate order in compartmental networks
*B.C. Patten**

S43.8 An input/state/output representation of ecological systems by means of systems ecology functions
F.M. Pulselli, L. Coscieme, M. Rustici, S. Bastianoni*

S43.9 The effect of scaling and connection on the sustainability of a socio-economic system
*R. Muneepeerakul, M.R. Qubbaj**

S43.10 Applying the Fisher Information metric to the French, German and United States systems during the 20th century
L. Vance, H. Cabezas, T. Eason et al*

11:00-12:30 Room C122

SYMPOSIUM 44
continued - please see 9:15 for details
Biogeochemistry of green infrastructure in the urban environment

S44.5 Human vs natural background sources of nutrients in urbanizing watersheds: case studies from the Portland, Oregon Metro Region
*J.A. Yeakley**

S44.6 Modulation of storm-driven water and nutrient loads by infrastructure in an arid urban ecosystem
N.B. Grimm, R.L. Hale, L. Turnbull, S. Earl, D.L. Childers, W.J. Roach*

S44.7 Patterns of tree water use in the Los Angeles urban forest
H.R. McCarthy, D.E. Pataki, L.T. Weller*

S44.8 Nitrogen and greenhouse gas fluxes in urban ecosystems
*P.M. Groffman**

11:00-12:30 Room C121

SYMPOSIUM 45
continued - please see 9:15 for details
Ecogeomorphology: a biophysical framework for river science

S45.5 Fluvial geomorphology and food webs: linking structure and process at the riverscape scale
M.S.P. Sullivan, A.R. Kautza, L.O. Rieck, J.M. Alberts, P. Tagwireyi*

S45.6 Building the resilience of aquatic refugia using ecogeomorphology
*M.C. Thoms**

S45.7 Floodplain wetland ecogeomorphology: an underdeveloped part of interdisciplinary river science
S. Tooth, T.S. McCarthy, W.N. Ellery*

S45.8 Morphologic controls on spatiotemporal regimes of flow permanence in desert systems under a changing climate
K.L. Jaeger, J.D. Olden*

11:00-12:30 Room C216

SYMPOSIUM 46
continued - please see 9:15 for timing
ESA Symposia - Connecting the science of ecology to practice: opportunities for facilitating Earth stewardship

S46.5 Local ecological knowledge and cultural property in sustainable resource management
*M.E. Lam**

S46.6 Integrating the assessment of ecosystem services into ecological restoration projects
D.A. McGrath, T. Greenwalt*

S46.7 Urban ecology in a developing world: how advanced socio-ecological theory needs Africa
M.R. McHale, D.N. Bunn, S.T.A. Pickett, W. Twine*

S46.8 Field environmental philosophy: a methodological approach to counterbalance biocultural homogenization and promote earth stewardship at the southern end of the Americas
*R. Rozzi**

11:00-12:30 Room C226

SYMPOSIUM 47
continued - please see 09:15 for details
Large-scale wetlands restoration

S47.5	Large-scale wetlands restoration: the impact of physical processes *L. Weishar*, J. Teal, K. Phillip, R. Hinkle, K. Strait, B. Evans*
S47.6	Large-scale wetlands restoration: the impact of biological variability *J.K. Shisler**
S47.7	Overview of large-scale wetlands restoration in Delaware Bay *J.H. Balletto**
S47.8	Stakeholder involvement in a large-scale wetlands restoration project *S.B. Peterson**
11:00-12:30 Room C215	WORKSHOP 07 continued - please see 9:15 for details Assessing stream and floodplain restoration in the Eastern USA as a stormwater management best management practice (BMP)
11:00-12:30 Room C214	WORKSHOP 08 continued - please see 9:15 for details Urban ecological restoration: techniques and practices applied to public commons, school sites and library sites
11:00-12:30 Room C224	WORKSHOP 09 continued - please see 09:15 for details Mississippi River ecological restoration: on-the-ground and scaling up to integrated river basin management
11:00-12:30 Room C225	WORKSHOP 10 continued - please see 09:15 for details Challenges for the conservation of ecosystem services in agroecosystems of the Southern Cone of South America
11:00-12:30 Room C213	WORKSHOP 11 continued - please see 09:15 for details Making sustainability decisions in the electric power industry
11:00-12:30 Room C220 Chair: S. Ludsin	GS01 Biodiversity & biological conservation
GS01.17	Predicting patterns of reptile biodiversity in remote regions *E. Padoa-Schioppa*, G.F. Ficetola, A. Bonardi, R. Sindaco*
GS01.18	Conserving and protecting biodiversity in the Americas: lessons and policy recommendations real-life conservation experiences of the last decade *E. Figueroa**
GS01.19	Genetic diversity, divergence, and connectivity within a complex lakescape: a case study of yellow perch (Perca flavescens) along the Huron-Erie corridor *T.J. Sullivan*, C.A. Stepien*
GS01.20	A national approach for mapping and quantifying habitat-based biodiversity metrics across multiple spatial scales *W.G. Kepner*, K.G. Boykin, D.F. Bradford, R.K. Guy, D.A. Kopp, A.K. Leimer, et al*
GS01.21	Response of macroinvertebrate communities to natural and anthropogenic variability in streams *W-S. Cho, V.T. Nguyen, H. Kim, Y-S. Park, T-S. Chon**
11:00-12:30 Room C221 Chair: F.A. Comin	GS02 Ecohydrology, watersheds & the coast
GS02.17	Conceptual framework for incorporating urban watershed functions into Maryland's TMDL Program *M. Southerland*, R. Morgan, L. Methratta, S. Schreiner, L. Currey, A. Kasko, et al*
GS02.18	Building a resilient gulf coast *V. Marmillion*, S. Coffee*
GS02.19	Threats to a world heritage area: water quality in the great barrier reef catchments *R.D.R. Turner*, R.A. Smith, R.L. Huggins, R.M. Wallace, S. Vardy, M.J. Warne*
11:00-12:30 Room D230 Chair: L.M. Pintor	GS03 Biological invasions

GS03.21 **Per capita seed production is reduced by small population size in natural populations of the invasive grass lolium multiflorum**
J.L. Firestone, M. Jasieniuk*

GS03.22 Allelopathy of Prosopis litter decreases spatial temporal occurrence of Acacia tortilis in Turkwel riverine forest, in Northern Kenya
G.M. Muturi, L. Poorter, G.M.J. Mohren, P. Bala*

GS03.23 **Natural re-vegetation after Rhamnus removal in the Oak Openings Region of Northwestern Ohio**
*T.L. Walters**

11:00-12:30
Room C222
Chair: J. Fiksel

GS07
Sustainability & resilience

GS07.6 **Ecology of compounding disturbance: clearcutting plus prescribed burning does not emulate natural disturbance (wildfire) in a boreal forest plant community**
A. Mallik, K. Pidgen*

GS07.7 **The forest regeneration after windthrow: a new approach to the role of large scale disturbances in Polish forestry**
*D. Dobrowolska**

GS07.8 **Shifts that divide populations**
R. Muneepeerakul, M.R. Qubbaj, R.M. Aggarwal, J.M. Anderies, M.A. Janssen*

GS07.9 **Assessing the potential of carbon sequestration in Pakistan for sustainable crop production**
A-U. Khan, M. Imran, M. Iqbal*

GS07.10 **No-till agriculture in the USA: problems and prospects**
*J.D. Margulies**

GS07.11 **Carbon sequestration in 10 years old Dacryodes edulis (G. Don) H. J. Lam trees under domestication: an underexploited benefit of vegetative propagation**
E.K. Asaah, Z. Tchoundjeu, E.N. Atiojio, P. Van Damme, A.C. Tsobeng, P.A. Minang*

11:00-12:30
Room C223
Chair: P. DeMarco

GS08
Ecological economics & environmental policy

GS08.6 **Capturing ag ecocommerce values with strategic doing and a shared governance model**
*T.M. Gieseke**

GS08.7 **Can ranchers profitably provide ecosystem services? An stm approach**
J. Ritten, J. Pritchett, M. Fernandez-Gimenez, E. Kachergis, W. Hibbs*

GS08.8 **Strategic information sharing in the problem of the commons**
*K.J. Kakeu Kengne**

GS08.9 **The influence of management policy on behaviour of Formosan macaques and Formosan muntjac in Taiwan - a case study of Fushan Botanical Garden**
L. Chang, H. Wang, G. Kuo, H. Lin*

11:00-12:30
Room C210
Chair: T. Jakeman

GS09
Ecological modelling

GS09.6 **Mapping large-scale forest dynamics: a geospatial matrix model**
*J. Liang**

GS09.7 **The contribution of pattern-based modelling for hybrid ecological models: the example of stream salamanders viability in changing hydrological regimes**
P. Girard, L. Parrott, D.M. Green*

GS09.8 **Modeling the effects of plant genetic identity and pollutants on the population dynamics of a forest pest**
E.V. Moran, S. Bewick, C. Cobbold*

GS09.9 **Systematic conservation planning for terrestrial vertebrates currently outside of Thailand's protected areas: a Bayesian network approach**
N. Tantipisanuh, G.A. Gale, C. Pollino*

GS09.10 **Modelling the community of macroinvertebrates in streams**
N. Schuwirth, P. Reichert*

GS09.11 Using height growth to model local and regional response of trembling aspen (Populus tremuloides Michx.) to climate within the boreal forest of western Québec
K.A. Anyomi, F. Raulier, D. Mailly, M.P. Girardin, Y. Bergeron*

11:00-12:30
Room C211
Chair: K. Song

GS10
Climate & global change

GS10.5 Contribution of soil in reducing carbon emissions from deforestation and forest degradation in the southern region of Madagascar
R-H. Razakamanarivo, T. Razafimbelo, C. Grinand, R. Vaudry, H. Razafimahatratra*

GS10.6 Response to impact of climate change through community managed forests: a case study from Nepal
*A. Baniya**

GS10.7 Greenhouse gas emissions from alternative water supply processes in southern California, USA
A.G. Schneider, A. Townsend-Small*

GS10.8 Assisted migration and forestry in Canada
J.H. Pedlar, D.W. McKenney, C. Ste-Marie*

GS10.9 "New paradigm" in limnology and global change
*E.A. Silow**

GS10.10 Community-based management of environmental challenges in Latin America
*M.M. Delgado, A. Newton**

11:00-12:30
Room C212
Chair: R. Kaur

GS11
Ecosystem restoration & ecological engineering

GS11.6 Long term efforts for restoration of Lake Pampulha, Brazil
*E. Von Sperling**

GS11.7 Floodplain restoration on the Upper Danube (Germany) by re-establishing back water and sediment dynamics
B. Cyffka, J. Geist, M. Kilg, P. Lang, A. Scwab, M. Weissbrod*

GS11.8 Restoration of streams and rivers toward biodiversity conservation and the measurement of success
V. Lüderitz, U. Langheinrich, M. Seidel, R. Gersberg*

GS11.9 The restoration of the mouth of the Housatonic River, CT: one point at a time
J.H. Mattei, M.A. Beekey, A. Leenders, J. Gazerro*

GS11.10 Assessment of stream, river, and lake restoration projects based on ecotechnological approaches and ecosystem principles
*S.S. Joshi**

GS11.11 Restoration engineering of degraded wetland in Beijing area and the following ecosystem succession monitoring
J.M. Hong, T.Y. Ma, X.D. Li*

12:30-2:00 **LUNCH**
Please be advised that lunch is not included in the delegate registration rate but there are plenty of cafés and restaurants in the area.

2:00-3:30
Grand Ballroom
Chair: J. Berggren

PLENARY SESSION 4
A cooperative role with the planetary life support system: ecological engineering and restoration of wetlands for their ecosystem services
*W.J. Mitsch**

Recent development in ecological modelling and engineering of lakes and wetlands
*S.E. Jørgensen**

3:30-4:30
Room C226
Chair: J. Teal, S. Peterson & L. Weishar

SYMPOSIUM 47
continued - please see 09:15 for details
Large-scale wetlands restoration

S47.9 Variability of sedimentation rates in large-scale wetlands restoration projects
*K.R. Philipp**

S47.10 Creek bank slopes, development and their role in wetlands restoration
J.M. Teal, L. Weishar*

S47.11 **Fish production and habitat use in a large-scale wetlands restoration project**
*K.A. Strait**

3:00-5:30
Grand Ballroom
Chair: P. Kareiva

FORUM 5
Where science and policy meet: NGO chief scientists

At times, science and policy seem like insular disciplines that interact only rarely and then only in an atmosphere of mutual hostility. This is particularly true in these times, when scientists (especially climate scientists) have faced unprecedented attacks from policymakers who question the very foundation of science itself and urge that policy be based on faith rather than on fact. Yet each discipline needs the other; scientists need policymakers to ensure that they have the material resources and regulatory environment in which they can succeed, and policymakers need scientists to ensure that policies are based on sound science rather than on supposition and mere hope. Our panel features the Chief Scientists of some of the world's largest conservation NGOs. These are the people who must bring science and policy together on a daily basis. They will discuss the challenges that scientists face when working to promote conservation policy, and they will describe some of the techniques they have used successfully to overcome distrust and bring sound science and sound policy together.
P. Kareiva, S. Hamburg, J. Hoekstra, G. Langham, C. Swanson*

3:30-5:00
Exhibit Hall C

POSTER SESSION 1
All posters with an odd number will be presented from 3:30-5:00 e.g. P1, P3, P5, P7, etc.

5:00-9:00

BANQUET
Ticket holders only - The banquet will take place at the Ohio State University's Olentangy River Wetlands.
Buses will start to leave the Columbus Convention Center at 5:00 and will start to return at 9:00

Wednesday 3 October 2012

Mid-Conference Field Trips

On Wednesday 3 October a number of mid-conference field trips will be running. See Mid-Conference Field Trips on pages 139-140 of this Program. Mid-conference field trips were booked by delegates during registration.

Green World, Green Region

Are you looking for an alternative to a Wednesday field trip? Spend the day at the Convention Center and join environmental activists from the mid-Ohio region for a full day of workshops, debates and discussions on how to produce global environmental outcomes through local projects. Sessions will include both local and international speakers. You can learn how local citizens promote ecosystem restoration through policy campaigns and personal actions. The fee for this event is US$75 which includes a continental breakfast, lunch and participation in all Wednesday sessions. To book, please contact Amy Lowe directly at alowe@morpc.org.

Thursday 4 October 2012

08:00-09:45
Grand Ballroom
Chair: M. Brown

PLENARY SESSION 5

Elinor Ostrom's Memorial Plenary

Elinor Ostrom's work has had a longstanding impact on studies of human and natural systems. While best known for her work in collective action and community-based governance of natural resources, for which she was awarded the Nobel Prize in economics, her research attention in recent years has evolved to focus on complex, coupled human-ecological systems. In pursuit of what she termed "interesting puzzles", Prof. Ostrom was a strong proponent of inter- and cross-disciplinary investigations and enthusiastically took up work in agent-based modelling, ecological systems, complexity theory, network analysis, forest ecology, and many other fields. In honor of her legacy, a panel of her former students and colleagues will share insights about her research agenda and its legacy on the study of environmental systems.

D. Cole, T. Koontz, D. Kauneckis

World on the edge

*L. Brown**

09:45-10:15
Main Lobby, Columbus Convention Center

REFRESHMENT BREAK

10:15-12:35
Room C112
continues at 4:00
Chair: J. Martin & W.J. Mitsch

Please note: This Symposia will continue on Friday 5 October, 9:30-10:50 in the same room

SYMPOSIUM 48

Ecological engineering: designing and restoring ecosystem services

To move from dependence on non-renewable resources, human society must rely more on ecosystem services supported by renewable energies. To allow this transition, designs to restore and augment these ecosystem services will be essential. One of the goals of the field of Ecological Engineering is to meet to this goal. This Symposia will highlight the need and examples of designing and restoring ecosystem services with specific examples related to wetlands, watersheds, storm water, degradation of commercial products, and industrial processes.

S48.1 **Restoring water storage and purification with rain gardens**
J. Martin, S. Suter, D. Schlea, C. Eger, P. Kosmerl*

S48.2 **Nutrient retention in residential retrofitted rain gardens**
B. Li, C.G. Eger, J.F. Martin, P. Kosmerl, D.A. Schlea*

S48.3 **Ecological services of constructed two-stage agricultural ditches**
J. D'Ambrosio, J. Witter, A. Ward, J. Tank*

S48.4 **Quantifying ecosystem services change at the field and watershed scales- a case study from northwest arkansas**
M. Leh, M. Matlock, E. Cummings, G. Thoma, J. Cothren*

S48.5 **Managing modified coastal plain streams in South Carolina**
A.D. Jayakaran, S.M. Libes, D. Fuss, D.R. Hitchcock*

S48.6 **Comparing recovery in psychrophilic lab-scale biodigesters of differing organic loading rates**
A. Tamkin, J. Rosenblum, J. Martin*

10:15-12:35
Room C113
continues at 4:00
Chair: M. Zalewski & L. Chicharo

Please note: This Symposia will continue on Friday 5 October, 9:30-10:50 in the same room, C113

SYMPOSIUM 49

Ecohydrology for enhancement resilience and ecosystem services of river basins

Ecohydrology (EH) theory, formulated within the International Hydrological Programme of UNESCO, assumes that water is the major driver of biogeochemical processes on Earth from molecular to basin scales. Modification of water cycles in different ecosystems, e.g., by deforestation, urbanization and transportation networks, amplified by emission of pollutants, results in degradation of life support systems. Understanding the interplay between water and biota at the basin scale provides the basis for the enhancement of ecosystem services for societies, including improvement of water quality and quantity, carrying capacity and biodiversity resilience. The major goal of the application of Ecohydrology at the basin scale is to achieve sustainability through: (1) slowing down transfer of water from atmosphere to sea (considering flood and drought control, biodiversity and food production as priorities), (2) reducing input and controlling pathways of excess nutrients and pollutants in aquatic ecosystems to improve water quality, biodiversity and human health, (3) enhancing ecosystem carrying capacity (resilience, biodiversity, ecosystem services for society) and harmonizing it with societal needs. These three principles of EH (hydrological, ecological and ecological engineering) provide a methodological framework for the synergistic implementation of EH measures at the basin scale and functional harmonization with existing and planned hydrotechnical infrastructure.

S49.1 **Ecohydrology for enhancement resilience and ecosystem services of river basins**
*M. Zalewski**

S49.2 Linking ecosystem services, green infrastructure and water management: a European perspective
G. Bidoglio, J. Maes, A. Della Notte, M.L. Paracchini, N. Clerici, C. Weissteiner*

S49.3 River ecosystems at risk: a large-scale impact sensitivity analysis for Europe
C. Schneider, C.L.R. Laize, M. Acreman, M. Flörke*

S49.4 Ecohydrology applied to the construction of reservoirs in the Amazon
J. Galizia Tundisi, T. Matsumura-Tundisi, A. Saraiva, R. Myai*

S49.5 Hydro-engineering for sustainable river basins: resilience and enhancement
*P.J. DuBowy**

S49.6 Impact of global change on coastal and estuarine biodiversity and productivity - an Ecosystem Services assessment for the Guadiana River Basin and coastal areas
L. Chícharo, K. Krauze*

10:15-12:35
Room C114
continues at 4:00
Chair: R. Wang

Please note: This Symposia will continue on Friday 5 October, 09:30-10:50 in the same room, C114

SYMPOSIUM 50
Creation and restoration of urban ecosystem service to meet the challenge of fast urbanization and industrialization

The urban ecological services provided by eco-factors and eco-infrastructure (wetland, green land, constructed surfaces, wastes discharge and buffering facilities, and transportation networks) form the core of any strategy for urban ecosystem quality improvement. Key concerns within this are urban-rural relationships and peri-urban strategies; the production-consumption metabolism and the circular economy; eco-building and eco-settlement; eco-management and eco-civilization; participation and education. The Symposia will look at how towns and cities are moving towards the full recognition of the ecosystem services provided by urban green infrastructure and how that infrastructure can be enhanced through connectivity, creative conservation, restoration ecology and public participation. During rapid industrialisation and urban expansion, planning for green infrastructure if often neglected. The Symposia will discuss where this has been done successfully, how urban ecosystem services can become a core part of urban planning, and how effective valuation of urban ecosystem services can influence decision-makers. The importance of ecosystem services in mitigation of, and adaptation to climate change, developing flood resilience and improving food security will be emphasised. Case studies will range from the restoration of degrade former industrial land to the management of complex aquatic systems. The Symposia will be a contribution to the new UNESCO/SCOPE urban futures project.

S50.1 Accounting environmental cost of urbanization in western China - a case study in Qinghai
X.Z. Deng, X. Wen, M. Hou*

S50.2 Ecosystem services, garden cities and ecopolis development
*I. Douglas**

S50.3 Study on the quantitative relationship between street green-view rate and its thermo effect
J. Huang, B. Han, R. Wang*

S50.4 Assessing urban-wetland interface resilience in reclaimed land under coastal rapid urbanization
Y.F. Li, Y.L. Shi, X.D. Zhu*

S50.5 May urban river increase ecosystem services? Analysis using DPSIR model
*Y.F. Lin**

10:15-12:35
Room C115
continues at 4:00
Chair: S. Jorgensen

SYMPOSIUM 51
Recent development in ecological modelling and engineering of lakes and wetlands

The Symposia gives an overview of the recent progress in ecological modeling and engineering with particular focus on lakes and wetlands. Wetlands are used increasingly for treatment of wastewater and storm water and more and more lakes are restored by the application of a wide spectrum of methods. The use of structurally dynamic models in this context is crucial.

S51.1 Perspectives in the application of structurally dynamic models
*S.E. Jørgensen**

S51.2 The application of tundra for wastewater treatment in Arctic Canada
*B.C. Wootton**

S51.3 Trade-offs in biodiversity conservation and nutrients removal in wetlands of arid intensive agricultural basins: the case of Mar Menor (Southeastern Spain)
J. Martinez-Fernandez, M.A. Esteve-Selma, J.M. Martinez-Paz, M.F. Carreño, J. Martinez-Lopez, F. Robledano*

S51.4 Changes in hydrography and hydrological regime of the drained-lake wetland "Bagna Nietlickie" nature reserve under increasing agricultural pressure
K. Glinska-Lewczuk, J. Chormanski, T. Okruszko, P. Burandt, J.A. Dunalska*

10:15-12:35
Room C124
continues at 4:00
Chair: F.A. Comin & G. Reub

SYMPOSIUM 53

Planning and performing ecological restoration through the valuation of Ecosystem Services

This session will include an overview of the approaches for ecosystem restoration and of the state of using ecosystem service valuation for planning and performing ecological restoration projects and presentations on advantages and disadvantages of current tools. The session will focus on tools that estimate environmental effects that are limiting ecosystem services such as sustainable populations and where (geographically) those limitations are more substantial. The session will explore how ecosystem tools provide results that increase benefits of implementing restoration or conservation measures in terms of human benefits and form the basis for determining the benefits and costs associated with ecosystem restoration investments. As conservation and restoration needs increase and funding is exposed to more review and scrutiny, cost-effective results are paramount. Some of the more common criticisms center around the facts that commonly used methods: 1) do not have a quantitative basis for the estimates, 2) are not transparent to allow thorough review and stakeholder input, and 3) do not demonstrate direct and indirect benefits to the affected public. Case studies will present innovative approaches for assessing potential impacts and benefits for prioritization of restoration projects.

S53.1 **Ecological restoration and ecosystem services: from theory to practice**
F.A. Comín, G. Reub*

S53.2 **Valuation tools for ecosystem services assessment across spatial and temporal scales**
K.J. Bagstad, B. Voigt, D. Semmens, R. Winthrop*

S53.3 **Integrating the assessment of ecosystem services into ecological restoration projects**
D.A. McGrath, T. Greenwalt*

S53.4 **Planning the ecological restoration of semi-arid agricultural watersheds through the assessment of ecosystem services**
B. Miranda, F.A. Comin, R. Sorando, S. Molinero, A. Calvo, V. Anzalone*

S53.5 **Ecosystem service valuation in environmental decision-making: net ecosystem service analysis**
J.P. Nicolette, M. Rockel*

S53.6 **Selection of cost-effective areas for mangrove restoration with MARXAN based on the evaluation of ecosystem services. The case of Celestún Lagoon (SE Mexico)**
J.A. Herrera-Silveira, C. Teutli, M.F. Adame*

10:15-12:35
Room C123
continues at 4:00
Chair: C.M. Febria, B. Koch, L. Wainger & M. Palmer

SYMPOSIUM 54

Restoring ecosystem services in aquatic systems - Do production functions that support ecosystem services meet restoration needs?

The restoration of aquatic systems is a challenge for both scientists and practitioners, especially in the face of climate change. Unfortunately, the ecosystem services provided by aquatic systems are often not directly linked to what scientists actually measure. Biophysical models that are used to assign value to ecosystem services rely on empirical work that describes ecosystem responses across a range of environmental conditions. These ecological production functions (EPFs) must be robust, and EPFs are arguably one of the most critical components in ecosystem service valuation. However the reality is that the science is lacking behind the available valuation tools and restoration options. Therefore, this session explores if the biophysical models available for ecosystem service valuation adequately meets restoration needs. Because access to water remains one of the most important ecosystem service, we focus the session on aquatic studies and freshwater in particular. Here we showcase papers that focus on the quantification and assessment of the biophysical processes associated with key freshwater ecosystem services which vary in their approach, analysis, scale and study system. The session will conclude with a panel discussion on developing mechanistic models for key EPFs in freshwater, highlight research needs that meet restoration goals, and propose ways in which to achieve them.

S54.9 **The state of knowledge on restoration of ecosystem services in running-waters**
*M.A. Palmer**

S54.6 **Restoration and conservation of floodplain complexity and cold water refuges in the Willamette River, Oregon**
S.V. Gregory, D.H. Hulse*

S54.1 **Biogeochemical tradeoffs and time lags in a large-scale coastal plain wetland restoration project**
M. Ardon, J.L. Morse, M.W. Doyle, E.S. Bernhardt*

S54.3 **Understanding catchment scale drivers of nutrient loading and eutrophication: towards developing ecological production functions that direct restoration efforts in large, highly utilized catchments**
J.M. Dabrowski, J. Nel, P.J. Oberholster*

S54.2 **Delivery of water quality improvement benefits by restored wetlands and riparian areas of the agricultural midwest**
C.B. Craft, J.M. Marton, S. Fennessy*

S54.8 **Development of river and lake phosphorus sensitivity indexes for mitigation and management purposes on catchment level**
P.J. Oberholster, A-M. Botha, J. Dawbroski*

10:15-12:35
Room C122
continues at 4:00
Chair: S. Luque, C. Furst & C. Lorz

SYMPOSIUM 55
Structure matters – the potential of land-use pattern to contribute to ecosystem services provision

The potential of landscapes and land use systems to provide ecosystem services is frequently assessed by the diversity of ecosystems and their particular ability to contribute to human well-being. However, regulating and cultural services, and to a minor extent some provisioning and supporting services, depend on geographic location of ecosystems or land-use types. This is also true for agricultural land-use and its spatial and temporal diversity, which is frequently excluded from assessments of ecosystem services. A fast reorganization of the system is needed in order to find the right balance between management and landscape planning within an multi-scale ecosystem services approach. An additional issue is stakeholder awareness, i.e. it might be hard to understand for non-experts, e.g. land-users or politicians, why a certain portion of land is supposed to be converted to ensure an added value for ecosystem services. Therefore, we see a huge demand for strategies to optimize land-use pattern and to enable stakeholders to understand the necessity in order to maintain and increase the capability of landscapes for sustainable provision of ecosystem services. The Symposia intends to identify and discuss (a) approaches how to better acknowledge the landscape structure in assessments of provision potential of ecosystem services of landscapes, in particular at the level of land-users and (b) ways for a better implementation of structural aspects, i.e. spatio-temporal patterns, of specific land-use types.

S55.1 **Landscapes as ecosystems: how much information do we need?**
*G.M. Lovett**

S55.2 **A novel approach to evaluating landscape resilience and risk of threshold phenomena from pattern analysis**
*K.H. Riitters**

S55.3 **Landscape heterogeneity drivers and related biodiversity components: a multiscale analysis of spatial heterogeneity in forest landscapes and associated services**
S. Luque, M. Redon, T. Cordonnier*

S55.4 **The need for eco-efficient landscapes to prevent irreversible degradation of agroecosystems in deforested Amazonia**
P. Lavelle, V. Gond, J. Oszwald, S. Doledec, I. Veiga, B. Ramirez, et al*

S55.5 **Ecosystem services of historical agricultural landscape**
*J. Spulerova**

S55.6 **Developing sustainable land use patterns**
A. Grêt-Regamey, U. Wissen Hayek*

S55.7 **Green infrastructure and landscape services as planning concepts: Informing local actors about how value can be created by intervening in the spatial pattern of landscapes**
*P.F.M. Opdam**

10:15-12:35
Room C121
Chair: J. Moen & L. Rist

SYMPOSIUM 56
Boreal forests in a sustainable world

Boreal forests constitute almost one-third of the earth's extant forests, contain 35% of the terrestrial carbon stocks in forests and soils, and support diverse biological communities in perhaps the last large wilderness areas in the world. Despite this, boreal forests have received limited attention in comparison to that currently centered on the loss and degradation of tropical forests. While this biome is at present relatively intact, natural disturbance regimes are increasingly being replaced by human-driven processes. Rising resource demands from society and climate changes are two major challenges. In particular, as much of the systems carbon is stored below-ground, there is considerable concern over how this will respond to changes in climate. However, specific characteristics of the boreal forest also present opportunities. Management to maximize carbon sequestration, and increasing the scale of reforestation in heavily disturbed areas, represent significant prospects for climate mitigation. Ecosystem service provisioning in the form of fibre (combined with product substitution to replace fossil sources) and biomass for biofuels, suggesting more intensive management, are also important mitigation and adaptation measures that should be further explored. Boreal forest management must develop to respond to these future influences and opportunities. This Symposia will address these questions at the biome level and will initiate an in-depth discussion on the future role of the boreal forest in a sustainable future.

S56.1 **Resilience of Alaska's boreal forest as a socio-ecological system**
F.S. Chapin III, R.W. Ruess, A.D. McGuire*

S56.2 **Global estimates of boreal forest carbon stocks and predicted patterns under climate change**
*C.J.A. Bradshaw, I.G. Warkentin**

S56.3 **Trade-offs and synergies among ecosystem services from boreal forests**
J. Moen, L. Rist*

S56.4 **Towards ecologically sustainable management of the circumboreal forest: should we reassess the paradigm?**
Y. Bergeron, T. Kuuluvainen, D. Coates*

S56.5 **A new science basis: managing boreal forests as complex adaptive systems**
K.J. Puettmann, P.J. Burton*

S56.6 **Understanding non-domestic sources of the canadian boreal forest policy: integrating theories of tnternationalization & policy change**
B.W. Cashore, I. Scher*

10:15-12:35
Room C216
Chair: R.S. de Groot & L.C. Braat

Please note: This Symposia will continue on Friday 5 October, 09:30-10:50 in the same room

SYMPOSIUM 57
Ecosystem services: from science to practice

The aims of the Symposia are to improve our understanding of the dynamics, the benefits and social and economic values of ecosystem services and to provide insight in the consequences of policies and management for the sustainability of current use of ecosystem services. The Symposia will integrate the fragmented knowledge about ecosystem services and trade-offs, currently found in a wide field of specialist disciplines. Presentations will address the following questions: (a) what is the role of ecosystem services in providing and sustaining benefits for humans and how are these benefits and values perceived by public and policy makers? (b) how is (the sustainability of) ecosystem services in natural, agricultural and urban systems affected by current policies and what are the trade-offs in service provision, and subsequent benefits and economic values, between different policy schemes ? (c) what is the use of ecosystem services in PES arrangements, biodiversity-offset programs and multiple service land use planning. All speakers are active members of the Ecosystem Services Partnership (www.es-partnership.org) and present the latest findings on the above topics, among others based on the outcome of the 4th International conference of the Partnership (4-7 October 2011).

S57.1 **Challenges in moving from ecosystem services science to practice**
*R.S. de Groot**

S57.2 **Bee pollination improves the commercial value and quality of strawberry fruits**
B.K. Klatt, C. Westphal, Y. Clough, A. Holzschuh, I. Smit, E. Pawelzik, et al*

S57.3 **Challenges in ecosystem services science**
*R. Costanza**

S57.4 **Ecosystem services valuation and trade-offs: accounting for justice and sustainability**
*J.C. Farley**

S57.5 **Valuation of ecosystem services against development in Sri Lanka**
*W.D.L. Stanley**

10:15-12:35
Room C215
continues at 4:00
Chair: B-F. Wu

Please note: This Symposia will continue on Friday 5 October, 9:30-10:50 in the same room, C215

SYMPOSIUM 58
The Three Gorges Project in China: environment monitoring network status and achievement

Three Gorges Project (TGP) in China is a large hydropower project creating many benefits to humans, such as flood control, electricity generation, and navigation improvement. It may cause the eco-environmental change in the Yangtze River basin. In order to prevent ecology and environment from impact of TGP, the Executive Office of the TGP Construction Committee of the State Council of China organized and coordinated a number of government departments and institutions to jointly establish the TGP environment monitoring network from 1994 with 28 key stations covering water resource, land resource, terrestrial animals & plants, fishery & aquatic biology, local climate, agricultural ecology, pollution sources and public health, etc. The monitoring network is operated from 1996. In 2010, the TGP was completed and at the same time, a integrated analysis of monitoring data has been carried out. The Symposia participants will present the status of the monitoring network and results of integrated analysis.

S58.1 **Three Gorges Project environment monitoring network: its status, challenges and efforts**
W. Zhou, B.F. Wu, L. Zhu*

S58.2 **Impact of three gorges project on fishery in the lower reach of Yangtze River**
*Z. Yimin**

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Setting The Standard For Environmental Excellence

Nationwide Children's Hospital

Since launching their recycling program in 2009, Nationwide Children's has grown organization-wide recycling to nearly 50%. This is a monumental accomplishment for America's 4th largest pediatric hospital and research center given their main campus covers more than 3.5 million square feet. Waste diversion has been such a success that it is now a revenue-generating department for the non-profit organization and their commitment is still growing. With the completion of a new 12-story patient tower, the hospital is one of the first in the nation to offer separate built-in recycling containers in every patient room making it easier for both staff and families to participate.

Learn more at www.nationwidechildrens.org.

G & J Pepsi-Cola Bottlers, Inc.

G&J Pepsi, one of the premier bottlers in the industry, has taken significant steps to improve efforts in sustainability. By establishing the multi-level employee Green Team and partnering with key business customers in Central Ohio, they have achieved success in the following areas over the last five years:

- Diverting 97% of waste to recyclers
- Sending 2,550 tons of material annually to a biodigester
- A 61% reduction on annual tonnage sent to landfills
- Reducing annual water usage by 2.3 million gallons averaging 1.3 gallons of water used to manufacture each gallon of finished beverage. National average is 1.8 gallons of water for every gallon of finished beverage.
- Executing onsite recycling programs at Central Ohio events and venues

the Memorial Tournament

The Memorial Tournament presented by Nationwide Insurance is one of the greenest stops on the PGA TOUR. In 2012, more than 60 percent of waste from the tournament was diverted including:

- recycling of plastics, aluminum, paper, cardboard, glass and metal.
- food waste converted into compressed natural gas.
- composting of landscape waste.
- charitable donations that saw the reuse of literally miles of carpeting.

Muirfield Village Golf Club is home of the Memorial Tournament and is also host of The Presidents Cup 2013. This eagerly awaited international event is expected to be the tournament's greenest of record.

Solid Waste Authority of Central Ohio (SWACO)

Providing strategic guidance and waste analysis to help businesses and agencies increase their amount of waste diversion is one of our strengths. Our waste analysis helped fuel Nationwide Children's and the Memorial Tournament's recycling programs, while it accelerated G &J Pepsi-Cola's recycling program. These are just three examples of how we made a difference. SWACO's waste audits and analyses can help any company, at any stage of their recycling program.

We offer a free online waste audit tool: *www.swaco.org/Businesses/WasteAuditChecklist.aspx*

SWACO is also proud to run one of the largest Drop Box Recycling programs in the country.

S58.3 Phytoplankton succession in a river-reservoir continuum regulated by artificial reservoir operation: a case in the Three Gorges Reservoir
Z. Li, J. Guo, F. Fang, J. Liu, M. Yang, L. Wang*

S58.4 Characteristics of water bloom and its trend in tributaries of three gorges reservoir (TGR)
Z-Y. Hu, Y-H. Bi, L. Chen, K-X. Zhu*

S58.5 Impacts of the three gorges project on the reservoir water quality
L.B.F. Lou, Y.S.Y. Yin, Y.M.X. Yu, C.S.S. Chen, Z.X.P. Zang*

S58.6 The variation of water environment and its influence factors in the tributaries of three gorges reservoir (TGR)
Y-H. Bi, L. Chen, K-X. Zhu, Z-Y. Hu*

10:15-12:35
Room C214
continues at 4:00
Chair: K. Schafer, W. Mitsch & G. Bohrer

SYMPOSIUM 59
Carbon sequestration and greenhouse gases in wetlands

Greenhouse gas (GHG) emissions and potential sink strengths of wetlands are largely unknown. Therefore, measurements and subsequent evaluation of CO2 and other greenhouse gas fluxes are of crucial importance to estimate sink and source strengths of vegetation in and around wetlands. It is conceivable that an increase in C sequestration through management of productive wetlands would lead to offset credits rendered. However, C sequestration potential and sink strengths of inland and tidal wetlands may be annulled by methane (CH4) release in these ecosystems, a 25 times more potent greenhouse gas. There is a significant knowledge gap in the quantity and controls of C sequestration and CH4 release of wetlands and especially in urban areas. The amount of C sequestered is determined by climatic and edaphic factors, CH4 release and also previous land use, current management practices, managed and natural water level dynamics, air pollution and the biophysical environment.

S59.1 Balancing carbon sequestration and methane emissions in the world's wetlands
W.J. Mitsch, B. Bernal, A.M. Nahlik, U. Mander, L. Zhang, C. Anderson, S.E. Jørgensen, H. Brix, et al*

S59.2 Comparing carbon sequestration in natural and created wetlands
B. Bernal, W.J. Mitsch*

S59.3 Eddy flux measurements of methane at the Oletangy River Wetland Research Park wetland - Determining the seasonal and diurnal dynamics of methane emissions
G. Bohrer, L. Naor Azrieli, S. Mesi, K.V.R. Schafer, P. Mouser, K. Stefanik, W.J. Mitsch, et al*

S59.4 Seasonal and landscape gradient controls on methane oxidation and methantrophs in a freshwater wetland
*T. Roy Chowdhury, W. Mitsch, R.P. Dick**

S59.5 Factors influencing microbial gas production rates in wetland sediments
P.J. Mouser, M. Brooker, G. Bohrer*

10:15-12:35
Room C213
continues at 4:00
Chair: B. Qin & H.W. Paerl

SYMPOSIUM 60
Eutrophication control in shallow lakes

Eutrophication is a worldwide issue. It is often most severe in shallow lakes which are heavily influenced by large external nutrient loads, frequent sediment resuspension and resultant high turbidity, highly active sediment-water column nutrient exchange and nutrient regeneration. In response to nutrient enrichment, these lakes experience accelerated eutrophication, causing the ecosystem to shift from macrophyte- to phytoplankton-dominated conditions, often culminating in summer cyanobacterial blooms. Our knowledge of the mechanisms controlling eutrophication and cyanobacterial bloom formation in response to changes in nutrient inputs, concentrations and ratios, and changing climatic conditions (warming and altered hydrology) is evolving. The Symposia entitled "Eutrophication control in shallow lakes" will focus on nutrient enrichment and reduction effects on phytoplankton biomass and composition, with an emphasis on nutrient management strategies aimed at controlling harmful cyanobacterial blooms in shallow lakes experiencing the contemporaneous effects of human nutrient enrichment and climatic change.

S60.1 Managing harmful cyanobacterial blooms in a world experiencing human- and climatically-mediated change
H.W. Paerl, H. Xu, B. Qin, G. Zhu, N.S. Hall, J.T. Scott*

S60.2 The cyanobacterial bloom formation related to nutrient enrichment and environmental conditions
B-Q. Qin, G-J. Yang, T-F. Wu, X-D. Wang, Y-D. Ding, G-W. Zhu, et al*

S60.3 In situ technology for eutrophication control in shallow waters: removing, converting and recycling nutrients for sustainable food web
*G. Pan**

S60.4 Technical understanding, logistical practicality and political reality of sediment inactivation in large, shallow, eutrophic lakes
H.L. Gibbons, E.B. Welch, R. Gibson*

S60.5 Effects of climate and land use change on water quality of a eutrophic polymictic lake
D.P. Hamilton, D. Özkundakci, C.G. McBride*

S60.6 Review of 30 years of watershed phosphorus management and options to improve the trophic state of Lake Okeechobee, Florida, USA
K.E. Havens, R.T. James, K.R. Reddy*

S60.7 Lessons from Dutch lake restoration measures
*E. Van Donk**

10:15-12:35
Room C224
Chair: T. Koontz

SYMPOSIUM 61
The role of knowledge in effective human-ecological system interactions

The interaction of human and ecological systems breeds complexity and unpredictability, making management challenging. A vital tool for effective management is knowledge. Given the dominant impact of humans on ecosystems around the globe, we need knowledge not only about natural systems, or human systems, but the interaction of the two. Traditionally, scientific disciplines have centered on aspects of either natural or human phenomena, but not both. This Symposia will address key aspects of knowledge generation and use at the human-natural systems interface. Presentations will touch on the creation and use of scientific knowledge for climate policy, the role of human-natural systems interface research for protected areas management, the use of traditional ecological knowledge to inform management decisions, and new directions in social-ecological systems research.

S61.1 Linking government processes to ecological outcomes: an examination of Costa Rica's payments for environmental services (PES) program
*S.D. Hardy**

S61.2 "Relax, we're from Conservation, Inc.": exploring unforeseen consequences of protecting biodiversity
*J.P. Lassoie**

S61.3 From 'no invasion' to 'innovation': the role of local knowledge in the invasion ecology of cordgrass-invaded mangrove ecosystem, South China
R.H. Peng, H. Wu, C.M. Wang, Y. Yang, J.X. Feng, G.H. Lin*

S61.4 Traditional knowledge as a guide to science and management. Learnings from Sápmi (Sámiland)
*J.A. Riseth**

S61.5 Coupling human decision sciences with hydrological modeling: improving the resilience of water management to climate change impacts
*D. Kavneckis**

S61.6 Development and use of complex scientific information about natural systems in policy-making
A. Singh, T. Koontz*

10:15-12:35
Room C225
Chair: F. Muller

SYMPOSIUM 62
Estimating ecosystem services with ecological indicators

The concept of ecosystem services has been rapidly expanding in ecosystem sciences as well as in environmental management throughout the last years. Especially for applied purposes but also for the scientific understanding of ecosystem service stocks, flows and demands it is necessary to use well-elaborated indicators for the representation and quantification of the relevant services. In this Symposia we want to exchange experience, results, concepts, solutions and general information about recent problems in ecosystem service indication in terrestrial and aquatic ecosystems. The Symposia includes theory-oriented papers referring to the predictability of natural capital flows and their potentials to be integrated in accounting systems. There will be presentations on indicator applications at regional, national and global scales originating from landscape ecological perspectives and methodological case studies from marine ecosystem service assessments.

S62.1 Indicator-driven landscape service assessment at various geographical scales
F. Kienast, M. Potschin, R. Haines-Young*

S62.2 Regional quantification of ecosystem service supply and demand
B. Burkhard, M. Kandziora, F. Müller*

S62.3 Mapping and modelling ecosystem services at continental to global scales
P.H. Verburg, S. van Asselen, N. Schulp*

S62.4 Indicators for ecosystem goods and services: framework, methodology and recommendations for a welfare-related environmental reporting
*S. von Gruenigen**

S62.5 **Marine biodiversity valuation in the Basque coast (Bay of Biscay): Using tools in marine spatial planning and the European marine strategy framework directive**
M. Pascual, A. Borja*

S62.6 **An environmental assessment of United States drinking water watersheds**
*J. Wickham**

S62.7 **Spatiotemporal persistence and predictability of natural capital flow in social-ecological landscapes**
G. Zurlini, I. Petrosillo, N. Zaccarelli*

10:15-12:35
Room C226
continues at 4:00
Chair: M. Weinstein & J.W. Day

SYMPOSIUM 63
Restoration ecology in a sustainable world

Human drivers of Earth System change have brought mankind to the precipice of the planet's sixth mass extinction. Because global patterns of little or no systemic change are often followed by precipitous responses in ES dynamics, mankind's very survival may be threatened. John Peterson Meyers posed the question, "how much of the earth's ecological integrity can we disrupt before we pass a threshold in the loss of life support services?" Humans have placed dramatic pressures on the planet's natural resources: nearly 50% of the land surface has been transformed by human action, half of all freshwater is appropriated for human use, more than 50% of the world's wetlands have been lost, approximately half of all marine food resources are fully exploited, and extinction rates are increasing sharply around the world. Additionally, the 21st century will be characterized by increasingly severe climate change and energy scarcity. The prospects for returning global ecosystem services to sustainable states form the basis for this special session. Invited papers will address ecosystem processes and natural capital through the lens of sustainability and resilience, climate change, energy scarcity, restoration and rehabilitation, system complexity and connectedness, biological invasions and creating the new systems knowledge required for a sustainability transition.

S63.1 **Restoration of ecosystem services and novel ecosystems**
*R. Costanza**

S63.2 **Resource use, economics, and global sustainability**
*J.H. Brown**

S63.3 **Sustainability and place: how mega trends of the 21st century will be expressed at a landscape level**
*J.W. Day**

S63.4 **Limits to growth: environmentalist's efforts vs nature's own restrictions**
C.A. Hall, S. Balogh*

S63.5 **The slippery slope of a paradigm shift: restoring ecosystems vs. restoring ecosystem services**
*M.A. Palmer**

10:15-11:45
Grand Ballroom
Chair: D. Wilhelm

FORUM 6
Funding restoration: private funding for ecosystem restoration

Restoration of ecosystem services often requires government funding and assistance, but government is an increasingly unreliable source of funding in many countries. Even when public money is used, much of the work may be done by private, for-profit contractors. Fortunately, businesses that provide restoration services can be a good investment for venture capital firms and other private equity investors. Moreover, when capital is invested in an enterprise, the investors become a constituency for policy changes needed to promote the business pursued by the enterprise. This forum will explore how and why venture capitalists and other private investors will take an interest in growing businesses that work to restore ecosystem services, and how the pecuniary interest of these venture capitalists can be harnessed to provide additional support for the policy changes needed to promote the expansion of restoration efforts.
D. Wilhelm, D. Nees, P. Tynan*

10:15-12:15
Room B-pod
Chair: B. Müller

WORKSHOP 13
Adaptation to climate change - challenges for cities and regions: an international dialogue
B. Müller, C. Bernhofer, T. Geyer, K.S. Jackson, S. Joss, J. McNeally, R. Westerfield, T. Geyer, L. Jeffrey, C. Korndoerfer, S. Rößler*

10:15-12:30
Room C220
Chair: L. Sandin

GS01
Biodiversity & biological conservation

GS01.22 **Facilitating pioneer species or the role of disturbance in maintaining diversity in dynamic fragmented landscapes**
R.F. del Castillo, S. Trujillo-Argueta*

GS01.23 **Human induced drivers effecting running water ecosystems: could habitat heterogeneity counteract the consequences?**
*L. Sandin**

GS01.24 Sustainable rangeland management: what have we learned about livestock and wildlife herbivory?
H.M. Yusuf, A. Angassa, S. Baumgartner, J. Sauerborn, A.C. Treydte*

GS01.25 Evidence refuting interference competition as a hypothesis to explain native lady beetle decline
M.M. Gardiner, C.A. Smith*

GS01.26 Study on biodiversity and ecosystem service unit measuring as an environmental policy tool for biodiversity banking - case study in the forest of Nagoya, Japan
K. Hayashi, Y. Hasegawa, K. Malhotra*

GS01.27 Breeding history influences long-term field survival of experimental introductions of Jacquemontia reclinata
J. Maschinski, S.J. Wright*

GS01.28 Mountain lake Biodiversity: patterns and threats in a changing world
M. Kernan, J. Catalan*

GS01.29 Lessons from transdisciplinary research on tree decline in Australia's grazing landscapes
K. Sherren, J. Fischer, S. Dovers, H. Clayton, J. Schirmer*

GS01.30 Social justice and economic stability through Agrofloresta, an agroecological agroforestry system from Brazil
L. Costa-e-Silva, C.E. Seoane, R. Fonini, A. Defert, I.L. Pinkuss, J. Perez-Cassarino*

10:15-12:30
Room C221
Chair: J. Lee

GS02
Ecohydrology, watersheds & the coast

GS02.20 The theoretical foundation of environmental decision support and its application to river management
P. Reichert, S.D. Langhans, J. Lienert, N. Schuwirth*

GS02.21 The water framework directive and state of Europe's water
*P. Kristensen**

GS02.22 Concept and application of ecohydrology in Indonesian inland waters
G. Sri Haryani, J. Sopaheluwakan, H. Pawitan*

GS02.23 Zoning control strategy for lake eutrophication in China
X.Z. Deng, J.Z. Han, J.Y. Zhan, F. Wu*

GS02.24 Potential impacts of water withdrawals, impervious cover, and climate change on river flows across the conterminous United States
P. Caldwell, G. Sun, S. McNulty, E. Cohen, J. Moore Myers*

GS02.25 Ecosystem services and trade-offs in water governance - a case study of the implementation of the EU Water Framework Directive in Sweden
M. Hammer, M. Petersson, U. Mörtberg*

GS02.26 Exploring resiliency and tipping points in agroecosystem
M. Tichit, L. Doyen, F. Leger*

GS02.27 Patterns of ecological agriculture in China
Z.J. Sun, Y.P. Wu, Y.M. Bi*

10:15-12:30
Room C222
Chair: J.J.A. Hugé

GS07
Sustainability & resilience

GS07.12 Exploring synergetic nexus between sustainable forest ecosystem management and total factor productivity in regionally segmented Canadian logging industries: normative and nonparametric modeling approaches
*A. Ghebremichael**

GS07.13 Distribution and characteristics of heronries and their adaptation to urbanization in Shanghai, China
J. Lu, M. Jiang*

GS07.14 Potential & limitations of sustainability assessment at the sub-national Level: Experiences from Europe and Africa
*J.J.A. Hugé**

GS07.15 Plant residues and newspaper mulch effects on weed emergence and crop performance
N.A. Read, E.E. Regnier, S.K. Harrison, J.D. Metzger, M.A. Bennett*

GS07.16 Resilience, species diversity and livelihoods in Tigray, Ethiopia
*F. Abay**

GS07.17 Infrastructure ecology: a resilience based approach to sustainability of urban infrastructure systems
A. Pandit, J.C. Crittenden*

GS07.18 Improving the effectiveness of statutory planning in recognising the importance of wetlands for resilient urban environments
K. Palmer, C.M. Cheyne, M.K. Joy, J.D. Holland*

GS07.19 The potential of residential yard and food waste as a compost feedstock for the reclamation of Great Lakes vacant lands
W.E. Auch, S. Albro, G. Unger*

10:15-12:30
Room C223
Chair: G. Dressler

GS08
Ecological economics & environmental policy

GS08.10 Integrated assessment of societal costs of fishing activities in the Pearl River Delta
Y. Wang, S.Y. Li, H.R. Pan, P. Failler*

GS08.11 Mobility - a panacea for pastoralism? An ecological-economic modeling approach
G. Dressler, B. Mueller, K. Frank*

GS08.12 Can carbon footprint serve as a comprehensive tool for assessing and managing environmental sustainability?
A. Laurent, S.I. Olsen, M.Z. Hauschild*

GS08.13 A policy analysis perspective on ecological restoration
K. Eckerberg, S. Baker*

GS08.14 Investing in forest carbon offset projects under climate policy uncertainty - a markovian framework with simulations
*M. Zhou**

10:15-12:30
Room C223
Chair: B. Fath

GS09
Ecological modelling

GS09.12 Impacts of hydrology and habitat changes on the primary production of Southeast Asia's largest lake
M.E. Arias, T.A. Cochrane, T. Piman, M. Kummu, J. Koponen*

GS09.13 Model estimation of carbon dioxide emission from Russian soils
*L.L. Golubyatnikov**

GS09.14 Promoting food security and ecological integrity: modelling smallholder organic adoption in the Philippines
L. Schmitt Olabisi, R.Q. Wang, A. Ligmann-Zielinska*

GS09.15 A landscape based, systems dynamic model for assessing impacts of urban development on water quality for sustainable seagrass growth in Tampa Bay, Florida
J.E. Rogers, M.J. Russell*

GS09.16 Modeling unobserved variables improves parameter estimation in historic ecology
E. Aráoz, J.M. Morales*

GS09.17 Landscape integrated model for fragmentation and connectivity assessment
K.A. Ostapowicz, E. Ziolkowska*

GS09.18 Predicting the sensitivity of freshwater unionid mussels to direct and indirect human-induced perturbations
J.A.M. Young, M.A. Koops, T.J. Morris*

GS09.19 A wetland carbon cycle model applied for prediction of the global warming effects
J-R. Zhang, S-E. Jørgensen, J-J. Lu, S-N. Nielsen, Q. Wang*

GS09.20 Dynamic forest models, data, and predictions for policy and management
*A. Huth, F. Hartig**

10:15-12:30
Room C211
Chair: A. Nahlik

GS10
Climate & global change

GS10.11 Modelling the colonization potential of tree habitats for multiple species in the eastern United States
A.M. Prasad, L.R. Iverson, S.N. Matthews, M. Peters, J. Gardiner*

GS10.12 Assessing coastal vulnerability and adaptation to sea level rise: a spatial temporal decision making approach
O. Sahin, S. Mohamed, R. Stewart, R.G. Richards*

GS10.13 The effect of artificial forest on methane emission from freshwater wetland
J. Lu, A. Ma*

GS10.14 Space-for-time substitution to assess likely response of aquatic ecosystems to future climate-related change
R.E. Lester, J.L. Barton, P.G. Close, A.J. Pope*

GS10.15 Effects of Phragmites australis on methane emission from a brackish estuarine wetland
A. Ma, J. Lu*

GS10.16 Social vulnerability and adaptations in the qinghai-tebetan plateau grasslands
Y. Wang, S. Li, D. Qin*

GS10.17 It takes more than a map: using species distribution models to inform conservation in response to climate change requires understanding determinates of species patterns
S.N. Matthews, L.R. Iverson, A.M. Prasad, M.P. Peters*

10:15-12:30
Room C212
Chair: C. Ahn

GS11
Ecosystem restoration & ecological engineering

GS11.12 Using regenerative stormwater conveyance systems to restore stream channels and create aquatic and terrestrial habitat
S. Reiling, J. Burch, P. Hill, S. Saari, S. Wald*

GS11.13 Restoring ecosystem services with stream restoration
*E. Straughan**

GS11.14 Applying the IAD framework to ecological restoration in the Chicago Wilderness
C. Watkins, K. Ross, P. Gobster, M. Tudor, A. Wali, L. Westphal, et al*

GS11.15 Urban eco-infrastructure enhancement for ecopolis development
R.S. Wang, C.B. Zhou, Y.L. Xue*

GS11.16 Using biodiversity and engineering solutions to address coastal erosion - the Singapore experience
L. Chan, M.E.L. Goh, S.F. Yang*

GS11.17 Post-disturbance regeneration thresholds in degraded and rehabilitated semiarid shrublands of the Monte Austral (Northern Patagonia, Argentina)
G.A. Zuleta, P. Tchilinguirian, M.L. Castro, M.E. Ciancio, A.A. Pérez, L.G. Reichmann, et al*

10:15-12:30
Room C125
Chair: L. Zhang

GS12
Ecological indicators

GS12.1 The water footprint of Switzerland
A.E. Ercin, A.Y. Hoekstra*

GS12.2 Succession of forest ecosystem in Guanyinshan giant panda nature reserve converted from a forest production bureau
X. Liu, X. Shao, G. Dang, X. He, P. Wu, Q. Cai*

GS12.3 Ecological risks of transboundary pollution of the Amur River
L.M. Kondratyeva, V.V. Bardyuk*

GS12.4 The lakes Baikal & Geneva pelagic community exergy analysis
E.A. Silow, A. Orlaine, A. Mokry, B. Montuelle*

GS12.5 Objectification of ecological stakes by means of indicators
*J.E. Hermansen**

GS12.6 Integrated multi-method assessment of ecosystem services and environmental sustainability. A case of crop rotation in intensive agroecosystems of the Northern Argentina's Pampas region
G.C. Rótolo, S. Montico, B.F. Giannetti, C.A. Francis, S. Ulgiati*

GS12.7 Self-organization of tropical seasonal rain forest in Southwest China
H. Lin, M. Cao, Y.P. Zhang*

12:30-2:00 **LUNCH**
Please be advised that lunch is not included in the delegate registration rate but there are plenty of cafés and restaurants in the area

2:00-3:30
Chair: B. Moser

PLENARY SESSION 6
President Grimsson Plenary Lecture
*O.R. Grimsson**

Global food security: challenges and opportunities
*R. Lal**

3:30-4:00 REFRESHMENT BREAK
Main Lobby, Columbus Convention Center

4:00-5:45 SYMPOSIUM 48
Room C112
continues on Friday at 09:30
continued - please see 10:15 for details
Ecological engineering: designing and restoring ecosystem services

S48.7 **Biodegradation of bioplastics and natural fibers during composting, anaerobic digestion and in soil**
E.F. Gomez, F.C. Michel Jr.*

S48.8 **Diversion effects on relative elevation and soil organic carbon sequestration in Louisiana Deltaic wetlands under sea level rise and subsidence influences using integrated spatial modeling approach**
H. Wang, G.D. Steyer, B.R. Couvillion, J.M. Rybczyk, H.J. Beck, W.J. Sleavin, et al*

S48.9 **Microtopography as a design elements to restore structure and function in mitigation wetlands created in Chesapeake piedmont**
*C-A. Ahn**

S48.10 **Morphological and ecological torrent restoration: two tailored design approaches in the Alps**
E. Comino, M. Rosso, I. Chouquet*

S48.11 **Can assessment of stream restoration projects describe functional success or failure? Ecosystem results of water quality improvements from stream restoration projects in Ohio**
S. Phillips, E.T. Rankin*

4:00-5:45 SYMPOSIUM 49
Room C113
continues Friday at 09:30
continued - please see 10:15 for details
Ecohydrology for enhancement resilience and ecosystem services of river basins

S49.7 **Concept and application of ecohydrology in Indonesian inland waters**
G.S. Haryani, J. Sopaheluwakan, H. Pawitan*

S49.8 **Remote sensing the hydrological variability of Tanzania's Lake Natron, a vital Lesser Flamingo breeding site under threat**
E.J. Tebbs, J.J. Remedios, S.T. Avery, D.M. Harper*

S49.9 **Ecohydrology for the city of the future**
*I. Wagner, P. Breil, M. Zalewski**

4:00-5:45 SYMPOSIUM 50
Room C114
continues Friday at 09:30
continued - please see 10:15 for details
Creation and restoration of urban ecosystem service to meet the challenge of fast urbanization and industrialization

S50.6 **Managing aquatic ecosystem services in an urban catchment: Brisbane and Moreton Bay, Southeast Queensland Australia**
*H. Ross**

S50.8 **Urban eco-infrastructure enhancement for ecopolis development**
R.S. Wang, C.B. Zhou, Y.L. Xue*

S50.9 **An approach to assessing the equilibrium state of urban streams in central Ohio USA**
M. MacFarland, A. Ward, L. Rieck, M. Sullivan*

4:00-5:45 SYMPOSIUM 51
Room C115
continued - please see 10:15 for details
Recent development in ecological modelling and engineering of lakes and wetlands

S51.5 **Review of recent lake models in ecological modelling**
*B.D. Fath**

S51.6 **A structurally dynamic model of Lake Chozas (Spain), to describe the re-organization as response to biological invasion**
*M. Marchi, S.E. Jørgensen, N. Marchettini, E. Bécares, S. Bastianoni**

S51.7 **Ecological engineering in times of energy scarcity**
*W.J. Mitsch**

S51.8 **Hydrological control on morphological diversity of floodplain lakes based on hydrodynamic model and GIS application**
K. Glinska-Lewczuk, J. Chormanski, T. Okruszko, D. Miroslaw-Swiatek, R. Kujawa, P. Burandt*

4:00-5:45
Room C124

SYMPOSIUM 53
continued - please see 10:15 for details
Planning and performing ecological restoration through the valuation of Ecosystem Services

S53.7 Measuring social and economic outputs from ecosystem services (EESS) of shellfish used in restoration and aquaculture
G. Greene, G. Reub, J. Fisher, B. Dewey*

S53.8 The role of ecosystem service valuation in sustainable natural resource decision making
*C.F. Casey**

S53.9 Use of ecosystem services analysis to identify agricultural best management and conservation practices: a case study of citrus production in Southern Spain
G. Reub, G. Greene, S. Deacon, J. Nicolette, S. Norman*

S53.10 Using ecosystem services as a framework and tools for effective ecological restoration projects: a motivated discussion
G. Reub, F.A. Comin*

4:00-5:45
Room C123

SYMPOSIUM 54
continued - please see 10:15 for details
Restoring ecosystem services in aquatic systems - do production functions that support ecosystem services meet restoration needs?

S54.7 The wetland continuum: a conceptual model of biophysical functions supporting production of ecosystem services
D.M. Mushet, N.H. Euliss*

S54.4 Restoring wetland ecosystem services in the Mississippi Alluvial Valley
S.P. Faulkner, R.L. Bernknopf, B. Chivoiu*

S54.5 Restoring ecosystem services in streams: a case study of modeling management options for ecosystem service provision in Chesapeake Bay watersheds
C.M. Febria, B. Koch*

S54.10 Incorporating ecological production functions in economic benefits assessment: what makes an ecological process valuable?
*L.A. Wainger**

4:00-5:45
Room C122

SYMPOSIUM 55
continued - please see 10:15 for details
Structure matters – the potential of land-use pattern to contribute to ecosystem services provision

S55.8 Which pattern is the best for whom - urban systems as a landscaping force - urban Sprawl
L.I. Inostroza, R.B. Baur, E.C. Csaplovics*

S55.9 Planning new land uses of non-urbanized areas for enhancing ecosystem services in metropolitan contexts
*D. La Rosa**

S55.10 The power of pattern – benefits from respecting land management practices and resulting structural aspects in the assessment of landscape potentials to provide ecosystem services
C. Fürst, S. Frank, F. Makeschin*

S55.11 Linking land markets, landscape pattern, and ecosystem function in North American residential landscapes
*D.C. Parker**

4:00-5:45
Room C215
continues on Friday at 09:30

SYMPOSIUM 58
continued - please see 10:15 for details
The Three Gorges Project in China: environment monitoring network status and achievement

S58.7 Changes of salt-water dynamics and soil salinity in the Yangtze River estuary under operation of the three gorges reservoir
J-S. Yang, W-P. Xie, G-M. Liu, S-P. Yu*

S58.8 20 years land cover and land use changes and driving forces in three gorges reservoir area
B-F. Wu, L. Zhang, L. Zhu, K. Yin*

S58.9 Ecological measures to reduce nitrogen and phosphorus losses from arable sope land by runoff in three gorges reservoir area, China
L-Z. Yang, L-Z. Xia, L. Ma*

S58.10 The variation of water environment and its influence factors in tributaries of three gorges reservoir (TGR)
Y-H. Bi, L. Chen, K-X. Zhu, Z-Y. Hu*

4:00-5:45
Room C214

SYMPOSIUM 59
continued - please see 10:15 for details
Carbon sequestration and greenhouse gases in wetlands

S59.6 **Linking porewater dynamics and atmospheric fluxes of methane in a tidal estuarine marsh**
M.C. Reid, K.V.R. Schafer, R. Tripathee, P.R. Jaffe*

S59.7 **Temporal and spatial dynamics of methane fluxes in a temperate urban wetland**
K.V.R. Schafer, G. Bohrer, M. Reid, R. Tripathee, P. Jaffe*

S59.8 **Methane emissions in a boreal peatland and their influence on the net ecosystem carbon budget**
I. Forbrich, L. Kutzbach, T. Becker, M. Gazovic, D. Jager, M. Wilmking*

S59.9 **Carbon sequestration and methane emissions in coastal freshwater wetlands in Veracruz Mexico**
J.L. Marin-muñiz, M.E. Hernandez, D. Infante Mata, P. Moreno-Casasola, E. Cejudo*

4:00-5:45
Room C213

SYMPOSIUM 60
continued - please see 10:15 for details
Eutrophication control in shallow lakes

S60.8 **The influence of elevated CO_2 on phytoplankton in a eutrophic lake**
X-L. Shi, X-H. Zhao, F-X. Kong*

S60.9 **Using trophic state index for organic carbon to estimate the rate of eutrophication**
*J.A. Dunalska, K. Glinska-Lewczuk**

S60.10 **Selective feeding and distribution of the cyprinid, Rastrineobola argentea along a eutrophication gradient in Mwanza Gulf (Lake Victoria), Tanzanian waters**
P.D.M. Tibihika, L.A.J. Nagelkerke, I. Cornelissen*

S60.11 **In situ study on nitrogen leaching in poplar-wheat intercropping ecosystem along the Taihu lake in China**
J. xue, Y. Wu, D. Wu*

S60.12 **Growth inhibition of cyanobacteria and its toxins elimination by Triarrherca saccharifloraa (Maxin.) Nakai in eutrophied waters**
T.T. Zhang, D. Zhang, Y. Li, Y. Zhou*

4:00-5:45
Room C226
continues on Friday at 09:30

SYMPOSIUM 63
continued - please see 10:15 for details
Restoration ecology in a sustainable world

Symp63.6 **When will ecologists learn engineering and engineers learn ecology? Nature waits**
*W.J. Mitsch**

Symp63.7 **Restoration pays: evidence from the field**
J. Aronson, J.N. Blignaut, R.S. de Groot*

Symp63.8 **Defining ecological restoration for a rapidly changing world**
*E.S. Higgs**

Symp63.9 **Biological invasions: what's worth fighting for and what can be won?**
*D. Simberloff**

Symp63.10 **The global sustainability transition and wetland restoration: can science, policy and practice be better integrated?**
M.P. Weinstein, J. Krebs*

4:00-5:45
Grand Ballroom
Chair: R. Lal

FORUM 7
Food security and climate change

With a population now over seven billion and growing, the world faces unprecedented challenges in producing and distributing sufficient food to avoid widespread hunger. Our food systems are particularly dependent on ecosystem services such as pollination, flood prevention, soil conservation and amendment, pest control and irrigation. These services face extreme risk from rapid climate change. At the same time, innovative and well-managed agricultural practices have the potential to reduce greenhouse gas emissions, sequester carbon dioxide, mitigate some of the worst effects of climate change, and foster adaptation to other effects. This distinguished panel will explore both the threat the climate change poses to food systems and the potential such systems have to overcome that threat.
R. Lal, A.K. Quinn, L. Brown, O.R. Grimsson*

4:15-5:45
Room B-pod
Chair: B. Müller

WORKSHOP 13
continued - please see 10:15 for details
Adaptation to climate change - challenges for cities and regions: an international dialogue

4:00-5:45
Room C220
Chair: L. Sandin

GS01
Biodiversity & biological conservation

GS01.31 Farmland birds in Norway: relationships between bird presence and land use
C. Pedersen, S.O. Krogli, W.J. Fjellstad*

GS01.32 Contrasting conservation objectives and climate change adaptation readiness in Britain and North America
*N.S. Henderson**

GS01.33 Large-scale acquisition and protection of conservation targets in the highlands of roan in the southern appalachian mountains
*J.E. Leutze**

GS01.34 The challenges of ecosystem-based plant conservation
*A.C. Hamilton**

GS01.35 Collaboration and capacity building to enhance species conservation, sustainable use and ecosystem services in the Western Ghats, India
A.J. Godbole, J.P. Sarnaik*

GS01.36 Challenges and potential of applying EBPC in a western industrialized country: a UK example
D. Long, S. Anderson, R. Moyse, S. Thomas*

GS01.37 Agroecology, resiliency and food sovereignty
*M.A. Altieri**

GS01.38 Brazilian agroecological agroforestry system promotes tree diversity, carbon fixation and Atlantic Tropical Forest restoration
R.O. Silva, L.C.M. Froufe, W. Maschio, C.E. Seoane, A.A. Carpanezzi, W. Steenbock*

4:00-5:45
Room C221
Chair: K. McKay

GS02
Ecohydrology, watersheds & the coast

GS02.28 If only they knew: understanding the risk information processing of residents in an urbanizing watershed
K.M. Slagle, R.S. Wilson, A. Baird*

GS02.29 An emerging gastrointestinal pathogen associated with human-originated contamination sources in Lake Erie beach waters
J. Lee, S. Agidi, C. Lee, J. Marion*

GS02.30 Relationship of coastal red tide landscape process and watershed land use pattern supported by remote sensing
Z. Wang, J.S. Wu, H.M. Liu, L.Q. Zhang*

GS02.31 Identifying thresholds in ecological response to river discharge using effectiveness analysis
S.K. McKay, A.P. Covich, M.C. Freeman, C.R. Jackson, J.R. Schramski*

4:00-5:45
Room C222
Chair: M. Weissburg

GS07
Sustainability & resilience

GS07.20 Integrating the assessment of ecosystem services into ecological restoration projects
D.A. McGrath, T. Greenwalt*

GS07.21 An ecological approach to both environmental and linguistic sustainability
*B. Joseph, M.S.P. Sullivan**

GS07.22 Lessons from nature: what can food webs teach us about thermodynamics?
*A. Layton, J. Reap, B. Bras, M. Weissburg**

GS07.23 Assessing sustainability, economic value, ecological impact of mussel farms in northern Adriatic Sea under different anthropogenic and climatic scenarios
C. Solidoro, P. Del Negro, S. Libralato, D. Melaku Canu*

GS07.24 Ecological disturbance theory for future eco-cities: towards annular cities?
*I.M. Ciumasu**

GS07.25 Under what conditions do Sámi pastoralists self-organize to manage pastures sustainably?
V.H. Hausner, P. Fauchald*

GS07.26 Impacts of climate change on cultivated land production and its protection
F. Yin, X.Z. Deng, Q.O. Jiang*

GS07.27 The land sparing strategy for land use allocation in farmlands influences the relationship between biodiversity and agricultural intensity
F. Teillard, M. Tichit, F. Jiguet*

4:00-5:45
Room C223
Chair: E. Lawton

GS08
Ecological economics & environmental policy

GS08.15 The New Zealand footprint project
E.S. Lawton, R.D. Vale*

GS08.16 Ecological restoration - present priorities in Sweden
S. Borgström, A. Zachrisson, K. Eckerberg*

GS08.17 Balancing sustainable renewable energy development and natural resources protection: a case study of the first offshore freshwater wind energy project in the United States
*T. Lanahan**

GS08.18 Impact of different baselines on optimal harvesting, effectiveness and robustness of REDD projects
J. Gheyssens, A. Pana*

GS08.19 Mining, ecosystems and livelihood: a case study of a tribal village of Orissa
*S. Vanaja**

GS08.20 Game-ranching and community-based-natural-resource-management: two emerging models of ecosystem protection, preservation and restoration
*S.C. Gluck**

GS08.21 Footprints of environmental policy in Ghana
*P.N. Tetteh**

GS08.22 The effect of the fukushima nuclear accident on stock prices of electric power utilities
*S. Kawashima, F. Takeda**

4:00-5:45
Room C210
Chair: B. Fath

GS09
Ecological modelling

GS09.21 Ecological modelling to improve biological control of insect pests
D.F. Rincon, L.A. Canas, C.W. Hoy*

GS09.22 Extending the SubWet model to study the role of algae and zooplankton in the free water surface wetland
P.T. Pham, R. D'hondt, H.T.T. Hoang, P. Goethals*

GS09.23 How harvest affects fluctuations in natural populations
A. Wikstrom, J. Ripa, N. Jonzen*

GS09.24 Applicability of the landscape continuum model for conservation management of selected priority species in the Polish Carpathians
E. Ziolkowska, K. Ostapowicz, K. Bojarska, N. Selva*

GS09.25 Simulating the impact of sea level rise on the microbial nitrogen cycle in tidally influenced regions of the Cape Fear River Estuary, NC, USA
D.E. Hines, J.A. Lisa, B. Song, C.R. Tobias, S.R. Borrett*

GS09.26 Modelling the combined carbon-nitrogen cycle in wetland ecosystems of forest area in Nothern Euroasia under climate change
*N.N. Zavalishin**

GS09.27 Quality assessment and management of ecological models: integrating scientific expertise with customer demands
*P. Goethals**

GS09.28 Process-based modelling effects of varied forest management scenarios on carbon dynamics in jack pine stands under future climate
W. Wang, C. Peng, Q. Zhu, D. Kneeshaw, G. Larocque, X. Lei, et al*

4:00-5:45
Room C211
Chair: A. Nahlik

GS10
Climate & global change

GS10.18 Determining pragmatic resettlement strategies for the first climate refugees of India : a case study in Indian Sundarbans
R. Banerji, I. Guha, J. Roy, S. Bhattacharya*

GS10.19 Current and future climatic spaces in the global protected areas network
A. Lira-Noriega, N. Barve, J. Soberon, A.T. Peterson*

GS10.20 The moving mosaic: a multi-dimensional view of land-use change
S.J. Watson, G.W. Luck, P.G. Spooner, D.M. Watson*

GS10.21 How climate change affects fire disturbance in Chinese boreal forests and its implications in tree recruitment and succession
J. Yang, Z. Liu, W. Cai*

GS10.22 Earthworms increase greenhouse gas emissions from soil
I.M. Lubbers, L. Brussaard, J.W. Van Groenigen*

GS10.23 Rapid immobilization of inorganic nitrogen in stable soil organic matter of forest ecosystems
J.P. Kaye, D.B. Lewis, M.J. Castellano*

4:00-5:45
Room C212
Chair: J. Baustian

GS11
Ecosystem restoration & ecological engineering

GS11.18 Assessing urban forest restoration effects on vegetation dynamics and plant-soil interactions in New York City urban parkland
P.T. McPhearson, M.I. Palmer, R. Karty, S. Sritrairat*

GS11.19 Reconnecting coastal wetlands in western Lake Erie: managing ecological changes across the landscape
J. Baustian, M. Eggleston, A. Czayka, M.J. Wiley, D.A. Wilcox*

GS11.20 A pilot ecologically engineered algal treatment system used to improve water quality on Baltimore's Inner Harbor
P.I. May, C. Streb, P. Kangas*

GS11.21 Social, economic, and ecological benefits of integrated floodplain-reservoir management
J. Opperman, A. Warner, J. Hickey*

GS11.22 Challenges of assessing the effects of ecosystem restoration on habitat connectivity for migratory fishes in tidal large-river systems
H.L. Diefenderfer, A.M. Coleman, N.K. Sather, Y. Ke, J.D. Tagestad, A.B. Borde*

GS11.23 Efforts to preserve and restore the native prairies of the Darby Plains in Ohio, USA
J. Watts, C. Morrow*

GS11.24 The Delaware Estuary Living Shoreline Initiative (DELSI)
D. Bushek, D. Kreeger, L. Whalen, J. Moody, A. Padeletti*

GS11.25 The degradation mechanism of nitrobenzene by mixed strains of microorganisms in river sediments
L-P. Qui, W-K. Wang*

4:00-5:45
Room C125
Chair: L. Zhang

GS12
Ecological indicators

GS12.8 Drivers of dryland productivity - insights from a global meta-analysis
J.C. Ruppert, F. Ewert, A. Linstädter*

GS12.9 Applying next-generation DNA sequencing technology to aquatic bioassessment
E.M. Pilgrim, S.A. Jackson, J. Martinson*

GS12.10 NDVI, dry spells and minimum monthly temperature changes as desertification indicators in central Mexico
P.L. López-Cuellar, A. Guevara-Escobar, Z. Mayoral, E. González-Sosa*

GS12.11 Functional diversity as ecological indicator of global change in terrestrial ecosystems
P. Pinho, P. Matos, C. Máguas, M. João-Pereira, A. Soares, M. Castro-Ribeiro, et al*

GS12.12 Relationships between food-web measures and indirect effects
*O.Y. Buzhdygan, B.C. Patten**

GS12.13 Design and template to develop ecological indicators for the Laurentian Great Lakes coastal zone
L.B. Johnson, J.J.H. Ciborowski, R.W. Howe, K.E. Kovalenko, G.J. Niemi, E. Reavie, et al*

4:00-5:45
Room C121
Chair: K. Song

GS13
Ecotoxicology

GS13.1 Toxicokinetic-toxicodynamic models as core concept of ecotoxicology - diversity of chemical stressors meets biodiversity in sensitivity of organisms
*R. Ashauer**

GS13.2 Development of transcriptomics-based gene classifiers for selected endocrine disrupting chemicals in zebrafish (danio rerio)
R. Wang, D. Bencic, A. Biales, et al*

GS13.3 Soil properties and macrofauna community along abandoned rice field chronosequence in Western Odisha, India
S. Sahoo, S. Pattnayak, A. Priyadarshini, K. Haripal, P.K. Panigrahi*

GS13.4 Effects on soil-plant attributes caused by Agrofloresta agroforestry system management
L.C.M. Froufe, D.K. Schwiderk, R.M. Cezar, G.F. Shtorache, C.E. Seoane, F. Vezzani*

GS13.5 Low carbon agriculture: origins, principles and strategies
S.L. Wang, C.D. Caldwell, W.F. Zhu*

GS13.6 Crop water production functions and ET-yield models in wheat as influenced by different management practices for ecological sustainability in central Punjab, India
P.K. Kingra, R.K. Mahey, R.K. Randhawa*

GS13.7 Field evaluation of rice *(Oryza sativa L.)* genotypes under aerobic conditions in Punjab, India
G.S. Mangat, R. Kaur, R. Khanna, N. Kaur, K. Singh*

4:00-5:45
Room C224
Chair: L. Li

GS14
Ecological complexity, health & knowledge

GS14.1 Cascading ecological effects: a demonstration of complexity in modeling ecosystem services
*N.K. Lincoln**

GS14.2 Ecosystem approach to estimation of pollution large rivers by toxic elements
E. Golubeva, L. Kondratyeva, N. Berdnikov*

GS14.3 Survival of the pinkest – are flamingo mortalities a natural consequence of East African lake dynamics?
S.A. Ward, P. Langdon, S. Bullock*

GS14.4 Interdependence and its conceptualization
*M.H. Dixon**

GS14.5 Enhancing bioavailability of three major plant nutrients in coal ash through composting and vermiculture technologies
*L. Goswami, B. Sahariah, A. Patel, S.S. Bhattacharya**

GS14.6 Let there be dark! Shedding light on light pollution
T.W. Assmuth, J. Lyytimäki, P. Tapio*

GS14.7 Risk for insect outbreaks under climate change
*M.J. Klapwijk, M.P. Ayres, A. Battisti, S. Larsson**

5:00-6:30
Exhibit Hall C

POSTER SESSION 2
All posters with an even number will be presented from 5:00-6:30 e.g. P2, P4, P6, P8, etc.

Friday 5 October 2012

8:15-9:00
Chair: R.S. DeGroot

PLENARY SESSION 7
Solutions for a sustainable and desirable future
*R. Costanza**

9:00-9:30
Main Lobby, Columbus Convention Center

REFRESHMENT BREAK

09:30-12:30
Room C112

SYMPOSIUM 48
continued - please see Thursday 10:15 for details
Ecological engineering: Designing and restoring ecosystem services

S48.12 Past and future of ecological engineering and ecosystem services
*W.J. Mitsch**

S48.13 Effects of oxbow lakes reconnection on macroinvertebrate communities: a case study of the Słupia River, N Poland
K. Obolewski, K. Glinska-Lewczuk, P. Burandt, S. Kobus, J.A. Dunalska*

S48.14 Restoring ecosystem services in degraded tropical soils: a case study from tea plantations of southern India
*P.K. Panigrahi, B.K. Senapati, P. Lavelle**

S48.15 Re-envisioning the water and sanitation infrastructure systems
D.S. Apul, C. Anand*

S48.16 Study on non-point source pollution in typical industrial area and its ecological engineering regulation
G.J. Gao, J.L.H. Huang, Y.Y.P. Ye, W.R.S. Wang, W.Z.H. Wang*

09:30-12:30
Room C113

SYMPOSIUM 49
continued - please see Thursday 10:15 for details
Ecohydrology for enhancement resilience and ecosystem services of river basins

S49.10 Toward early-warning integrated system by meta-ecosystem analysis in mire
*T. Nakayama**

S49.11 Multicriteria assessment of agricultural and farming production systems: the case of the Toledo River Basin (Brazil)
P.P. Franzese, S. D'Angelo*

S49.12 Integration of Ecohydrology and eco-farming for water, food, biodiversity and related ecosystem services in Ethiopia
Y. Zerihun Negussie, G. Tikubet, M. Urbaniak, M. Zalewski*

09:30-12:30
Room C114

SYMPOSIUM 50
continued - please see Thursday 10:15 for details
Creation and restoration of urban ecosystem service to meet the challenge of fast urbanization and industrialization

S50.10 Environmental cost-benefit analysis of the rehabilitation of a closed landfill in Taipei, Taiwan
*Y.C. Weng**

S50.11 The ecological process of urban ecosystem restoration: an example from Kaohsiung Metropolitan Park construction
S-P. Yo, C-S. Hong, T-Y. Lee*

S50.12 Practice of rural renewable energy and low carbon eco-county development
C.B. Zhou, Y.G. Chen, W.Y. Xu*

09:30-12:30
Room C216

SYMPOSIUM 57
continued - please see Thursday 10:15 for details
Ecosystem services: from science to practice

S57.6 Ecosystem integrity and ecosystem services
F. Mueller, M. Kandziora, B. Burkhard*

S57.7 A preliminary estimate of the loss of ecosystem services due to the extraction of natural gas in the Marcellus Shale
*D.J. Murphy**

S57.8 Forest ecosystem services evaluation: a multi-criteria perspective
T. Häyhä, E. Buonocore, A. Paletto, P.P. Franzese*

S57.9 Restoring natural capital and the flow of ecosystem services
J. Aronson, J.N. Blignaut*

S57.10 The complex relation among forest services and realization approaches of multifunctional forestry
Y. Wang, P. Yu, Q. Guo, L. Xu, W. Xiong*

S57.11 Analysis on the temporal and spatial pattern of ecosystem services based on land use change: a case study of Guanting Reservoir Watershed in China
L. Guihuan, Z. Huiyuan, W. Yihui, C. Yanyan*

S57.12 Incorporating ecosystem services into the evaluation, operation and maintenance of US Army Corps of Engineers projects
K.A. Burks-Copes, S.S. Blersch, T.S. Bridges*

S57.13 Policy and governance challenges in enhancing ecosystem services
E.R. Furman, E. Primmer*

S57.14 Rio+20: a whole new world of ecosystem services
*L.C. Braat**

09:30-12:30
Room C215

SYMPOSIUM 58
continued - please see Thursday 10:15 for details
The Three Gorges Project in China: environment monitoring network status and achievement

S58.11 Investigation of soil fertility and productivity of different land use patterns in resettlement region in the areas near to the three gorges dam
L. Ma, L.Z. Xia, L.Z. Yang, Y.D. Li, G.H. Liu*

S58.12 Variation characteristics on niche of dominant herbaceous plant in drawdown zone of three gorges reservoir in China at the earlier stages of filling water
R.M. Cheng, W.F. Xiao, X.R. Wang, Q.S. Guo, X.H. Feng, R.L. Wang*

S58.13 Groundwater dynamics and soil gleyization monitoring in Honghu Region, Middle Reach of Yangtze Valley, at the initial operation stage of Three Gorges Project
*S. Chen**

S58.14 The regional climate monitoring and impact assessment over the three gorges reservoir area
X-Y. Chen, Q. Zhang, L-C. Song, C-J. Zhang*

09:30-12:30
Room C226

SYMPOSIUM 63
continued - please see Thursday 10:15 for details
Restoration ecology in a sustainable world

Symp63.11 Restoring coastal ecosystems in the 21st century and beyond: the case of deltas
*C. Ibanez**

Symp63.12 What is necessary to achieve sustainable management of the Mississippi Delta
G.P. Kemp, A.M. Freeman, A.A. Renfro, J.W. Day, Jr.*

Symp63.13 Sustainable management of tropical coastal ecosystem: understanding the role of restoration
*A. Yanez-Arancibia, J.W. Day**

Symp63.14 The irrelevance of most contemporary academic ecology to solving the major problems of the 21st century
C.A. Hall, J.W. Day*

09:30-12:30
Room C124
Chair: J.T. Bruskotter, A. Treves & S. Gehrt

SYMPOSIUM 64
Carnivore conservation in human-dominated systems: ecological, ethical and social dimensions

Although large carnivores rank among the world's most imperilled species, in recent years carnivores have been making a comeback in much of Europe and North America. Some species have shown considerable adaptability, oftentimes living in suburban and even urbanized settings. Yet despite some successes, restoration and conservation of endangered carnivores remains elusive and is often impeded by human intolerance. Recovery of carnivores could help restore associated biodiversity and increase ecosystem resilience, but the long-term conservation of carnivores will require concerted efforts on the part of policy makers. This Symposia brings together international scholars from several disciplines to examine the ecological, ethical and social dimensions of carnivore conservation in human-dominated landscapes. Topics vary considerably—from contrasting the ecological role of carnivores in urbanized and "natural" systems, to exploring the ethical and legal considerations that underlie restoration efforts and management strategies, to understanding how individuals make decisions about carnivore conservation. Presentations reflect the sundry social and ecological considerations policy-makers and management agencies must weigh when making decisions about carnivore restoration and management. Taken together, these presentations demonstrate how carnivores can confound conventional wildlife management, and point to new ways to promote carnivore conservation in human-dominated landscapes.

S64.1 Using risk maps to forecast predator attacks on livestock
A. Treves, K.A. Martin, A.P. Wydeven*

S64.2 Too little, too late? Understanding support for official lethal control of depredating wolves among farmers and hunters in Wisconsin
C. Browne-Nunez, A. Treves, D. MacFarland*

S64.3 Large carnivore monitoring and conflict mitigation in Sweden
*J. Karlsson**

S64.4 Urban carnivores: special challenges for uneasy neighbors
*S.D. Gehrt**

S64.5 Public perceptions about the relationship and role of science and politics in conservation: insights from wolf management in Michigan
M. Gore, M.L. Lute, M.P. Nelson, J.A. Vucetich, P.E. Lederle*

S64.6 Carnivores as a hazard: the role of risk perception in predicting public acceptance
R.S. Wilson, J.T. Bruskotter, R. Zajac, K. Slagle, S. Prange*

S64.7 The wildlife trust doctrine: a legal means of conserving carnivores?
J.T. Bruskotter, S.A. Enzler, A. Treves*

S64.8 Is it wrong to hunt wolves?
*M.P. Nelson, J.A. Vucetich, M. Gore**

09:30-12:30
Room C123
Chair: S. Hallin

SYMPOSIUM 65
Denitrification regulating climate change and other ecosystem services: from large scale processes to community ecology

Managing nitrogen is one of the major environmental challenges for the 21st century. Denitrification, a microbial process in the global nitrogen cycle, provide several ecosystem services by ultimately regulating the reactive nitrogen species NO3- and N2O causing eutrophication and climate change, respectively. Denitrification is a respiratory process in which NO3- is reduced to the end-products N2O or N2 by a wide range of unrelated taxa. Wetlands and riparian zones remove a substantial proportion of NO3- through denitrification, and NO3- removal by denitrification is utilized in wastewater treatment plants and constructed wetlands. However, this ecosystem service may come at a cost if denitrification results in N2O emissions. Nitrous oxide is a potent greenhouse gas and the single most dominant stratospheric ozone depleting substance. Terrestrial ecosystems account for a bit less than 25% of the global denitrification activity, but are the dominant N2O source, whereas aquatic ecosystems account for approximately one third of the total planetary N2O emissions. The N2O:N2 ratio of denitrification end products is controlled by the microbial community composition and a range of environmental factors. Net negative fluxes of N2O have been reported indicating N2O consumption by the microbial community, but the understanding of factors regulating the N2O uptake is limited.

S65.1 Landscape and regional scale studies of denitrification
*P.M. Groffman**

S65.2 Denitrifying communities at global and local scales - ecological drivers and links to ecosystem functions
*S. Hallin**

S65.3 The roles and benefits of wetlands in managing reactive nitrogen
D.L. Hey, J. Kostel, W. Crumpton, W. Mitsch*

S65.4 Bridging microbial community ecology and nitrogen cycling in soil
*L. Philippot**

S65.5 Long-term denitrification rates in created riverine wetlands: effects of environmental factors and microbial communities
K. Song, W.J. Mitsch, M.E. Hernandez, J.A. Batson*

S65.6 Spatial distribution of denitrifying and total microbial community in created riverine wetland
J. Truu, M. Truu, T. Sildvee, K. Oopkaup, U. Mander, W.J. Mitsch*

S65.7 Beyond microbes: how higher soil organisms can affect denitrification and N2O emissions
J.W. van Groenigen, I.M. Lubbers, I. Kuiper, G.B. de Deyn*

09:30-12:30
Room C122
Chair: U. Mander

SYMPOSIUM 66
Ecosystem functioning and ecosystem services of ecological networks and greenways: from local to global

We need more than big linkages between big areas for big mammals; we also need citizens and administrators who understand the need for movement at all scales... We need not just analysis, but application; not just policies, but practical programs; not just individual actions, but integrated action... We need to develop new linkages that will function in the future. (Larry Harris 1989) Ecological networks mitigate separation and offer connection between sites. However this is not the only role they have for society. Greenways and ecological networks offer more as they are a societal constructs mostly occurring in urbanised and cultural landscapes. They link the core conservation sites with nature and nature functions in the wider countryside. In this way the ecosystem functions that are supported by ecological networks can be translated into ecosystem services. An ecological network and the corridors that it includes mitigates biodiversity loss and maintains functions that otherwise could be held by an unfragmented landscape. For species corridors specifically can function as (1) conduit (2) habitat (3) filter (4) barrier (5) source and (6) sink. These functions may not be mutually exclusive and are species specific. In general the aim of a functioning corridor is to promote the attributes of conduit, habitat and source, and not the other attributes. For society the additional ecosystem services can be manifold, such recreation if green corridors are combined with bike and pedestrian pathways. They also can support ecosystem resilience in the context of the wider landscape by providing habitat for biological control species. By creating landscape diversity through the re-embedding of nature in the landscape they support the service of education in the land and stimulate cultural and economic resiliencies. Aquatic corridors can support water purification and support the resilience of fish populations. Bird flyway provide global connectivity and linkage between wetlands throughout continents and between continents. These combined resiliencies strengthen the likelihood of ecological, cultural and economic success across local, regional, and global scales. In this Symposia we will further deepen the ecosystem functions and services of ecological networks and let invited authors analyse and conclude on ecological networks in their local, national and international context and the roles that the network play in nature conservation as well as for other ecosystem services.

S66.1 **Safe to Fail: adaptive design experiments for providing urban ecosystem services in urban greenways**
*J. Ahern**

S66.2 **Ecosystem services of ecological networks at different hierarchical levels**
*U. Mander**

S66.3 **Implementation of Green Network Plan in Estonia: assessing delivery of biodiversity services**
M. Kulvik, V. Kuusemets, J. Raet, K. Sepp, M. Suškevics*

S66.4 **Constructed wetland parks as a network of urban oases, Case Nummela, Municipality of Vihti, Uusimaa Region, Finland**
O.M. Salminen, H. Ahponen*

S66.5 **Integrating operational scales of species to landscape for development of large-scale ecological networks**
M.J. Samways, J.S. Pryke*

S66.6 **Pesticide de-contamination of surface-waters as a wetland ecosystem service in agricultural landscapes**
*J. Tournebize, E. Passeport, C. Chaumont, C. Fesneau, A. Guenne, B. Vincent**

09:30-12:30
Room C121
Chair: C-B. An

SYMPOSIUM 67
Climate change and human activity in arid Central Asia: lessons from the past

Arid Central Asia, a region extending from the Caspian Sea in the west to the modern Asian summer monsoon limit in the east, is one of the largest arid (desert) areas in the world. It is important to understand ecology and environment changes here, as this area links low, middle and high latitude climate regimes: the prevailing Westerlies, the winter Siberian High Pressure Cell and the summer tropical lows. Furthermore, Central Asia is one of the main resource areas of aeolian dust of Northern Hemisphere and aeolian dust influences the atmospheric radiation balance and ocean fertilization, and hence global climatic variations. Also, may have served as a critical bridge between East and West. The relationship between human and environment and their interactions are poorly understood in this region, however. Indeed, it is not at all clear what and how environment change will be occurred if global warming continues? How do human activities contribute to climate change and how do they compare with natural influences? We must learn more from the past.

S67.1 **Environmental change and human activity**
*C. An**

S67.2 **Agriculture, evolution, and environmental change: three certain variables in an uncertain equation**
*L. Barton**

S67.3 **The role of minor crops in the development of Eurasian agriculture**
*M.K. Jones**

S67.4 **Food web, production and consumption: the longue durée of the Neolithic China**
X. Liu, M.K. Jones*

S67.5 Gendered control over household resources and its impact on carbon finance initiatives in the Nyando River basin, Kenya
S.A.A. Nasong'o, F. Zaal, J.B. Okeyo-Owuor, N. Maina*

S67.6 Scope of rice straw mulching for enhancing water use efficiency in wheat (Triticum aestivum L.) under changing climate in Indogangetic Plains of India
H. Ram, V. Dadhwal, K.K. Vashisat, H. Kaur*

S67.7 Spatio-temporal analysis of climate and hydrological characteristics in the Jinghe River basin, NW China
P. Yu, V. Krysanova, S. Zhang, S. Pan, S. Huang, Y. Wang, et al*

S67.8 Understanding water, geomorphology and biota interplay in the landscape as key for sustainable future
*M. Zalewski**

09:30-12:30
Room C224
Chair: J.S. MacIvor & J. Lundholm

SYMPOSIUM 68
Urban ecosystem services from green roofs

Impervious surfaces are dominant features of the urban landscape and include roads, parking lots, building walls and rooftops. These surfaces absorb solar radiation and divert stormwater in contrast to the original vegetated habitat, thereby intensifying urban environmental issues such as increasing volume and decreasing quality of water runoff, loss of floral and fauna diversity, and the urban heat island effect. Adding vegetation and soils to roofs alters their surface properties and contributes to numerous other economic, social, and environmental functions. Green roofs are often assembled using industry-standard practices as well as plants and soil elements that may not co-exist with one another in nature. However, design elements that influence the stability, composition and diversity of green roof vegetation and soil communities can significantly improve their contribution to urban ecosystem services. Recently this has driven research in identifying green roof plant combinations and traits, as well as the interactions between plants, soil, and mobile species like birds and bees, to optimize performance of multiple ecosystem functions, urban aesthetics and food security - all in light of increasing human populations and impending climate change. The Symposia will elucidate the ecological interactions on green roofs underlying their contributions to urban ecosystem services.

S68.1 Replicating local ecosystems on green roofs
*K. Ksiazek**

S68.2 Sedum cools soil and can improve neighboring plant performance during water deficit on a green roof
C. Butler, C.M. Orians*

S68.3 Plant selection strategies to improve the provision of ecosystem services by green roofs
C. Farrell, C. Szota, S-K. Arndt, N-S. Williams*

S68.4 Role of green roof biodiversity on the quantity and quality of stormwater runoff
K. Johnson, J. Bader, K. Hurley, I. Buffam*

S68.5 Linking biodiversity and human health goals: the role of urban green roofs
*A. Loder**

S68.6 Experimental tests of plant biodiversity effects on green roof ecosystem services
J.T. Lundholm, J.S. MacIvor, M.A. Ranalli*

S68.7 Green roofs as habitat for wild bees in city landscapes
*J.S. MacIvor**

S68.8 Plant, arthropod, and microbial communities on New York City green roofs: Assembly, development, and function
M.I. Palmer, K.L. McGuire, J.M. Aloisio, T.S. Granger, J.C. Law, M.C. Smith*

S68.9 Vegetable production on green roofs
L.J. Whittinghill, D.B. Rowe*

09:30-12:30
Room C225
Chair: G. Lin, C.B. Craft & J. Tang

SYMPOSIUM 69
Effects of climate change and human disturbance on carbon dynamics of coastal wetlands

There are increasing interests in quantifying and enhancing carbon sinks in coastal wetlands to offset carbon emissions for mitigating global climate change. However, on-going climate change (global warming, sea-level rise, extreme weather events, etc.) and human activities (e.g. land reclamation, nitrogen loading, aquaculture and urbanization) may significantly reduce such ecosystem service offered by coastal wetlands. During recent years, important progresses have been made in quantifying carbon pools and storage, monitoring carbon fluxes, enhancing carbon sinks and evaluating possible impact of climate and human disturbances on carbon dynamics in mangroves, salt marshes and seagrass beds. This Symposia will invite several leading scientists to discuss current understandings and key challenges associate with quantifying and enhancing carbon sinks in coastal wetland ecosystems and restoring ecosystem functions in these ecosystems toward sustainability. The Symposia will serve as a platform not only for academic exchange but also for establishing international collaboration network among scientists around the world.

S69.1 Effects of natural disturbances, salinity, and temperature on light-use efficiency and carbon cycling in the subtropical mangrove forests of Everglades National Park, Florida
J.G. Barr, V. Engel, J.D. Fuentes, D.O. Fuller*

S69.2 Effects of climate change and sea level rise on carbon sequestration by coastal wetlands
*C.B. Craft**

S69.3 Carbon stock and sequestration in mangrove forests of Guaratiba (Southeastern Brazil)
G.C.D. Estrada, M.L.G. Soares, V. Fernandez, P.M.M. Almeida, D.M.C. Santos, M.R.M. Estevam, et al*

S69.4 Carbon pools and fluxes in the mangrove wetlands of China under different tidal regimes
G.H. Lin, W.Z. Lu, H. Chen, C.M. Wang, R. Li, S.C. Yang*

S69.5 Effects of nitrogen loading on greenhouse gas emissions from salt marshes in the US northeast
J. Tang, K. Kroeger, S. Moseman-Valtierra*

09:30-12:30
Room C213
Chair: K. Crist

WORKSHOP 12
Management of greenhouse gases: implications and evaluation of sustainable practices, economic growth, air quality and state, federal and international policy scenarios
K. Crist, J. Fiksel, S. Nagendra, M. Zimmer, J. Kuruvilla, S. Miller*

09:30-12:30
Room C220
Chair: A. Mallik

GS01
Biodiversity & biological conservation

GS01.39 Understanding edge influence on vegetation in boreal forests
K.A. Harper, S.E. Macdonald, A. Mallik, K.J. Stewart, P-A. Esseen, K. Hylander, B-G. Jonsson, et al*

GS01.40 Biodiversity should be biodistribution
L. Normand, N. Gaetz*

GS01.41 Sustaining migration: quantifying spatial subsidies to incentivize conservation of migratory species
D.J. Semmens, L. Lopez-Hoffman, J.E. Diffendorfer*

GS01.42 Life in the concrete jungle: a global analysis of urban biodiversity
M.F. Aronson, N. Williams, et al*

GS01.43 Computer science helps conservation planning
B. Dilkina, C.P. Gomes*

GS01.44 Impacts of historical deer densities on present forest songbird communities
E.J. Cullen, T. Nuttle*

GS01.45 Beyond remnants and single properties: landscape scale improvement in grassy woodlands
*P.R. Ampt**

GS01.46 Development of evidence based legal models for ecosystem and biodiversity protection and recovery
E. Nordtveit, I. Måren, V. Vandvik*

GS01.47 Scale-dependent and multi-scale effects of species diversity patterns in a highly fragmented landscape along a sharp climatic gradient
Y. Ziv, I. Giladi, G. Yaacobi, Y. Gavish, G. Rotem, F. May, et al*

GS01.48 The footprint of climate change in Ohio: evidence of state-wide shifts in flower phenology and biodiversity implications
K.M. Calinger, P.S. Curtis*

09:30-12:30
Room C221
Chair: E. Toman

GS02
Ecohydrology, watersheds & the coast

GS02.32 Comparative assessment of the integration of legal tools to spatial planning for flood mitigation: USA, EU and Turkey cases
N.I. Cetin, A. Tezer*

GS02.33 The use of an algal eco-technology to clean wastewater and create a biofuel in New York City
P.I. May, V. DeCapio, J. Bowers, J. McLaughlin*

GS02.34 Developing a successful watershed improvement program for stream water quality and habitat improvement in an urbanized area
J.L. Herr, J. Stachura*

GS02.35 Geohydrological model of the relationship aquifer-river from the FFCC-Vado Carranza of the Colorado River with the purpose of riparian zone management
J.E. Rodriguez, J. Ramirez-Hernandez*

GS02.36 Coupled human and natural systems: human behavioural responses to changing ecosystem conditions
E. Toman, E. Nisbet, R. Wilson, J. Martin, E. Irwin, S. Ludsin, et al*

GS02.37 REFORM – Restoring rivers for effective catchment management
A.D. Buijse, I.G. Cowx, A.M. Gurnell, N. Friberg, D. Hering, C. Wolter, et al*

09:30-12:30
Room C222
Chair: A. Saxena

GS07
Sustainability & resilience

GS07.28 Using insights from statistical physics to model common pool resource management
M. Sachs, N. Kunz, Z.A. Hamstead, A. Fajardo*

GS07.29 Ecological design and hydrological function in developing coastal landscapes
D.R. Hitchcock, A.D. Jayakaran, T.H. Epps, K.W. Krauss, T.M. Williams, W.H. Conner, et al*

GS07.30 Evaluating the resilience framework for climate change in a complex world: taking the case of livelihood strategy of village social-ecological system
A. Saxena, K. Shandilya, R. Bailis*

GS07.31 Adapting spatial planning into climate change for the resilience of ecosystem services: an implementation methodology for Istanbul
A. Tezer, A.C.T. Onur, I. Albayrak, O.L. Sen*

GS07.32 The sustainable effects of a biophilic universities: modifying old ivy to become the new "green" ivy
D. Bessette, E. Sawrey*

GS07.33 Arkfab: a bio inspired design for sustainable urban agriculture in the city of Atlanta, Georgia
J. Chaddick, J. Goodman, J. Yen, S.V. Ginkel, R. Nuri, J. Tescher, et al*

GS07.34 The impacts of the big earthquake on Japanese environmental education: the potentiality of socio-ecological system theory and community resilience
*S.F. Furihata**

GS07.35 Responding to extreme climatic events through conservation agriculture by smallholder farmers in Zambia
B. Bwalya Umar, P.H. Nyanga*

GS07.36 Identifying the factors and interactions that drive agroecosystems over sustainability thresholds
B.D. Maxwell, P.G. Lawrence, J. Barroso, A. Bekkerman, C. Jones, F. Menalled, et al*

GS07.37 Ecosystem service and land-cover change patterns in Spain
F. Prieto, V. del Val, J. Montalvo*

09:30-12:30
Room C223
Chair: J.J. Gutrich

GS08
Ecological economics & environmental policy

GS08.23 The 21st century utility: accounting for natural capital
R. Schmidt, D. Batker, J. Harrison-Cox, D. Cosman*

GS08.24 Transforming environmental data into information for policy and resource management
*B. Wee**

GS08.25 Participatory spatial analysis, high resolution remote sensing data and ecosystem services valuation approach as a tool for integrated landscape - based storm water management
*H.V. Voinov Vladich**

GS08.26 A cautionary discussion on ecosystem services valuation
*K.E. von Stackelberg**

GS08.27 Benefits transfer and ecosystem service valuation applications: potential and pitfalls
B. Wyse, D. MacNair*

GS08.28 Water management and native plant communities in Owens Valley, California: a cost-effective economic analysis of maintenance or restoration of alkali meadow communities
J.J. Gutrich, K. Gigliello, K. Vest, A. Elmore*

GS08.29 Ecosystem services valuation by local stakeholders: case study in the San Pedro river basin
D. MacNair, B. Wyse, R. Childs*

GS08.30 Economic and environmental impacts of implementing multiple agro-environmental policies in New Zealand
A.J. Daigneault, S. Greenhalgh, O. Samarasinghe*

GS08.31 Religious response to a pre-historical environmental crisis in South Asia: evidence from the Mahabharata
*K.R. Aiyer**

GS08.32 Impact of the palm oil development in Indonesia
*J.J. Jupesta**

09:30-12:30
Room C210
Chair: D.S. LeBauer

GS09
Ecological modelling

GS09.29 Are smaller bodied fishes more vulnerable to habitat loss?
M.A. Koops, J.A.M. Young*

GS09.30 Evaluation of model size and currency in systems analysis: comparative network environ analysis of carbon and nitrogen model time series for the Neuse River Estuary, USA
S.J. Whipple, B.C. Patten, S.R. Borrett*

GS09.31 Restoring fish habitat: Great Lakes' areas of concern as a model
E.L. Gertzen, S.E. Doka, C.K. Minns, C.N. Bakelaar, A. Doolittle*

GS09.32 Restricted mating sites decrease a strong Allee threshold: a prediction for Asian carps
K. Cuddington, W. Currie, M. Koops*

GS09.33 An R package for ecological network analysis
S.R. Borrett, M.K. Lau*

GS09.34 Hydraulic signatures of ecosystem integrity: a modelling framework for evaluating stream restoration techniques
S.S. Blersch, D.M. Blersch, J.F. Atkinson*

GS09.35 Urbanized ecosystem (UrbEcoSys): proof of concept
*M.R. Iversen**

GS09.36 Unravelling microbial interactions in aquatic ecosystems: an improved model of microbial controls on nutrient processing
Y. Li, M.R. Hipsey, A.M. Waite, G. Gal*

GS09.37 Facilitating feedbacks between ecological models and data to improve ecological forecasts
D.S. LeBauer, D. Wang, R. Kooper, P. Mulrooney, A. Desai, K. McHenry, M. Dietze, et al*

09:30-12:30
Room C211
Chair: M. Kernan

GS10
Climate & global change

GS10.25 Carbon emissions precipitated by inputs to lawn maintenance
*M.T. Hernke**

GS10.26 Boreal landscapes of Northern Eurasia - a global challenge for future?
A. Shvidenko, D. Schepaschenko*

GS10.27 What role does fire play in changing savanna landscapes in Southern Africa?
*A. Devine**

GS10.28 Adaptive strategies to mitigate the impacts of climate change on European freshwater ecosystems
*M. Kernan**

GS10.29 Influence of climate and land use changes on low lying baltic coastal habitats
J. Mantilla-Contreras, I. Möller, T. Spencer, S. Zerbe*

GS10.30 Climate change science communication in Canada: myths, denial and action
S.W. Simard, J. Dordel, J.E. Wilson*

09:30-12:30
Room C212
Chair: M. Liptak

GS11
Ecosystem restoration & ecological engineering

GS11.26 Lessons for ecological restoration in Mediterranean areas: a study of ecohydrological interactions in mine reclaimed slopes
T. Espigares, L. Merino-Martín, M. Moreno-de las Heras, J.M. Nicolau*

GS11.27 Restoring degraded coal-mined landscapes and developing sustainable communities
S.K. Doshi, J.H. Todd, J.A. McInnis*

GS11.28 Carbon dynamics, food web structure and reclamation strategies for Athabasca oil sands affected wetlands: review and summary of a 5-year study
J.J.H. Ciborowski, D.G. Dixon, A.L. Foote, K. Liber, J.E.G. Smits, A. Farwell*

GS11.29 Predicting species presence-absence as a function of edaphic variation: implications for restoration of California native grasslands
K.M. Hufford, S.J. Mazer, J.P. Schimel*

GS11.30 Use of dredged sediment for grass biomass production
A. Karam, L.M.C. Casseus, L.É. Parent*

GS11.31 Restoring ecosystem services in the Cuyahoga River watershed from headwater streams to the Lake Erie lacustuary
*M.A. Liptak**

09:30-12:30
Room C115
Chair: V. Kuusemets

GS14
Ecological complexity, health & knowledge

GS14.8 Fitness-related traits of cultivated vs. wild switchgrass (Panicum virgatum): implications for widespread planting of biofuel cultivars
A.L. Stottlemyer, A.A. Snow, P.M. Sweeney, M.N. Miriti, E.A. Heaton*

GS14.9 Exploring current and future approaches to studying the multiple dimensions of urban ecosystems
A.K. Hahs, M.J. McDonnell, S.T.A. Pickett*

GS14.10 Civic Ecology: can community-based restoration provide ecosystem services in cities?
M.E. Krasny, K.G. Tidball*

GS14.11 Kinda-fuzzy-logic models: understanding competing mental models for environmental education programs
R. Gupta, J. Fraser, M. Krasny*

GS14.12 Social perspectives on the purpose and value of environmental education
J. Fraser, R. Gupta, M. Krasny*

GS14.13 Energy consumption and emissions pattern in the transport sectorof karachi using leap model
*S.S. Ahmad**

GS14.14 Influence of landscape features to the populations of pollinators
V. Kuusemets, A. Liivamägi, J. Luig, I. Forrero*

GS14.15 Building the National Ecological Observatory Network (NEON): infrastructure, field sampling, remote sensing, data processing and citizen science
D. Tazik, S. Berukoff, H. Loescher, T. Kampe, H. Powell, D. Schimel*

GS14.16 Measuring ecological complexity: a meta-analysis of the theory and application of social ecological systems
W.G. Marshall, V.A. Luzadis*

GS14.17 Environmental justice & watershed planning: a methodology and initial results from an assessment in Baltimore County, Maryland
J. Dowdell, N. Pentz, R. Hirsch, S. Stewart, N. Stern*

GS14.18 Innovations in the communication of science of global change
J. Dordel, J.E. Wilson, S.W. Simard*

12:30-2:00 LUNCH
Please be advised that lunch is not included in the delegate registration rate but there are plenty of cafés and restaurants in the area

2:00-2:45
Room C125
Chair: L. Li

CLOSING CEREMONY
End of EcoSummit 2012

Posters

All posters wizth an odd number will be presented from 3:30-5:00 e.g. P1, P3, P5, P7, etc, on Tuesday
All posters with an even number will be presented from 5:00-6:30 e.g. P2, P4, P6, P8, etc, on Thursday

3:30-5:30
Exhibit Hall C

POSTERS 1-100

P1	Evaluating the error associates with population estimation of tiger using different non-invasive techniques: a case study from Ranthambhore tiger reserve *R. Singh*, P. Pandey, S. Parkash Goyal*
P2	Medicinal plants conservation by traditional medicine practitioners (TMPs) in Aiyedaade local government area of Osun State, Nigeria *A-T. Oladele*, G-O. Alade, O-R. Omobuwajo*
P3	Vegetation and species diversity in thumamah landscape area: a managed recreation park *A. Alatar*, M. El-Sheikh, J. Thomas, A. Hegazy*
P4	Promoting conservation and sustainable use through access and benefit sharing systems: analysis of policies, laws and practices of biodiversity-rich, developing/poor economies: case of Ethiopia *A-D. Mekuriaw**
P5	Biogeography of cryptic species of dwarf crocodiles (osteolaemus spp.) *N. Smolensky*, L. Fitzgerald*
P6	Marker-assisted bioprospecting of plant health-promoting microorganisms reveals unexpected diversity and ecological functions *X. Rong*, S-J. Park, S. Debenport, B.B. McSpadden Gardener*
P7	Clonal integration of Fragaria orientalis in reciprocal and coincident patchiness resources *Y. Zhang*, M. Sammul, Q. Zhang*
P8	Evaluation of understorey species diversity in a 10-year Tectona grandis plantation in tropical rainforest in Ile-Ife, Southwestern Nigeria *A.I. Odiwe*, A.A. Alimi, O. Ogunsanwo, R.O. Adewumi*
P9	The influence of decomposer fungi on vascular plant and cryptogams communitystructure developed on coarse woody debris *Y. Fukasawa**
P10	Elevational patterns of species richness and density of rattan palms (aracaceae: calamoideae) in central Sulawesi, Indonesia *S. Stiegel*, M. Kessler, D. Getto, J. Thonhofer, S.F. Siebert*
P11	Growth analysis and physiological features of landrace maize across an altitudinal gradient *B.A. Pace*, H.R. Perales, M.L. Mercer*
P12	Status of atelopus exiguus in The Ecuadorian Andes: potential survival of the chytrid fungus epidemic and analysis of other current threats *C.A. Korfel*, T.E. Hetherington*
P13	Investigating the diet of an endangered carnivorous landsnail using next generation sequencing – a detective story *S. Boyer*, S.D. Wratten, A. Holyoake, R. Cruickshank, J. Abdelkrim*
P14	Interspecific association of dominant tree species in evergreen broad-leaf forest of three gorges reservoir region in China *R.M. Cheng*, W.F. Xiao, R.L. Wang, X.R. Wang, X.H. Feng, Z.B. Liu*
P15	Change in dominant groups of macro-benthic invertebrates in the Yangtze Estuary *W. Liu*, W. He, J. Lu*
P16	Planning for wildlife persistence in the tea plantation landscape of the Nilgiris, India *J.D. Margulies*, T. Thekaekara*
P17	Habitat specialization in the Reed Parrotbill *L. Xiong*, J. Lu*
P18	Effect of different C/N ratios on denitrification of aerobic denitrifying strain Pseudomonas .stutzeri A1501 *S. Liao*, L. Yang, A. Wang*

P19	Unintended consequences: how anthropogenic resources may negatively affect urban songbirds *J.S. Malpass*, A.D. Rodewald*
P20	Autogenic recovery after feral hog (Sus scrofa) disturbance in seepage slope wetlands *M.E. Brown*, D.L. Miller*
P21	Microbial community structure change of tidal wetland soil effected by endosulfan *D. Zhao*, J.J. Lu, X.Y. Li, Y.T. Xu*
P22	Metabolite profiling to predict resistance to phytophthora ramorum in natural populations of coast live oak *A.O. Conrad*, B.A. McPherson, D.L. Wood, S.O. Opiyo, P. Bonello*
P23	Deciphering genetic structure of Symplocos laurina, a montane plant: a glimpse into its past and present *S. Banu*, R.M. Bhagwat, M.D. Lagu, N.Y. Kadoo, B.G. Kulkarni, V.S. Gupta*
P24	Genetic diversity in Symposialocos racemosa Roxb. from Western Ghats, a biodiversity hotspot of India *S. Banu*, R.M. Bhagwat, M.D. Lagu, N.Y. Kadoo, B.G. Kulkarni, V.S. Gupta*
P25	Status of sea turtles in Morocco *M. Aksissou*, W. Benhardouze, M. Tiwari*
P26	Impacts of anthropogenic activities on species diversity in tropical dry evergreen forest of the coromandel coast of peninsular India *B. Swamynathan, D. Ramamoorthy**
P27	Habitat conservation planning for the west virginia northern flying squirrel: an appalachian species gliding towards recovery *K. Mertz**
P28	The Amazonian manatee: migration, adaptation to climate change and the need to transform the human socio-economic system *E.M.A. Arraut*, M.M. Marmontel, M.E.M.S. Sousa*
P29	Biodiversity enhancement and landscape restoration at the Stonehenge World Heritage Site, UK *G. Twiston-Davies*, J. Mitchley, S.R. Mortimer*
P30	Effects of black-tailed prairie dog restoration on shortgrass prairie wildlife in northeastern New Mexico *C.B. Goguen*, D.H. Long*
P31	Wild carnivores vs domestic canids: an emerging issue of protected areas in Chile *F. Astorga*, D. Poo, J. Organ, G. Medina-Vogel*
P32	What do you know and what do you like: assessing the relation between knowledge and attitude toward wild carnivores in central Chile *D. Poo*, F. Astorga, J.F. Organ, G. Medina-Vogel*
P33	Conservation actions in Mexican island territory *K. Santos del Prado Gasca*, M. Caso Chávez, A. Aguirre Muñoz*
P34	Effect of the fence constructed in the border region on the wildlife species populations shared between Mexico and USA *R. List, M. Valdez, C. Lopez, E.M. Peters, P. Zamorano, A. Martinez-Balleste*, et al*
P35	Maize landrace genetic diversity in a changing climate: temperature adaptation in the maize landraces of southern Mexico *M.A. Kost*, E.J. Stockinger, H.R. Perales, K.L. Mercer*
P36	Wildlife tourism in rescue centres in chile: conservation and ethical implications *F. Astorga*, D. Poo, J. Organ, G. Medina-Vogel*
P37	Efficiency assessment of bacterium-assisted root stabilization of arsenic by kale (Brassica oleraceae var. viridis) *S. Ladan*, M.J. Malakouti, P.A. Jacinthe, M. Ghannadi Maragheh*
P38	Constituency, capacity, and conservation: enabling community-based marine stewardship for resource use and conservation *M. Pearce*, A. DeWan*
P39	Genetic structure of smallmouth bass across North America: patterns from two genomes *S.I. Karsiotis*, T.J. Sullivan, C.A. Stepien*
P40	Great Plains wind energy habitat conservation plan *K. Tyrell*, K. Mertz, D. Young*

P41	Natural regeneration of forest: the effect of canopy diversity on diversity of seedlings and saplings and the influence of a new tree generation diversity on a tree species composition in the future *A. Gazda, S. Miscicki*, K. Chwistek*
P42	Landscape units as a tool for the conservation of the Baird's Habitat (Tapirus bairdii) in Guatemala, Central America *M. García*, F. Castillo, R. Leonardo, I. Gómez, L. García*
P43	Microbial complexity in freshwater beaches revealed with pyrosequencing: a public health implications *C.S. Lee*, M. Kim, J.W. Marion, Z. Yu, J. Lee*
P44	Defense varies during leaf development in tropical seedlings, shedding light into herbivory-mediated patterns of biodiversity *S.A. Queenborough*, M.R. Metz, R. Valencia*
P46	Linkages between habitat and aquatic macroinvertebrate biodiversity along the Mekong-Salween Divide: a case study of the Mingyong glacier watershed *H. Fair*, R. Lanno, T.D. Yao, L. Zhang*
P47	Diversity of fishes in the Middle Allegheny River *D.G. Argent*, W.G. Kimmel*
P48	The effects of nutrient contamination on soil, water and vegetation composition and biodiversity on a groundwater-dependent terrestrial ecosystem at Aberffraw, Wales *J. Rhymes*, N. Fenner, L. Jones, H. Wallace*
P49	Selective logging and invasibility of Chromolaena odorata in tropical forests: a case of Bia-Tano Forest, Ghana *R. Adisenu-Doe**
P50	Sustainable management of Parthenium hysterophorus through leachates of highly competitive cohabiting flora *D. Jaggi*, J. Knox, M.S. Paul*
P51	Spatial and temporal changes in the fish communities from a mangrove-dominated creek system near Karachi, Pakistan *S.M. Hussain*, Z Khatoon, R Paperno*
P52	Effects of total submergence or flooding with saline water on growth, physiology and osmoregulation of native and invasive species in wetland forests of Mississippi floodplain *F.I. Iwanaga, A.Y. Yamada, F.Y. Yamamoto**
P53	Disturbance regimes and plant invasiveness in Southern Tamilnadu, India *S.M. Sundarapandian*, S. Chandrasekaran, P.S. Swamy*
P54	The role of UV-B radiation in plant invasions - two interacting aspects of global change? *M. Beckmann*, M. Hock, A. Erfmeier*
P55	The floristic status of seven paddy fields with chronosequences after rice crop closure *K-D. Kim*, N-G. Ku, H-J. Lee, G-G. Lee*
P56	Non-indigenous fish populations in Jamaica: the case of Pterygoplichthys pardalis (Castlenau, 1855) in the Black River System *A.D. Jones*, E.J. Hyslop*
P57	A management proposal to rehabilitate natural grasslands invaded by Hieracium pilosella in the Tierra del Fuego steppe, Southern Patagonia *C. Escartín*, S. Cabeza, M. Collantes*
P58	Counting the costs: the impact of invasion of Australia's tropical savannas by an introduced grass *S.A. Setterfield*, N.A. Rossiter-Rachor, M.M. Douglas, A. Petty, L. Wainger*
P59	Does viral load of VHS virus change over the course of infection in immersion challenged and injection challenged yellow perch? *V. Palsule*, L.R. Pierce, C.A. Stepien*
P60	Detection of Fish Viral Hemorrhagic Septicemia virus (VHSv) using StaRT-PCR: enhanced quality controls with internal standards *L.R. Pierce*, E.L. Crawford, V. Palsule, J. Willey, D. Leaman, et al*
P61	Evolution and biogeography of an emerging quasispecies: diversity patterns of the Fish Viral Hemorrhagic Septicemia virus (VHSv) *C.A. Stepien*, L.R. Pierce*

P62	The influence of established Alianthus altissima stands on the growth and ectomycorrhizal colonization of Quercus rubra seedlings *C. Byrne*, N. Bateman, S.M. Byrd, J.M. Bauman*
P63	The effect of forest dynamics on spontaneous regeneration of non-native tree species in both natural and managed temperate forests *A. Gazda*, K. Chwistek, S. Miscicki*
P65	Integration of climate change into the environmental impact assessment of a construction project in Iran *S. Shokravi*, K. Rezaie, Z. Hassanzade*
P66	In search of cleaner forms of cooking fuels: a case study of selected communities within two districts of Ghana *E.A. Kyei*, E. Acheampong, E.A. Abeney, P. Sarfo-Mensah*
P67	Reading the weather: how local farmers mitigate climate change and variability in the Okavango Delta of Botswana *O. Kolawole, P. Wolski, B. Ngwenya*, G. Mmopelwa*
P68	Negative effects of simulated climate change on non-vascular epiphytes in a montane moist evergreen broad-leaved forest in Southwest China *L. Song*, W-Y. Liu, N. Nadkarni*
P69	Network tracking of carbon metabolism within a city: a case study of Beijing *S.Q. Chen*, B. Chen, S.Y. Zhou, M.M. Jiang*
P70	Dynamics of alaska boreal forest under climate change: a matrix model *J. Liang*, M. Zhou, D.L. Verbyla, L. Zhang, A. Springsteen, T. Malone*
P71	Community led social learning innovation model for adaptation to climate change *G. Cundill*, S. Shackleton, H. Lotz-Sisitka*
P72	The impact of population on carbon emissions in China from 1970 to 2050 *Q-C. Wang**
P73	The carbon balance of a tropical rubber plantation *Q-H. Song*, Z-H. Tan, Y-P. Zhang, L-Q. Sha, J-W. Tang, X-B. Deng, et al*
P74	Does climate change affect bird habitats by reducing food plants? *K. Sung*, Y. Yi, U. Yeo, D. Oh, S. Park*
P75	A comparison of a national sample of environmental health and nursing directors on knowledge, attitudes, and programming activities related to climate change and public health *J.M. Crawford*, B. Polivka, R. Wilson, R. Chaudry, S. Syal, J. Lutz*
P76	Climate change and lake Baikal plankton *L.R. Izmestyeva, E.V. Pislegina, S.V. Shimaraeva, E.A. Silow**
P77	The comparative study of long-term dynamics of lakes Khovsgol and Baikal ecosystems to distinguish between global climate change or regional perturbations effect *O. Jensen, B. Mendsaikhan, B. Boldgiv, E.A. Silow**
P79	Evaluating and displaying risk of tree and bird habitat changes associated with climatic change *L.R. Iverson*, S.N. Matthews, A.M. Prasad, M.P. Peters, G.W. Yohe, M.M. Friggins*
P80	An index to improve the evaluation of clean development mechanism projects to the sustainable development in the world *H.F. Beirão Junior*, M.A. Díaz Mier, L.F. Rivera Galicia*
P81	Modeling the fate of endemic land snail using ecological niche modeling tools *N. Barve*, K.N. Shivaprakash, S. Sen, N.A. Aravind, G. Ravikanth*
P82	Carbon sequestration as a tool for city greening- a case study of Atunrase, a residential estate in metropolitan Lagos, Nigeria *F.A. Williams*, T. Adejumo*
P83	Are all species moving poleward? Climate change signal less clear in distributional changes of Ohio's breeding birds *K.E. Batdorf*, P.G. Rodewald, S.N. Matthews, M.B. Shumar*
P84	The role of environmental health departments in addressing climate change adaptation *S. Syal, R. Wilson*, M. Crawford, J. Lutz*

P85	Leaf area index and albedo relationship in Brazilian Amazon *D.N. Furlan*, M.V.R. Ballester, R.G. Andrade*
P86	Development of the carbon balance model for climate change in Gyeonggi-do, Korea *D.K.L. Lee*, C.P. Park*
P87	Integrative urban and regional climate change adaptation strategies - the way ahead *B. Mueller*, S. Joss, C. Korndoerfer*
P88	Accounting for forest fire risks in the carbon budgets of afforestation projects within the continuous boreal forest *X. Cavard*, J-F. Boucher, Y. Bergeron*
P89	Abnormal growth of the Korean red pine due to climate change in Korea *C.S. Lee**
P90	The legal implications of gas flaring on climate change in Nigeria *O.F. Oluduro**
P91	Can changes in the vegetation structure be used to determine critical thresholds for vegetation in the transition between semi-arid and sub-humid climate? *A. Vergeat, A. Ramos, L. do Rosário, M. João-Pereira, C. Branquinho, P. Pinho**
P92	Lichen functional diversity as a tool for assessing the first effects of climate change: developing an early-warning ecological indicator *P. Matos, P. Pinho*, E. Llop, S. Munzi, C. Branquinho*
P93	Habitat conservation plans and climate change *P. Bernazzani*, B. Bradley, J. Opperman*
P94	Procedural and distributive justice in REDD+: equity considerations at a local level *J. Lee**
P95	Evidence of bioavailable dissolved organic carbon in waterways disturbed by thermokarst and fire in a permafrost dominated landscape *J.R. Larouche*, B.W. Abbott, J.B. Jones, W.B. Bowden*
P96	Should carbon sequestration be delayed? *X. Tian**
P97	Analysis of the climate change mitigation potential of the Brazilian agriculture *N.A. Gomes, M.O. Gavira**
P98	Fast-action and win-win strategies for climate change mitigation *R.D. Hottle**
P99	Adaptation to climate change: housing orientation of poultry units in Queretaro, Mexico *M. Izquierdo-Suzan*, A. Guevara-Escobar, H. Suzan-Aspiri*
P100	Ecological processes, landscape systems, and climate change - adaptation planning evaluated *C. Frederick**

3:30-5:30
Exhibit Hall C

POSTERS 101-200

P101	Bridging hazards and climate for resilient natural resource management *E. Toman*, H. Brenkert-Smith*
P102	Impact of regulatory fragmentation on species movement in response to climate change *J.L. Carroll*, J.S. McLachlan*
P103	Predicting impacts of climate change on grassland ecosystems in the Canadian prairies *H. Wang*, Y. Bai, Y. He, A. Iwaasa, V. Baron, M. Schellenberg, B. McConkey*
P104	Wetlands of the NW of Morocco *M. Aksissou**
P105	Heavy metals accumulation in the mantle of the common cuttlefish sepia pharaonis from the Arabian Gulf *S. Al Farraj*, A. El-Gendy, H. Alyahya, M. El-Hedeny*
P106	Effects of watershed urbanization on fish communities in coastal bayous, North Central Gulf of Mexico *D. Grigas, J. Cebrian, B. Ehmen, Y. Chen*, et al*
P107	Polychlorinated biphenyls in bottom sediment and water from hydroecosystems of Armenia *A. Aleksandryan*, A. Khachatryan*

P108 Mechanistic linking of stomata conductance to soil moisture using a tree level hydrodynamic model
A. Matheny, G. Bohrer*

P109 Rubber plantations act as water pumps in tropical China
Z-H. Tan, Y-P. Zhang, Q-H. Song, W-J. Liu, X-B. Deng, J-W. Tang, et al*

P110 Characteristics of runoff Variation in Wuyuer-Shuangyang river watersheds and their influences on Zhalong Wetlands (1956-2000)
S. Tong, X. Lu, Z. Zhang, X. Song, M. Jiang*

P111 Characteristics of hydrology in Ruoergai wetland of the Eastern Tibetan Plateau
Z.Z. Zhou, G.Q. Qin, K.S. Song, L.Z. Zhang*

P112 The soil hydrological characteristics of two typical forest communities in Minjiang upper reaches of Sichuan province, China
J. Xue, Y. Wu, C. He*

P113 Linking hydrology, ecology, and livelihood sustainability in East African river catchments
M.E. McClain, A.A. van Dam, G.M. Gettel, K. Irvine, N. Kitaka, J. Kipkemboi, et al*

P114 NEON, monitoring ecological change at a continental-scale: proto-typical aquatic systems monitoring
M. Fitzgerald, K. Goodman, C. Roehm, E. Richer, S. Parker, R. Utz, et al*

P115 Stormwater quality in a mixed land-use watershed, Springfield, Ohio, USA
J.B. Ritter, B.A. Johnson, K.E. Minter, K.A. Shaw, et al*

P116 Duration of initial saturation as an ecohydrological control on wetland plant species success
*T.P. Duval**

P117 Estimation of water balance in La Ciénega de Santa Clara during an hydrologic cycle
M. Lomeli, J. Ramirez-Hernandez*

P118 Conservation of threatened plant species in the Eastern Saudi Arabia
L. Bidak, S. Heneidy*

P119 Aquatic-to-terrestrial contaminant fluxes in the scioto river basin, Ohio
J.M. Alberts, M.S.P. Sullivan*

P120 An automated approach for the identification of land use options to promote bird diversity on agricultural land
J. Timmis, A. Nellis, R. Winspear, G. Siriwardena, D. Baker, P. Edwards*

P121 Structures change, factions variation and its ecological effects under terrestrialization and paludificaiton successions of wetland systems in Sanjiang Plain, China
X.G. Lu, Z.S. Zhang, Y.C. Zou, S.Z. Tong, X.H. Liu, Z.S. Xue, et al*

P122 Urban stream geomorphic stability increases fish abundance and diversity
L.O. Rieck, S.M.P. Sullivan*

P123 Plant productivity and its response to water available under karst conditions, China
Y.Q. Huang, C.X. He, L. Mo, Z.F. Zhang, X.K. Li, D.N. Zhang, et al*

P124 Open model for climate behaviors
*J. Rising**

P125 Influences of riparian land use on fish-centered food webs in a large warmwater river system (Scioto and Olentangy Rivers, OH, USA)
A. Kautza, S.M.P. Sullivan*

P126 Tri-trophic underground symbiosis between a weevil, bacteria and a desert plant
O. Shelef, Y. Helman, A.L.L. Friedman, A. Behar, S. Rachmilevitch*

P127 Disturbance, connectivity, and scale: the role of wildfire in shaping structure and function of stream ecosystems in Yosemite National Park, CA, USA
B.K. Jackson, S.M.P. Sullivan*

P128 Linking adjacent landscape characteristics and riverscape heterogeneity in the Scioto River Basin, Ohio, USA
P. Tagwireyi, M.S.P. Sullivan*

P129 Spatial distribution of the mistletoe Psittacanthus calyculatus and its interactions with hosts and dispersers in a tropical deciduous forest
I. Arce-Acosta, M. Córdova-Athanasiadis, H. Suzán-Azpiri, O.R. García-Rubio*

P130 Spatiotemporal complexity in systematic wetland restoration planning
*G.R. Evenson**

P131	Forest diversity & plant-soil feedback: the effects of mature trees on seedling survival *S.M. Wolf*, I. Ibanez*
P132	The effect of habitat burning on tsetse fly populations in Cameroon *L. Wagner*, R. Garabed*
P133	Macroecology of Homo urbanus: social and environmental consequences of the urban transition *J.R. Burger**
P134	Metaphyton small-scale mat conditions and their effects on diatom epiphytes *L.L. Saunders*, S.S. Kilham, G.W. Fairchild, R. Verb*
P135	Rewards for agro-biodiversity conservation: an analysis of participation in jambi's conservation agreements for rubber agroforests, (Sumatra) Indonesia *G.B. Villamor*, Q.B. Lee, P. Vlek, M. van Noordwijk*
P136	Aquaponics: a portable farming system for producing organic products without soil *S. Rapi**
P137	Investing in our ecological infrastructure: the economic rationale for restoring degraded ecosystems *S. Alexander, J. Aronson*, J. Blignaut, P. Brancalion, M. Calmon, J. Farley, et al*
P138	The business case for monitoring a company's consumption and production of ecosystem services *R-W. Dunford**
P139	Doing material and energy flow analysis with GRI indicators *V.D. Devenin**
P140	Is there a transition of growth towards less energy dependence path? Exploring the limits of decoupling effects *P. Kalimeris*, K. BIthas*
P141	A research about the relationship between economic assets and natural assets in a national level: an application of the original AGE method *B. Han*, J. Huang, R. Wang*
P142	Tourism growth and waste disposal generation: an IPAT-type model for Mallorca based on stochastic differential equations *I.R.A. Arbulu*, J. Lozano, J. Rey-Maqueira*
P143	Heterogenous developers, spatial interactions, and land development outcomes under uncertainty *M.K. Gnagey*, E.G. Irwin*
P144	Increasing land fragmentation and ecological footprint in U.S. exurbia - evidence from a new measure of leapfrog development *W. Zhang*, D. Wrenn, E.G. Irwin*
P145	Cooperative institutions for sustainable rural development under CDM forestation in arid irrigated regions *U. Djanibekov, A. Bhaduri, N. Djanibekov, G. Villamor*, A. Khamzina*
P146	Rural roads and other rural infrastructural needs in Imo State: a look at the private sector capital infusion initiative *U.I. Uwazie, M.N. Obasi**
P147	Seasonality effect on milk and milk product supply in Central America *A-A. Duron Benitez*, W-C. Huang*
P148	Landscape level ecological integrity indices: an application to the Great Basin *S.K. Mishra*, R.P. Raunikar*
P149	Effects of soil compaction on hydraulic architecture characteristics of three two-year old seedling species *Y. Wu*, S. Liu*
P150	Response of advance regeneration and mature tree layer after removal of overstory lodgepole pine in Central British Columbia *C.B. Hawkins, A. Dhar**
P151	Triclosan and its relationship to antimicrobial resistance in Alum Creek *K. Giesting*, K.D. Svitana, J.A. Bennett*
P152	Assessing soil quaity for urban agriculture in the North Central U.S. *J. Beniston*, R. Lal*
P153	Strategy for resolving low dissolved oxygen and methylmercury events in northern Suisun Marsh *S. Siegel, P. Bachand, D. Gillenwater*, S. Chappell, B. Bergamaschi, M. Stephenson, et al*

P154	The productivity process of scots pine as integrative index of pine forest vitality in forest-steppe predbaikalia *V.F. Zabuga*, G.A. Zabuga*
P155	Statistical assessment of wetland soil development using reference wetland soil properties *K. Sung*, Y. Yi, J. Lee, S. Park*
P156	The wintering habitat characteristics of the common teals in Huajiang Wetland, Taiwan *C.B. Hsu, H.H. Tao, G.W. Huang, C.P. Chen, H.L. Hsieh**
P157	Theory study on station location design for fishery-independent survey and comparison of sampling and estimating for marine fishing production assessment *Y. Liu*, J. Lu*
P158	Assessment of indicators for analysis of changes in tropical wetlands environmental services *A.R. Moraes*, R.S. Bernardes*
P159	Biological indication to determine the extent of disturbed ecosystems *Z-M. Biyasheva*, Z-D. Kenzhyn, A-B. Kerymkulova, A-E. Iskakova, N-V. Magai, A-B. Bigaliyev*
P160	Developing environmental indicators for the recovery of severely disturbed landscapes in Oaxaca, México *J. Ruiz-Vega*, T. Aquino-Bolaños, J.R. Delgado-Gamboa*
P161	Environmental impacts on the Galapagos islands: identification of interactions, perceptions and steps forward *F.J. Benítez-Capistrós*, J. Hugé, N. Koedam*
P162	Introducing a biodiversity assessment tool for the greater mekong subregion - the impact of rural development on species diversity *M. Cotter*, J. Sauerborn*
P163	A spatially-explicit multiscale application of Quadratic Entropy Index in the analysis of landscape pattern *E.R. Diaz-Varela*, J.V. Roces-Diaz, P. Alvarez-Alvarez, C.J. Alvarez-Lopez*
P164	Studies on the physico-chemical characteristics of water samples of Manasbal lake, Srinagar, J&K, India *J.A. Dar, M.F. Mir, M.A. Bhat, S.M. Sundarapandian**
P165	The relations between distribution of valuable meadows and butterflies in Estonia *K. Kask*, V. Kuusemets, J. Raet, J. Luig, R.G.H. Bunce*
P166	Influence of forest patches on leaf breakdown and macroinvertebrate communities in agricultural landscapes *C.W. Goss*, P.C. Goebel*
P167	Time series trends of MODIS EVI phenology and NDVI layers for land cover change monitoring *M. Cervantes Jiménez*, A. Guevara-Escobar, P.L. López-Cuellar*
P168	The impact of environmental education programs on stream ecology: effects of frequent anthropogenic disturbance on benthic macroinvertebrates in lotic waters *J.P. Bossley**
P169	Parasite as a leading indicator for food web robustness *H.W. Chen*, W.C. Liu, K.T. Shao*
P171	Field experimental study of river flow andrainfall effects on chlorophyll-a in Apalachicola River *W. Huang*, E. Johnson, P. Hsieh, J. Cherrier, K. Tucker*
P172	Are ecological processes in experimental systems scale-dependent? *A. Koch*, T. Eggers, A. Kratochwil, J. Mantilla Contreras*
P173	Temporal changes in arbuscular mycorrhizal communities on a highly invasive plant, Vincetoxicum rossicum (Apocynaceae) *N.J. Day*, P.M. Antunes, K.E. Dunfield*
P174	Traditional ecological knowledge of indigenous ethnic minorities on bamboo uses: a case in Cat Tien Biosphere Reserve, Vietnam *D.T. Sang*, K. Ogata*
P175	Wasting away: consumer ecological knowledge and drought response *G. Hustvedt, E. Dascher**
P176	Environmental beliefs and environmental behaviour: exploring segmentation as a means for engaging learning *J.E. Heimlich**
P177	Urban resiliency: ecological knowledge development in Cleveland students through Green Corps *G. Unger, T. Auch**

P178	Incorporating wetland delineation skills into an undergraduate Wetland Ecology course *M.S. Durrett**
P179	Can or should ecology be a unified science? Implications for an undergraduate curriculum *M.H.H. Stevens**
P180	Relative competitive abilities of cultivated vs. wild switchgrass (Panicum virgatum): implications for new biofuel cultivars *D. Palik*, A. Snow, P. Sweeney, M. Miriti, E. Heaton*
P181	An unknown neighbor: the cultural myths concerning the lesser grison *D. Poo*, F. Astorga, J.F. Organ, G. Medina-Vogel*
P182	Geochemical evaluation on environmental load of persistent organic compounds in coastal area *J. Hara**
P183	Science and data products of the National Ecological Observatory Network (NEON) *H. Powell, S. Berukoff, T. Kampe, H. Loescher, D. Schimel, D. Tazik**
P184	Testing the growth/differentiation balance and systemic induced resistance hypotheses with Austrian pine *P.W. Sherwood*, D.A. Herms, R.C. Hansen, D.F. Cipollini, P. Bonello*
P185	Carryover effects of larval digestive plasticity in postmetamorphic red-eyed treefrogs, Agalychnis callidryas *S.S. Bouchard*, C.R. Jenney, K.M. Warkentin*
P186	Forging ecological knowledge from the cauldron of big data *B. Wee**
P187	Building stewardship in high school science classrooms with university graduate students: an environmental science learning community at the land-lake ecosystem interface *C.A. Stepien*, R. Lohner, A. Haponski, L. Pierce, T. Sullivan*
P188	The establishment of a baseline for the Mexican portion of the Gulf of Mexico to identify the potential impacts of the British Petroleum oil spill *M. Caso*, E. Peters, V. Gutierrez Avedoy*
P189	Heat-waves have indirect effects on the roots of white oak (Quercus alba) *N.E. Lightle*, H.A. Heckathorn*
P190	Responses of Conocarpus lancifolius to abiotic stress in semi-arid land of Kuwait *A. Redha, P. Suleman, R. Al-Hasan*, M. Afzal*
P191	Rescuing the ecological knowledge about secondary forests in Mata Atlântica, Brazil *A. Siminski*, K.L. Santos, A.C. Fantini, M.S. Reis*
P192	Education to help save the planet: exploring the role of citizen science and civic ecology in cultivating environmental values *L. Briggs*, N. Trautmann, M. Krasny*
P193	Evaluation of urban land use and ecosystem services change of Changzhou city, China *F. Li*, R.S. Wang, D. Zhao*
P194	Considering gases to be in the aqueous state impacts energetic calculations for methane-producing and other microbial reactions *T.J. Hackmann*, J.L. Firkins*
P195	Low-carbon eco-industrial park and its evaluation framework *J. Qi*, B. Chen, W. Bai, L-X. Xu, F. Ni, J-H. Sang, et al*
P196	Determining forest structure at an individual-tree scale using remote-sensing-based methods *W.T. Kenny*, G. Bohrer, K. Meyer, S. Garrity*
P197	Simulating the dynamics of forest ecosystems using individual-based model EFIMOD and standard forest inventory data *V.N. Shanin*, A.S. Komarov, S.S. Bykhovets*
P198	Semi-automated delineation of core boundaries of potential suitable habitats of tree species *M.P. Peters*, S.N. Matthews, L.R. Iverson, A.M. Prasad*
P199	Romul - model of soil organic matter dynamics based on morphology data from organic and mineral soil horizons *A.S. Komarov*, Y.S. Khoraskina, M.G. Bezrukova, S.S. Bykhovets*
P200	Epiphyllous liverworts presence probability in relation to evergreen forest based on hyper-temporal imagery *Y. Jiang, C.A. de Bie, T. Wang, A.K. Skidmore, X. Liu, X. Shao**

3:30-5:30
Exhibit Hall C

POSTERS 201-300

P201	Predicting dissolved oxygen during flood pulses and base flow in an urban river after dam removal in central Ohio, USA *Y. Zhang*, L. Zhang, W.J. Mitsch*
P202	The integration of microbial functioning into carbon cycle modelling *C.T. Berridge*, A.J. Dolman*
P203	Should I come back or should I go on? A study of Lévy walk models of central-place foraging *B.B.S. Niebuhr*, M.G.E. da Luz, E.P. Raposo, G.M. Viswanathan, M.R. Pie*
P204	Predicted future climate change impact on the distribution of endangered, endemic Hibiscus brackenridgei on Oahu *C. Rovzar*, T.W. Gillespie*
P205	Impact of spatial variability of forest aboveground biomass estimation in Maine using UAVSAR and ALOS PALSAR L-band radar *C.M. Robinson*, S.S. Saatchi, M. Neumann, T. Gillespie*
P206	Species distribution modeling for the eastern massasauga rattlesnake (sistrurus catenatus catenatus) *E. McCluskey*, T. Hetherington*
P207	Network analysis of the urban water metabolism of Wilmington, North Carolina: evaluating alternative recycling scenarios for city sustainability *J. Mejaski*, S.R. Borrett*
P208	The limiting factors of the N and P removal rate of wastewater constructed wetland treatment systems *J.J. Lu, B.B. Jiang*, H.Y. Zhang*
P209	Scaling wetland processes to mesocosm experiments: reviewing 18 years of experience *L.Z. Zhang*, W.J.M. Mitsch*
P210	Soil nutrients of the main shrub types in Three Gorges Reservoir area in China *R.M. Cheng*, W.F. Xiao, X.H. Feng, R.L. Wang, Z.B. Liu, X.R. Wang, et al*
P211	Re-establishing an ecologically healthy relationship between nature and culture: the mission and vision of the society for ecological restoration *S. Alexander, J. Aronson*, A. Clewell, K. Keenleyside, E. Higgs, D. Martinez, et al*
P212	Degradation in arid rangelands of Hadj Mecheri (Algeria): pastoral practices or climate change? *R. Hammouda*, D. Nedjraoui*
P213	Integrated renewable energy systems for sustainable energy, water and crop production in arid and semi-arid regions: modelling, control strategies, agricultural and land management practices *N.J. McWilliam**
P214	Changes in soil physico-chemical properties and vegetation following grazing exclusion at a semiarid desertified sandy site in Inner Mongolia, Northern China *Y-Q. Li*, X-H. Zhou, J-R. Brandle*
P215	Treatment performance of domestic wastewater in a tropical constructed wetland: efficiency and reuse potential *J.S. Butler**
P216	Soil seed banks dynamics in alpine grasslands at different degradation levels in Qinghai-Tibetan Plateau *Y.Y. Li*, S.K. Dong, L. Wen, X.X. Wang, Y. Wu*
P217	Rehabilitation of degraded steppe rangeland: results of a participatory pilot experiment in an Algerian semi arid steppe *R. Hammouda*, B. Bouchareb, D. Nedjraoui*
P218	CH_4 and N_2O emissions from paddy soil fertilized with residue of dry thermophilic anaerobic digestion (RDTAD) *S. Zhou*, G. Muto, S. Riya, M. Hosomi*
P219	Scale-dependence of plant richness and vegetation-environment relationship along a gradient of dune stabilization in Horqin Sand land, Northern China *X.A. Zuo*, X.Y. Zhao, Y.Q. Li, S.K. Wang*
P220	Trade-off of sexual and asexual recruitment in degraded and artificially restored grasslands in alpine regions of Qinghai-Tibetan Plateau *L. Wen, Y.Y. Wang, S.K. Dong*, X.X. Wang, Y. Wu*

P221	Pollution and potential ecological risk assessment of heavy metals in Lake Donghu, Central China *T. Ntakirutimana*, J. Guo, X. Gao*
P222	The response of plant communities to soil moisture and salinity conditions in typical wetlands of Beijing area *T.Y. Ma*, D. Hu, J.M. Hong*
P223	When and why to intervene: culling native species for restoration *M. Maron**
P224	Role of waterfront geoenvironment as habitats in the activities of crabs, bivalves, and birds for biodiversity restoration *S. Sassa*, Y. Watabe, S. Yang, T. Kuwae*
P225	The characteristics of the soil seed bank in Yeyahu Lake degraded wetlands research, Beijing *J.M. Hong*, G.P. Shi, L.X. Dang*
P226	Biodiversity and water quality variation in constructed wetland of Yongding River system, Beijing *G.S. Du*, C. Liu, B.B. Huang, H.M. Li*
P227	Restoration engineering of degraded wetland in Beijing area and the following ecosystem succession monitoring *J.M. Hong*, T.Y. Ma, X.D. Li*
P228	Relationship between soil enzyme activities and structural characteristics of herbaceous layer in different plantations in Karst area *J. Xue*, Y. Wu, C. Liu*
P229	Function of microbes under environment-friendly JW pavement *L-F. Fan, W-L. Chao, S-F. Wang, J-W. Chen, C-P. Chen*, H-L. Hsieh*
P230	An integrated management strategy towards healthy mangrove ecosystem *H.L. Hsieh*, S.S. Shih, C.P. Chen*
P231	Influences of grassland degradation on quality of soil and plant in alpine region of Qinghai-Tibet Plateau *X.X. Wang*, S.K. Dong, L. Wen*
P232	Habitat restoration for salmon (Oncorhynchus spp.) in Washington Harbor *H. Meng*, J. Lu, T. Ron*
P233	Wetland bird habitat restoration in the Yangtze river estuary: a test of the hypothesis that biodiversity increases as habitat types increase *L. Xiong*, J. Lu*
P234	The restoration of the mouth of the Housatonic River, CT: a reference site *J. Gazerro*, J.H. Mattei, M.A. Beekey, T. Leenders*
P235	Do exotic plants act as facilitators or competitors in the restoration of native plant communities in stressful environments? The stress gradient hypothesis in New Zealand's coastal sand dunes *S. Krejcek*, S. Hartley, D. Bergin, J. Sullivan*
P236	Platform and database for information decision, management and sharing of Ecological Shandong Province *W.H. Guo**
P237	Clover groff stream restoration project, Columbus, Ohio *N.A. Seger, S. Phillips**
P238	Negative net biodiversity effect on the efficiency of vegetation barriers to trap sediment in marly gully floor under ecological restoration *A.E. Erktan*, L.C. Cécillon, F.R. Rey*
P239	Initial seedling densities following a variable retention harvest in a mixed-pine forest ecosystem of the Eastern Upper Peninsula of Michigan *P.A. Nyamai*, P.C. Goebel, D.M. Hix, R.G. Corace III*
P240	The restoration of the mouth of the Housatonic River, CT: the intertidal zone *R.T. Parcell*, J.H. Mattei, M.A. Beekey, J.E. Gazerro, A. Leenders*
P241	Recreational enhancements of an urban stream and their potential for stream restoration *J. Ritter*, J. Blumenschein, A. Evelsizor, K. Minter, C. Rigsby, K. Shaw, et al*
P242	Effect of provenance and plantation density on growth patterns of one Pinus pseudostrobus Lindl. population in Mexico, under climate change scenarios *V.H. Cambron*, H. Suzan*

P243	Restoring mixed-grass rangeland with native grass and legumes: finding the right mix *J. Mischkolz*, E.G. Lamb*
P244	Pathways for volatilization from the wetland rhizosphere *M.C. Reid*, P.R. Jaffe*
P245	Manipulation of lake water level and remediation of aquatic vegetation *G.X. Wang*, W.L. Wang, X.D. Wu*
P246	Importance of instream wood characteristics for developing restoration designs for channelized agricultural headwater streams *P.C. Smiley Jr.*, E. Gates*
P247	Dyeing of cotton with Holarhena antidysentrica Linn leaf extract *A. Deshmukh**
P248	Environmentally mediated top-down control of algal proliferation in Florida's springs *D.M. Liebowitz*, T.K. Frazer, J.B. Heffernan, L.V. Korhnak, M.J. Cohen*
P249	Design of wetland assistant treatment system for river water quality and analysis of feasibility - a case study of Yitong River *C.G. He, Y.J. Mi, J.Y. Wang*, H.F. Bian, L.X. Sheng*
P250	Evaluating restoration techniques in gypsum quarry slopes in SE Spain *M. Ballesteros*, A. Iriarte, A. Foronda, R. Aguilera, F. Martín-Peinado, E.M. Cañadas, E. Fernandez-Ondono, J. Lorite, et al*
P251	What we can do with the constructed wetland vegetable biomass? *E. Comino*, V. Riggio, M. Rosso*
P252	Public perceptions of papyrus: establishing priorities for the restoration and management of wetlands at Lake Naivasha, Kenya *E.H.J. Morrison*, C. Upton, D.M. Harper*
P253	Creation of the National Ecology Institute as a restoration project in Korea *C.S. Lee**
P254	Effects of plant diversity on early developments of structural and functional attributes in created mesocosms mitigation wetlands *C.A. Ahn, L.D. Williams*, R. Peralta, S. Dee, B. Jang*
P255	Restoration ecology of wild turkeys in the Mississippi alluvial valley: demography and movements *M.K. Marable, J.L. Belant, D. Godwin, G.M. Wang**
P256	Energy eco-engineering by waste treatment of scale livestock and poultry farms *S.X. Tian*, Z.J. Sun*
P257	Plant functional response to desertification and land degradation in Mediterranean woodlands – contribution to restoration strategies *A. Nunes*, S. Tápia, P. Pinho, O. Correia, C. Branquinho*
P258	Remediation of Cd contaminated soil by earthworm-plant-microorganism ecosystem *S.M. Ma*, Z.J. Sun, L.Y. Lv*
P259	Binational monitoring program for the Santa Clara wetland: after one year of the operation of Yuma desalination plant *E.M. Peters, A. Martínez-Ballesté, K. Flessa, E. Glenn, J. García-Hernández, F. Zamora*, O. Hinojosa, et al*
P260	Improving everglades water quality with the compartment b stormwater treatment area *J.E. Siegfried*, J. Chamberlain*
P261	Urban soil heterogeneity in New York City parkland *S. Sritrairat*, P.T. McPhearson*
P262	Algal cultivation for phosphorus recapture in lower Great Lakes watersheds *D.M. Blersch*, E.A. Hennessey, P.S. Byrley*
P263	Soil organic carbon development in restored wetlands of the Eastern Tibetan Plateau *L.Z. Zhang*, M.L. Lv, Z.Z. Zhou*
P264	Future urban forests: long-term effects of ecological woodland restoration in New York City parks *L.R. Johnson*, S.N. Handel*

P265	Hydrologic modelling of tidal creeks for mangrove forest restoration *D.E. Marois*, W.J. Mitsch*
P266	The centennial marshes of San Francisco Bay: origins, characteristics, and opportunities for ecological enhancement *D. Gillenwater*, S. Siegel, K. Borgmann, G. Block*
P267	Energy production and water quality improvement by means of human-constructed harvested wetlands *N.G.F. Reaver*, T. Allman, K.M. Woodling, Z.A. Reaver, A.T. Doerr, B.P. Campana, et al*
P269	Effects of plant variation and bacterial isolate addition on wetland effectiveness in treating wastewater: insights from microcosm experiments *D.N. Choesin*, E. Laelasari, P.M. Triawan, K. Bone, B.M. Anggoro, H. Halim*
P270	Towards restoration of an eastern deciduous forest by 60 years of fenced deer exclusion: increased insect abundance and diversity *E.H. Yerger*, M.J. Chips, A.N. Hervanek, T. Nuttle, A.A. Royo, W.P. Carson*
P271	Nutrient limitation and avaialbility in the Southern Florida slash pine forest after a fire *C.T. Nguyen*, Y.C. Li, B. Schaffer, J.R. Snyder, R. Munoz-Carpena, N. Comerford*
P272	An application of an analytical storm water quality model to an integrated subtropic wetland system *B.B. Jiang*, W.J. Mitsch, C. Washburn, L. Zhang*
P273	Phytoextraction of phosphorus for ecological restoration: application of soil additives *S. Schelfhout*, T. Du Pre, G. Haesaert, J. Mertens, A. De Schrijver, K. Verheyen, S. De Bolle, et al*
P274	Mineralogical characterization of contaminated fluvial sediments *A. Jaouich, A Karam*, J. Lafond, et al*
P275	Effect of some indigenous woody plantations on soil carbon sequestration in a rehabilitated Coal mine habitats in a dry tropical region, India *A.N. Singh**
P276	Restoring forests and vernal pools through the wildlife habitat incentives program (WHIP) special projects, NRCS *C.R. Morrow*, J.T. Watts*
P277	Impact of enrichment planting on soil fertility status of degraded forestland in Malaysia *A. Abdu*, D.S. Karam Singh, H. Abdul Hamid, S. Jusop, Z. Ibrahim, N.M. Majid*
P278	The contribution of multi-storied forest rehabilitation technique on productivity and carbon sequestration of planted tropical forest *A.H. Hazandy*, A. Arifin, I. Heriansyah*
P279	Current status of the wild medicinal plants in the western Mediterranean coastal region, Egypt *L. Bidak*, S. Heneidy, K. Shaltout, Y. El-Soudany*
P280	Vertebrate fauna as perceived by local farmers: ecosystem service or dis-service? *M.E. Periago*, D.M. Tamburini, R.A. Ojeda, D.M. Cáceres, S.M. Díaz*
P281	Habitat additions and the effects observed on bees, natural enemies and pests in Ohio pumpkin crops *B.W. Phillips*, M.M. Gardiner*
P282	Comprehensive assessment of urban soil quality by soil degeneration index as influenced by soil sealing in Beijing, China *D. Zhao*, F. Li, R.S. Wang*
P283	Mulch effects on squash and pollinator (peponapis pruinosa) performance *C. Splawski*, E.E. Regnier, S.K. Harrison, M.A. Bennett, J.D. Metzger*
P284	Using remote sensing and GIS to analyze LULC change for its impact on ES *M.M.L. Lin**
P285	Ecosystem service evaluation in riparian habitats: the case of the Piedra River (NE Spain) *M.R. Felipe-Lucia*, F.A. Comín*
P286	The monitoring and evaluation methods of forest resources and forest ecological benefits in three gorges reservoir area *D. Yongfeng*, Z. Changgui*
P287	Differentiating the impacts of economic and climate changes on ecosystem services provision in mountain regions *S. Briner*, C. Elkin, R. Huber*

P288	Insect-mediated ecosystem services in maine's lowbush blueberry (Vaccinium angustifolium) agro-ecosystem *M. Jones*, F.A. Drummond*
P289	A framework for ecological and economic valuation of ecosystem services associated with host-affiliate relationships *D.E. Spooner**
P290	A microbial alternative to chemical fertilizers: plant growth promotion by symbiotic algal & bacterial inoculants *S-J. Park, B.B. McSpadden Gardener**
P291	Importance of groundwater upwelling in an urban river ecosystem *R.S.W. Yam, Y.T. Fan**
P292	Investigating classification systems on stream habitats and aquatic biota at multi-spatial scales: using Maryland Biological Stream Survey data as an example *R.S.W. Yam, Y.C. Chin**
P293	Does ecosystem service valuation reflect importance of habitat quality and biodiversity in constructed wetlands? *R.S.W. Yam, K.P. Huang*, W.C. Peng*
P294	Evaluation of ecosystem services under land use scenarios-a case study in Japan for finding good valance of biodiversity conservation and climate change prevention *K. Shoyama**
P295	Pollination and seed set of Trifolium repens in an urbanization gradient *H.A.F. Verboven*, R. Brys, M. Hermy*
P296	Characterization of ecosystem services for land use decisions *M. Ferrari*, D. Geneletti*
P297	Comparing theory and practice of ecosystem services in planning and management projects *M. Ferrari*, D. Geneletti*
P298	A multiscale analysis of ecosystem services provision and their relation with landscape pattern in agroecosystems from Northwest Spain *J.V. Roces-Díaz*, E.R. Díaz-Varela, V. Gómez-Pardeiro, P. Álvarez-Álvarez*
P299	Biomass and carbon estimation of Eugeissona tristis *A.N. Ainuddin*, A.M. Syafinie*
P300	Assessing trade-offs between different ecosystem services under different climate scenarios *S. Briner*, A. Grêt-Regamey, P. Bebi*

3:30-5:30
Exhibit Hall C

POSTERS 301-400

P301	Opportunities to improve ecosystem services in intensively managed southern pine-dominated landscapes *D.C. Bragg**
P302	Ozone effects on ecosystem services at Great Smoky Mountains National Park *D.H. Bingham*, E.M. Porter*
P303	Carbon, nitrogen, and phosphorus cycling potential of post-industrial Great Lakes vacant lands *W.E. Auch*, S. Albro, G. Unger*
P304	Coastal SolVES: adapting a terrestrial-based GIS tool for the non-monetary, spatial evaluation of ecosystem services in a coastal environment *A.W. Coffin*, Z.D. Cole, R.A. Swett, B.C. Sherrouse*
P305	Using vermicomposting as a tool for ecological conversion of paper mill solid waste *B. Sahariah, L. Goswami, I. Sinha, P. Sharma, S.S. Bhattacharya**
P306	Size matters: the contribution of mega-infauna to the food webs and ecosystem services of an Oregon Estuary *T.H. DeWitt*, S.R. Pacella, C. Folger, P.M. Eldridge*
P307	Dynamics of a performance-based index to assess multiple agro-ecosystem services at a watershed scale: a simulation study *A. Jaradat*, G. Boody*
P308	Participation in and efficiency of urban food production *J. Reeves*, P. Grewal, J. Kovach, M. Kleinhenz, J. Sharp*
P309	The importance, management and status of harvested animals in the Arctic tundra ecosystems *P. Fauchald*, D. Ehrich, J. Schmidt, K. Klokov, F.S. Chapin III, D. Berteaux, et al*

P310	The national atlas for sustainability- mapping ecosystem services indicators for the US *A.C. Neale*, M.H. Mehaffey, D.R. Mangis*
P311	Critical areas identification for water environmental services payment in the Valle de Bravo Catchment, Mexico *A. Guevara-Escobar*, M. Jimenez-Cervantes, H. Suzan-Aspiri, E. Gonzalez-Sosa*
P312	Insect scavenging as indicator of ecosystem services at Brazilian Savanna invaded and not invaded by alien grasses *A.O. Latini*, F.M. Lanza-Souza, M.S. Moura, M.C. Ferreira, D.C. Resende, G.C. Castro, et al*
P313	Soil ecosystem services in conventional and organic arable fields along a gradient of landscape complexity in southern Sweden *A. Williams*, K. Hedlund*
P314	ESCALATE - an interdisciplinary research school on ecosystem services *M. Beckmann*, R. Seppelt*
P315	Integrating assessment method of ecosystem services based on objective supply and subjective value for biodiversity offset banking: a case of hypothetical restored forest ecosystem in Aichi prefecture, Japan *T. Ota*, K. Hayashi, M. Ooba, H. Ito*
P316	Landscapes, soil macroinvertebrate communities and ecosystem services in deforested Amazonia *R. Marichal, M. Grimaldi, A. Feijoo M., C. Praxedes, D.H. Ruiz C., M.P. Hurtado, P. Lavelle*, et al*
P317	Arbuscular mycorrhizal fungi affect the dynamics of soil aggregation *E.K. Barto*, D.J.P. Morris, S-C. Gleber, M. Bigalke, W. Wilcke, M.C. Rillig*
P318	Norwegian farmers' views on climate change and multifunctional agriculture - implications for policy *W.J. Fjellstad*, R.J.F. Burton, F. Flemsæter, J.T. Brobakk*
P319	Bee diversity and pollination services provided to urban garden and turf-based vacant lot habitats *S.P. Prajzner*, M.M. Gardiner*
P320	Land use policy based on mapping ecosystem service supply and demand: a case study in Three River Headwater Region (TRHR) *T. Zhang, J.Y. Zhan**
P321	Effect of coccinellid flux on soybean aphid suppression *J.M. Woltz*, D.A. Landis*
P322	Integrating ecosystem models with spatial analysis of ecosystem services *P. Vihervaara*, M. Forsius, T. Kumpula, L. Mononen*
P323	Assessing the per-parcel water retention efficiency of residential neighbourhoods *K. Verbeeck*, M. Hermy, J. Van Orshoven*
P324	Linking multiple ecosystem service and socio-economic research at the farm-scale: preliminary findings of the Farm Platform *S. Peukert*, P. Murray, R. Bol, R. Brazier*
P325	A model of freshwater ecosystem services, pastoralist livelihoods and the spread of infectious disease for the Ruaha landscape, Tanzania *B. Voigt*, J. Erickson, C. Gustafson, L. Van Wormer*
P326	A comparison of user groups' preferences on attributes of urban forests in Washington D.C. *R.T. Andrada*, J. Deng*
P327	Hydrological dynamics in the slope/plain (forest/city) interface in Pedra Branca Massif, Rio de Janeiro, Brazil *R.V.M. Bezerra, R.C.M. Montezuma*, R.R. Oliveira, A.S. Avelar, et al*
P328	The co-construction of environmental services in hydrological pes. cases in Madagascar *G. Serpantié*, A. Toillier, C. Roche, A. Rakotonirina*
P329	Landscape changes and ecosystem services of a urban forest in Rio de Janeiro/Brasil *R.C.M. Montezuma*, M. Maranhão de Sousa, A.A. Chirol, R.R. Oliveira, A.H. Santos, H.F. Togashi, et al*
P330	Carbon fluxes for typical wetlands in different climates of China: a review *M.L. Lv*, L.S. Sheng, L.Z. Zhang*
P331	Development of US EPA's ecological production function library *R.J.F. Bruins, L.A. Wainger, S. Sifleet, T.H. DeWitt**
P332	Restoring forests through rehabilitiation silviculture and voluntary carbon markets: a case study from Vermont *C. Danks, J. Gunn, W.S. Keeton, B. Machin, E. Russell-Roy, L.E. Saligman**

P333	Urban expansion and environmental legislation: a critical analysis of the Rio de Janeiro municipality *D.P. Cintra, R.C.M. Montezuma*, E.S. Gomes, L. Name, N. Muniz, C. Thomé*
P334	Quantifying in situ rates of methanogenesis and denitrification in wetland sediments *M. Brooker*, P.J. Mouser, G. Bohrer*
P335	Catastrophic events and risk aversion can increase the supply and value of ecosystem services *L.E. Dee*, S.D. Gaines*
P336	Above and below ground ecosystem services of Apocynum in sustainable agriculture along the Tarim River in arid Northwest China *R. Aihemaitiiang*, N. Thevs*
P337	An historic ecosystem service assessment for Maryland *C. Dean*, B. Fath*
P338	Carbon sequestration of agricultural land in two case regions of Ethiopia *K. Rimhanen*, H. Kahiluoto*
P339	Developing parasitoid enhancement as a component of cole crop management *E.K. Linkous*, C. Welty*
P340	Preserving soil biodiversity in agroecosystems with sustainable management practices *F.D. Conti, C. Gardi, C. Menta, K. Hedlund**
P341	Pathogen removal by constructed riparian wetlands during variable hydrologic conditions in central Ohio *C. Young, J. Martin*, W. Mitsch, A. Hoet, F. DeGraves*
P342	Impacts of ecosystem services change on human well-being in loess plateau of China *L. Zhen*, L. Yang, X.C. Cao, R.Z. Wu, et al*
P343	Comparison of the concentration of metals in organs of two species of fish in the lower Orinoco River, Venezuela *B. Betancourt*, H. Castellano, A. Narayan*
P344	Bioaccumularion and bioasorption of copper and lead by chlamydomonas reinhardtii in single and binary metal systems: a comparative study *R. Flouty*, G. Estephane*
P345	Exogenous silicon alleviates copper stress by increasing antioxidant enzymes activity of cu-stressed cotton *S. Ali, S-A. Bharwana*, B. Ali, R-A. Gill*
P346	Metal contamination of selected forest fruits in umuahia city market, Nigeria *P.C. Ogbonna*, F.C. Maduka, I.L. Princewill-Ogbonna*
P348	Bayesian matbugs calculator (BMC) for eco-risk assessment and priority setting of toxic substances *W. He, N. Qin, F.L. Xu**
P349	Hymenocallis littoralis: an ideal, perennial phytoremediator for Cd and Pb contaminated wastelands *M. Varun*, R.J. D'Souza, J. Pratas, M.S. Paul*
P350	Brief embryonic strychnine exposure causes embryonic synaptic changes and long term adult behavioral impairment in zebrafish *N.M. Roy*, B. Arpie, J. Lugo, E. Linney, E. Levin*
P351	Exposure of songbirds to heavy metal contaminants across an urban to rural landscape *L.M. Rowse*, A.D. Rodewald*
P352	A multi-species approach for assessing lead bioavailability in the ecological risk assessment of a shooting range *S.R. Bowman*, J.L. Bryant, R.P. Lanno*
P353	Investigating the environmental fate, dose-response and toxicokinetics of triclosan and its degradation products in Daphnia spp. *K.A. Albanese*, R.P. Lanno, Y-P. Chin, C.M. Hadad*
P354	Household waste as a pathway of pharmaceuticals and personal care products (PPCPs) into the environment *F.D. Sikoki, B.B. Babatunde*, P. Kika, O.K. Udeala, K. Ugoeze, P. Nwachukwu*
P355	Using genotoxicological tools to support river restoration *A-M. Botha*, S. Jappie, P.J. Oberholster*
P356	Antibacterial effects and mechanisms of toxicity of different types of nanosilver: application of a suite of recombinant luminescent bacteria *A. Kahru*, I. Kurvet, A. Käkinen, I. Blinova, O. Bondarenko*

P357	Ecotoxicity of synthetic metal-based nanoparticles: approaches for evaluation *I. Blinova*, L. Kanarbik, A. Kahru*
P359	Applications of fish connectivity mapping in ecotoxicology *R. Wang**
P360	The influence of heavy metals on plant-water relationships (Acer rubrum, Betula papyrifera and Quercus rubra) *F.M. Kirkey*, P. Ryser*
P361	Association of organochlorine pesticide contamination in egg and reproductive effects on the snail-eating turtle Malayemys macrocephala in the lower Chao Phraya river basin, Thailand *S. Keithmaleesatti*, P. Varanusupakul, N. Kitana*
P362	Physiological effects of atmospheric ammonia on four lichen species *S. Munzi, P. Pinho*, C. Cruz, C. Branquinho*
P363	Field and laboratory investigations into endocrine disruptive effects of estrogenic compounds on freshwater mussels *D.M. Sovic*, R.P. Lanno*
P364	Cytogenotoxicity of sublethal doses of basic violet-1 to Labeo rohita (Ham.) *A. Kaur, K. Kaur**
P365	Providing urban forest ecosystem services in a world of rooftop solar energy collection: applied solutions for a sustainable coexistence *D.C. Staley**
P366	A how-to guide for multifamily recycling: the story of how one university town brought recycling to 30,000 apartment dwellers *A. Adams**
P367	Stakeholder's vision for wetland management using group model building approach *H. Chen, Y-C. Chang**
P368	Identifying trends in the public comment process of Section 404 compensatory wetland mitigation permits *A.A.T. Conkey*, R.D. Slack*
P369	Valuing the invaluable: a case study of cultural ecosystem service management *N.K. Lincoln**
P370	Approaches to chemicals risk assessment with regards to human health and the environment *A. Aleksandryan*, T. Shashina, N. Skvortsova*
P371	The thin edge: student work to support advocacy, policy, incentive, and partnerships *V-L. Russell**
P372	Is geoengineering in our future? What an historical perspective suggests *T. Leech*, B-A. Schuelke-Leech*
P373	The history and ironies of the clean water act in America *N.L. Schumm**
P374	Generating inhabit-ability: five principles for policy and project management practice *A. Stephens**
P375	Beyond panaceas: sustainable management of China's grasslands *J. Liu, Y. Wang, S. Li*, D. Qin*
P376	Integrating environment mitigation into planning: a case study of an oil sands project in Alberta, Canada *A. Wei*, C. Clark*
P377	Does economic crisis turn into environmental opportunity? - assessing the environmental footprint of Taiwan's economic recession and recovery *C.W. Chao*, H.W. Ma*
P378	Decision analytic approaches for integrating ecosystem services and risk assessment *K.E. von Stackelberg*, D. Moore*
P379	Trends in land use change inside and outside high-value areas *W.E. Dramstad*, S.O. Krøgli, W. Fjellstad*
P380	Environmental policy in Nigeria *A.S. Sambo*, A. Aliyu, A. Abdulhamid, S. Mustafa*

P381	Change in transportation ecoefficiency: the influence of local and state government in U.S. metropolitan areas *A.C. McCreery**
P382	Saving our waters from the growing threat of nutrient pollution: an analysis of policy alternatives for addressing farm run-off in Lake Erie, the Chesapeake Bay and the Gulf of Mexico *J. Logan*, K. Kubitza*
P383	Master planning a sustainable future for Louisiana's coastal regions *K. Rhinehart, K. Belhadjali, N. Snider, D.J. Reed, J. Chamberlain*, L. Silva, et al*
P384	EcoSummit or EgoSummit? Universal values for social innovation and environmental policy *M.V. Comar**
P385	From so simple a beginning: contemplating the entangled bank of coupled natural and human systems *M.R. Iversen**
P386	Determining climate effects for the southwestern United States *D.E. Busch**
P387	The effect of interpersonal trust on the environment: a theoretic model and a cross-national investigation *D. Bornstein*, D. Ben-Shahar*
P388	Collective capacities for common natural resources conservation in Mexico *V. Bunge*, A. Martínez-Ballesté, C.A. López-Morales, K. Ruiz-Bedolla, H. Cotler*
P389	Do farmers have heterogeneous preferences for the environment and does it matter? A latent-class approach to crop choice and management practices *A. Konar*, E. Irwin, B. Roe*
P390	Imperatives of resolving the Niger Delta conflicts for growth and development *M.N. Obasi*, U.I. Uwazie*
P391	Management of tidal lowlands in Indonesia: problems and perspectives *M.D. Azdan*, D.N. Choesin*
P392	Evaluating operators' attitudes on emerging educational service in agriculture: evidence from Japan *Y. Ohe**
P393	Response of epiphytic bryophytes to simulated N deposition in a subtropical montane cloud forest in Southwestern China *W-Y. Liu*, L. Song*
P394	Effects of agricultural intensification on soil nitrous oxide emission in Mid-Hills of Nepal *N. Raut*, B.K. Sitaula, L.R. Bakken, R.M. Bajracharya*
P395	Recycling habits in the United States *C.D. Pankrat**
P396	Net Ecosystem exchange of carbon and tidal effects in Chongxi Wetland, Yangtze Estuary *A. Ma*, J. Lu*
P397	Differential activities of fungal communities under canopies of living and deceased Piñon (Piñus edulis) and Juniper (Juniperus monosperma) trees in the Los Piños Mountains New Mexico *D.D. Warnock*, R.L. Sinsabaugh*
P398	Experimentally reversing soil acidification in NE hardwood forests: soil microbial and biogeochemical responses *S.R. Carrino-Kyker*, L.A. Kluber, D.J. Burke, J.L. DeForest, K.A. Smemo*
P399	All property is riverfront property: the raindrop app and FLOW project *N. Myers, T. Carter, V. Tremante**
P400	Evaluating the sensitivity of wetlands to climate change with remote sensing techniques *Z-T. Yang*, R. Becker, W. Shaver, J-Q. Chen*

3:30-5:30
Exhibit Hall C

POSTERS 401-472

P401	Impact of human use and grazing on tundra vegetation state: a large scale comparative remote sensing study *D. Ehrich*, A. Thuestad, H. Tømmervik, P. Fauchald, V.H. Hausner*
P402	Science and technology incentives to the clean energy sector in Brazil *M.O. Gavira**
P403	Effect of agricultural land use on biodiversity and ecosystem function in wetlands *M. Ermold*, S.A.O. Cousins*

P404	Reconciling forest conservation and agricultural expansion in the Amazon's agricultural frontier *M. Macedo*, R. DeFries, D. Morton, C. Stickler, G. Galford, Y. Shimabukuro*
P405	Abatement of Cr^{6+} and Pb^{2+} from aqueous matrices using sugarcane biomass *B.O. Opeolu*, O.S. Fatoki*
P406	Developing a common sustainable indicators system for assessment of ecological civilization in Hangzhou, China *J.H. Jiang*, H.Y. Wang, J.Y. Zhang*
P407	Analysis of population, land resources, economic status and ecological environment in the areas of head part of the three gorges reservoir *L. MA*, L.Z. YANG, L.Z. XIA, Y.D. LI*
P408	Maximizing ecological benefits and minimizing degradation associated with livestock corrals in an African savanna *L.M. Porensky**
P409	Values for the engagement in local food systems: CSAs vs. farmers' markets vs. non-consumers *J.R. Farmer**
P410	Visualizing and quantifying a sustainable agroecosystem in Northeast Ohio *E.L. Kolbe*, C.W. Hoy, N.L. Hilbert*
P411	Peak oil and public health: knowledge, attitudes, and programming activities among a national sample of environmental health and nursing directors *S.L. Tuckerman*, J.M. Crawford, R.S. Wilson, W.B. Lyons*
P412	The zero-carbon energy grid as a biomimetic system: early concepts and quantitative tools *J. Seryak*, C. Schreier*
P413	Living and promoting sustainability at the training center for conservation and sustainable development (CECACDS), Oxapampa, Peru *F.A. Trama*, F.L.S.V. Rizo Patron*
P414	Ensuring sustainable tropical forest rehabilitation: lessons learnt from a comparative analysis across Asia and Latin America *A. Adiwinata Nawir*, M. Guariguata*
P415	Assessing sustainability requirements and contributions of institutions of higher education *T.T. Cai*, L.A. Zuccarelli, S.B. Jones, T. Olsen, C. Meyer*
P416	Green solutions for wet weather management *G.C. Scannell*, G. Bohrer, R.L. Jones*
P417	Pastoralist trade-offs in adapting to rangeland change in southern Ethiopia *J.E. Bennett**
P418	Is prawn post-larvae production sustainable? An application of emergy analysis *J.M. Kimpara*, F. Garcia, W.C. Valenti*
P419	Sustainability in higher education: priorities for implementing sustainability from academicians' perspective *M. Nejati, A.S. Md Shahbudin, A. Amran, M.H. Mohd Helmi**
P420	Emergy of tilapia cage-farming in Brazil *F. Garcia*, J.M. Kimpara, E.J. Scaloppi Junior*
P421	Emergy assessment of cropping systems in the Pampa region, Argentina *P. Benzi, D.O. Ferraro**
P422	Borrowed ground: evaluating the current and potential role of usufruct in neighborhood-scale foodsheds *B. Kerrick*, C. Hoy, N. Hilbert*
P423	Income and living within a fair earth share: a New Zealand case study *E.S. Lawton*, R.D. Vale*
P424	Revisiting the Emergy Sustainability Index *D. Arbault**
P425	The role of social learning for resilient social-ecological systems in Korean village groves (Maeul-sup) *E. Lee*, M.E. Krasny, C. Kim*
P426	Teaching by example: a small university's strategy for sustainability *S.B. Jones*, T. Cai, R.G. Dodson, J.M. McMahon, C. Meyer, C.S. Sasala*

P427	Household wastewater treatment with simple hyacinth mesocosms in near-tropical developing countries *P. Khong, D. Clouttick, T. Hand**
P428	Transferring the knowledge: development of a university outdoor learning laboratory for teaching ecological principles of sustainability *C.S. Anderson*, A.C. Stam*
P429	The evaluation of Tehran's ecological footprint *S. Tavallai*, F. Sasanpour*
P430	Impact of algae post-gasification effluents on growth and macronutrient contents of energetic willow: studies on promising disposal of undue leachates *K. Wojtkowiak, M.F. Jedrzejczak*, K.A. Skibniewska, et al*
P431	Filling maize yield gaps in sub-Saharan Africa - a spatially explicit modelling approach *C. Folberth*, K.C. Abbaspour, R. Schulin, H. Yang*
P432	Community-based river turtle conservation in the lower Amazon, Brazil *J.C.B. Pezzuti*, D.G. McGrath*
P433	Microclimate matters for the regeneration of abandoned agriculture areas in a semi-arid environment *A. Silva, P. Pinho*, L. do Rosário, O. Correia, C. Máguas*
P434	Large ecosystem management using key watershed strategies and investments *B. Bachman*, M. Rylko, V. Salazar*
P435	The resilience of coastal populations dependent on coral mining for the provision of building materials under the impacts of climate change *N. Beykan*, J.K. Rosenthal*
P436	Enhancing the sustainability of agricultural production systems through principle-based management *G.F. Sassenrath*, J.D. Wiener, J.M. Halloran, J.R. Hendrickson, D.W. Archer*
P437	Learning from Yellowstone: how to apply sustainable practices in your community *J. Evanoff*, H. Lacey*
P438	Greening the highways: outplant survival of deciduous trees in stressful environments *M. Bigger*, H. Mathers*
P439	Integrating indicators for a coastal region of southern Mexico sustainability measure: experiences beyond the theory *S. Laffon-Leal*, E. Nunez-Lara, A. Alderete-Chavez*
P440	Household potable water from low quality ambient sources using wetland plants and solar heat and UV *W. Jennings, B. Ciccotelli, T. Hand**
P441	Greening in the Red Zone: civic environmental restoration as a post-disaster resilience strategy *K.G. Tidball, M.E. Krasny**
P442	An agent-based modelling analysis of greening as recovery and resilience after disaster *C.A. Aktipis, K.G. Tidball*, R.C. Stedman*
P443	The effect of extreme rainfall on root distribution of Halogeton glomeratus on the southern fringe of the Taklamakan Desert, Northwest China *F. Zeng*, C. Zhao, W. Zhao*
P444	Urban fruit harvest: a case study engaging students in the Baltimore Orchard Project *N.N. Fath**
P445	A device trapping ebullition from water body and gas composition studies *S. Yan*, Y. Gao, Z. Zhang, J. Guo, et al*
P446	Utilization of Eichhonia crassipes for water purification in a large eutrophic lake (Dian Chi) in China: the effects on the water quality, macrozoobenthos and zooplankton *Z. Wang*, Z. Zhang, J. Zhang, Y. Zhang, H. Liu, S. Yan, et al*
P447	Runoff simulation in Xingzi River Lianjiang Karst watershed in northern Guangdong based on SWAT Model *Z. Liang*, X. Wang, J. Wang*
P448	Eco-hydrological situation of Mexican watersheds: an overview *H. Cotler*, M.L. Cuevas, C. Enriquez, N. Luna*
P449	Determination of anammox reaction characteristics of riverine sediments by isotope technique *S. Zhou*, S. Borjigin, R. Higuchi, S. Riya, A. Terada, M. Hosomi*

P450	Human impact on the lake Baikal: the present state *E.A. Silow**
P451	Advancing decision-support tools in watershed management: a review of game theory applications in water resources *L.K. Read*, R.M. Vogel*
P452	Ecosystem banking as a means to restore ecosystem services in urbanizing watersheds *A.M. Redmond*, C. Eichel*
P453	Nitrogen removal from effluent of livestock waste using vermifilter enhanced by aerating and altering filter media *S.X. Tian*, H. Xiong, Z.J. Sun*
P454	Regional storm water improvement planing for nutrient management at federal facilities within Chesapeake Bay *L.A. Jeffrey**
P455	Managing watersheds for recreational use: identification of stakeholder groups & values *H.R. Hall**
P456	Ecological evaluation of headwater streams in an impaired watershed of northeast Ohio: implications for restoration *J.H. Stinner*, R.H. Moore*
P457	Coupling substance cycles in a resettlement area of a reservoir in semi-arid Brazil: the concept of the INNOVATE Project *M. Siegmund-Schultze*, J. Köppel, A. Maciel, J.A.A. Silva, M.C. Sobral*
P458	Use of systematic conservation planning to identify priority areas for managing the health of freshwater ecosystems and their associated biodiversity and ecosystem services *J.L. Nel*, D.J. Roux*
P459	The effects on the aquatic ecosystem by the weir construction focused on the riparian plants *K-D. Kim*, N-G. Ku, H-J. Lee, H-E. So, I-H. Ju*
P460	Employing scaled physical models for identifying effects from various hydraulic parameters on residence time *M.D. Wahl*, L.C. Brown, A.B.O. Soboyejo, B. Dong, N.R. Fausey*
P461	The performance of integrated system of facultative oxidation pond and vermifiltration for treating anaerobic digester effluents in low temperature *S.X. Tian*, Z.J. Sun*
P462	Assessing harmful cyanobacterial bloom occurrence risks by integrating artificial neural network and fuzzy theory in Lake Taihu, China *W.F. Li*, Y. Xiao, Y.H. Zhang*
P463	Stream biotic and abiotic condition in an urbanized watershed in southeast Arkansas, USA *Y. Chen*, K. Herzog, M.A. Eggleton*
P464	Maintaining the ecosystems services of Australia's tropical rivers *M.M. Douglas**
P465	Wetland alteration due to climate change on Tabasco México, perspectives *L. Gama*, C. Pacheco-Figueroa, J.D. Valdez-Leal, E. Moguel-Ordoñez, E. Mata-Zayas*
P466	Characteristics of headwater wetlands in SW Washington, USA *J.E. Janisch, A.D. Foster*, W.L. Ehinger*
P467	Monitoring results from stream restoration projects on downsteam water resources and ecosystem function at the watershed scale *S. Phillips, E. Rankin**
P468	Baseline groundwater monitoring program to assess pre-Utica drilling activity *J.C. Dick*, C.E. McLean, C.L. Grope, A.C. Draa*
P469	Creating a global great rivers network for integrated river basin management *D.L. Galat*, C. Apse, K.M. Krchnak*
P470	Heavy metal pollution in soil and cocoa bean at Ikwuano, Nigeria *P.C. Ogbonna*, N. Okechukwu, I.L. Princewill-Ogbonna*
P471	Deep green - raising the bar on environmental design: net zero water, net zero energy, net zero carbon *N. Myers, V. Tremante**
P472	Establishment of a water quality indicator to a rapid assessment protocol for urban stream condition assessment *C.A. Pompêo*, G.P. Fasola*

Key Event

OPENING CEREMONY
AT THE OHIO STATE UNIVERSITY

Join your colleagues for the opening festivities! Taking place at 7:00pm on Sunday, September 30th, 2012 at the new Ohio Union located on the Ohio State University campus. President E. Gordon Gee and Dr. Caroline Whitacre, Vice President for Research will join in welcoming you to Columbus and EcoSummit 2012. Entertainment will follow the brief program.

5:30pm to 10pm	Complementary transportation will be available from the Greater Columbus Convention Center. Buses will run continuously between the GCCC and the Ohio Union.
5:30pm	Networking.
6:00pm	A complementary All American Buffet and beverages will be served.
6:00pm to 9:30pm	Cash bars.

We look forward to greeting you!

Sponsored by The Columbus Foundation

Key Event

ECOSUMMIT BANQUET
AT THE WILMA H. SCHIERMEIER OLENTANGY RIVER WETLAND RESEARCH PARK

Come and join nearly 700 conference delegates for a gala picnic banquet at the Olentangy River Wetland Research Park located on the Ohio State University campus.

5:00pm to 9:00pm Banquet, Tuesday, October 2nd, 2012.

Explore the park, a Ramsar Wetland of International Importance, tour the research facility, enjoy a picnic dinner and listen to music all at your own pace.

4:30pm to 10pm Complimentary transportation will be available from the Greater Columbus Convention Center. Buses will run continuously between the GCCC and the Wilma H. Schiermeier Olentangy River Wetland Research Park.

Pre-Conference Field Trips

ECOSUMMIT 2012 WOULD LIKE TO THANK OUR NUMEROUS PARTNERS THROUGHOUT THE EASTERN U.S. WHO HOSTED THE DELEGATES AND CONTRIBUTED TO AN ENRICHING EXPERIENCE FOR ALL!

New York/New Jersey

- Rutgers University
- PSEG
- URS Corporation
- Meadowlands Environmental Research Institute
- Woods Hole Oceanographic Institution

Washington D.C.

- University of Maryland Center for Environmental Science

Atlanta

- Coweeta Long Term Ecological Research
- University of Georgia
- Great Smoky Mountains National Park

Miami

- Florida Gulf Coast University
- South Florida Water Management District
- Everglades National Park

Chicago

- Richard Lanyon
- Wetlands Research, Inc.
- US EPA Great Lakes Program Office
- Indiana Dunes National Lakeshore
- The Nature Conservancy

Columbus

- The Wilds

Mid-Conference Field Trips

ECOSUMMIT 2012 WOULD LIKE TO THANK OUR NUMEROUS PARTNERS THROUGHOUT OHIO WHO HOSTED THE DELEGATES AND CONTRIBUTED TO AN ENRICHING EXPERIENCE FOR ALL!

Urban River Revitalization – The Olentangy/Scioto Ecosystem Corridor

- The Ohio State University, Wilma H Schiermeier Olentangy River Wetland Research Park
- Grange Insurance Audubon Center

Ohio River – History and Restoration

- Ohio University Russ College of Engineering and Technology
- Boat of Knowledge in Science Classroom (BooKS) sponsored by National Science Foundation

Big Darby Creek Scenic River Canoe Trip

- Franklin County and Columbus Metro Parks

Cuyahoga River Watershed Restoration – Headwaters to Lake Erie

- EnviroScience, Inc.

Freshwater Mussels – Protection and Restoration

- Otterbein University, Columbus Zoo and Aquarium Freshwater Mussel Conservation and Research Center
- BBC&M Engineering, City of Marysville

Rock the River - Cuyahoga River Urban Watershed Restoration and Rock and Roll Hall of Fame

- EnviroScience, Inc.

Lake Erie – Stone Lab

- Ohio State University Stone Laboratory
- Ohio Sea Grant

Stream Restoration Techniques – Central Ohio

- Franklin Soil and Water Conservation District
- The Ohio State University

Miami Valley Basin Stream and Wetland Restoration Sites and Bog Tour

- Wright State University
- Ohio Department of Natural Resources
- Five Rivers Metro Parks, Ohio Historical Society

Green Technology – Wind, Solar and Algae

- Algae Venture Systems, PSEG
- Vaughn Industries
- Heidelberg University, Sisters of St. Francis

Ohio State University Research Centers

- The Ohio State University
- Center for Automotive Research
- Byrd Polar Research Center
- Ornamental Plant Germplasm Center

Brownfields Redevelopment – Urban and Industrial Sites Transformed

- Franklin County and Columbus Metro Parks
- City of Columbus
- Grange Insurance Audubon Center
- Otterbein University Equine Center

Sustainable Land and Watershed Management

- Northern Appalachian Experimental Watershed
- The Ohio State University, USDA

Mid-Conference Field Trips

Agricultural Sustainability and Food Security

- The Ohio State University
- Ohio Agricultural Research and Development Center
- OARDC Honey Bee Laboratory
- Malabar Farm

Arc of Appalachia

- Highland Nature Sanctuary
- Ohio Historical Society

Forest Restoration and Management

- Vinton Furnace State Experimental Forest
- US Forest Service

Oak Openings Restoration and Management

- Toledo Metro Parks
- The Nature Conservancy
- USDA Forest Service
- EnviroScience, Inc.,
- The Ohio State University

Wayne National Forest – Devastation to Destination

- US Forest Service
- Wayne National Forest

Coal Mining and Reclamation in Appalachia

- Ohio Coal Association
- Central Ohio Technical College

The Wilds – Wildlife Conservation Center for Ecological Sustainability

- The Columbus Zoo
- The Wilds

Darby Plains Habitat Restoration

- Franklin County and Columbus Metro Parks

Wetland Mitigation Banking

- Ohio Wetlands Foundation

Greenways Bike Excursions 5 and 10 miles

- Franklin County and Columbus Metro Parks
- Grange Insurance Audubon Center

Inniswood Metro Gardens

- Franklin County and Columbus Metro Parks

Muskingum River Canoe Float

- Canoe Creation

Mohican Zip Line Tour and Hike

- Mohican Visitors Bureau
- Mohican State Park

Columbus Gardens, Arts and Entertainment

- Experience Columbus
- Columbus Topiary Garden
- Franklin Park Conservatory
- Wexner Center for the Arts
- Brothers Drake Meadery

Coastal Lake Erie Wetlands and Birding Tour

- Old Women's Creek National Estuarine Research Reserve
- Ohio Department of Natural Resources
- US Fish and Wildlife Service

Hocking Hills Hiking

- Franklin County and Columbus Metro Parks
- Appalachian Ohio Alliance Land Trust
- Camp Oty'akwa

Sustainable Local Food System – Food Security

- Appalachian Center for Economic Networks
- Innovative Farmers of Ohio

Appalachian Watershed Resource Management

- Muskingum Valley Conservation District
- Heart of Ohio RC&D Council

Solid Waste Authority of Central Ohio – Sustainability

- Solid Waste Authority of Central Ohio, Quasar Energy Group
- Clean Water Limited
- Rumpke, Franklin County

Materials Management Guidelines – Greening of the Conference

SUSTAINABILITY AT THE FOREFRONT OF ECOSUMMIT GREEN EVENTS GUIDE AND GREEN RIBBON PROGRAM

EcoSummit 2012 will bring together the world's most respected minds in ecological science to discuss restoring the planet's ecosystems. This presents a once in a generation opportunity for central Ohioans to promote ecological sustainability on the world stage and showcase the environmental sustainability achievements of the region and state. With this in mind, it became a priority to incorporate sustainability principles into the event to reflect the values embodied in the conference and minimize the environmental footprint of the event. Not only will we strive to make the event as green as possible, but we also hope to leave a legacy that goes beyond EcoSummit 2012.

The Sustainability & Materials Management Green Events Guide was developed to assist event planners, venues, suppliers/ vendors, exhibitors, and hotels in implementing sustainable practices to make events and services greener. The guide includes a menu of actions and recommendations based on the ASTM (American Society for Testing and Materials) Standards for Environmentally Sustainable Meetings, Events, Trade Shows and Conferences, the United Nations' Green Meeting Guide, and the experience of the Greater Columbus Convention Center.

The Greater Columbus Convention Center has made significant strides toward greening the facility and their operations, as demonstrated by their goal to attain LEED-EB (existing buildings) Silver certification. LEED (Leadership in Energy and Environmental Design) is a program that seeks to minimize the impact that buildings have on the environment. The Convention Center is taking an integrated approach to its building operations that include aspects of energy, water, light, landscape, and waste. Aramark is the exclusive provider of all food and beverage services for the Greater Columbus Convention Center and they have also implemented several conservation practices.

The event guide is organized into five sections: event planners, venues, exhibitors, vendors/suppliers, and hotels. Each section contains a menu of actions applicable for implementation by those represented in each section. The actions were intended to provide as many options as possible. While ideally every action would be implemented, it will not be possible in every situation.

The EcoSummit Green Ribbon Recognition Program promotes exhibits that incorporate sustainability principles, and recognize exhibitors that implement them by displaying a Green Ribbon in the exhibit. The program consists of eight green initiative areas related to the common aspects of an exhibit. Each green initiative area will list at least one implementation action that has been assigned value points for a total of 120 points. To earn a green ribbon, the exhibitor must select and commit to implement actions totaling a minimum of 75 points.

Thank you to the Greater Columbus Convention Center and to the following partners who assisted with the guide:

- Angel Arroyo-Rodriguez
  Ohio Environmental Protection Agency (Ohio EPA)
- Kristi Higginbotham and Melanie Stanley
  Solid Waste Authority of Central Ohio (SWACO)
- Bob Thomas
  Destinations by Design
- Brandi Whetstone
  Mid-Ohio Regional Planning Commission (MORPC)

We Support NGOs

THANK YOU FOR SUPPORTING SUSTAINABLE NGO ORGANIZATIONS WITH YOUR REGISTRATION!

EcoSummit 2012 is proud to support the following NGO organizations dedicated to sustainability around the world. A small portion of each registration was donated to help support their travel to the conference. You are cordially invited to learn more about each of these organizations and the important work they are doing by visiting their booths in the Exhibition Hall.

Centro Neotropical de Entrenamiento en Humedales Peru, Center for Conservation and Sustainable Development (CECACDS), Peruvian Amazon
Promote the conservation and management of natural resources in Peru and bordering areas with an emphasis in wetlands by the development of training processes of community leaders, decision makers, professionals, technicians, government bodies, NGOs, academic institutions and community organizations; and in the development of projects that reduce poverty, social development, and the associated investigations of the wetlands.

Hima Mesopotamia, Mesopotamian Marshes, Iraq
Hima Mesopotamia is an international NGO dedicated to the health of the people and ecosystems of the Mesopotamian Marshes through the promotion of responsible stewardship of the Tigris–Euphrates watershed. By creating a network of individuals & organizations that are involved in water, health, ecological, economic, and human rights issues in the Middle East, Hima Mesopotamia aims to provide a forum for cultural and environmental information exchange to support ecological and cultural health.

Nature Palace Foundation, Kampala, Uganda
Nature Palace Foundation (NPF) is a not-for-profit Community Development and Human-well being focused organization that operates on the principle of blending Conservation with Development.

We respond to universal concerns of Food Insecurity, Biodiversity Loss, Climate Change, Poverty and Disease through innovative approaches that include Environmental Advocacy; a Community Botanic Garden, Sustainable Agriculture models and Pro-poor Eco-tourism.

EcoBiodversity Service, Bukavu, D. R. Congo
EcoBiodiversity Service is devoted to promote sustainable management of natural resources through a better understanding of ecosystem services on scientific bases. We have made it our mission to promote ecological studies on natural ecosystems in D.R. Congo and to reconcile humans and the wildlife through new approaches.

Association de Protection des Tortures Marines au Maroc (ATOMM), Tetouan, Morocco
ATOMM is a nonprofit association created in June 2008 at the Faculty of Sciences of Tetouan-Morocco. It aims is to develop the human and material capacity of environment conservation in general and sea turtles in particular through training and awareness of students and fishermen. It seeks to build a relationship cooperation with scientists and fishermen for the preservation of sea turtles in Morocco.

Film Festival

Throughout the week of EcoSummit, be sure to visit the Pagetech Film Festival pavilion located inside the exhibit hall. Filmmakers worldwide have submitted films on environmental themes such as sustainability, protecting and repairing the environment and environmental awareness. Films were submitted in the following divisions:

- Professional
- Amateur
- Ohio filmmakers *(amateur only)*
- Student
- Ohio student

Submissions were asked to have "language independence," the extent to which a viewer who does not speak the language used in the film (if any) can understand and follow the film.

Judging was conducted by Jennifer Lange, curator of the film/video studio program at the Wexner Center for the Arts; Shelly Casto, director of education for the Wexner Center for the Arts; and Johnny DiLoretto, film critic and director of operations for the Gateway Film Center. Winners were selected prior to the start of EcoSummit.

All films will be shown throughout the week, and a lineup of films, times, and winners will be conspicuously posted outside the Pagetech Film Festival pavilion.

Also, throughout the week stop by the film festival for a special viewing of the films we call "What were they thinking?". These are the films that were not judged due to their unusual or off-topic content.

Thank you to our generous film festival sponsor Pagetech Limited, and to our other supporters - the Wexner Center for the Arts and the Gateway Film Center.

OSU Innovation Gallery

Graduate student Wanying Zhao studies the ecology of invasive plants with her adviser John Cardina. Photo credit: Kenneth Chamberlain. Courtesy of CFAES/CommTech

Paleoclimatologist Lonnie G. Thompson drills for ice cores in a 1974 Antarctic expedition. Photo courtesy of Lonnie Thompson

Dr. Katrina Cornish of the Ohio Agricultural Research and Development Center works to develop and commercialize rubber from the Russian Dandelion, a new crop plant for Ohio. Photo credit: Kenneth Chamberlain. Courtesy of CFAES/CommTech

OHIO STATE UNIVERSITY

DISCOVERING THE FUTURE: ENVIRONMENT AND ENERGY INNOVATION GALLERY

The environmental community at Ohio State spans more than 30 departments, a dozen colleges, and seven campuses, but our size only enhances our opportunities. We are as diverse – and complex – as the systems we study. Witness over 80 vibrant images of Ohio State's contribution to environmental and energy innovation in the Ohio State University Innovation Gallery, including Lonnie Thompson's historic characterization of our changing climate, Ohio's first Ramsar Wetland of International Importance, green algae for green energy, and primate "cousins" connecting over the O-H-I-O cheer.

Presenting Author Index

Name of Author followed by page number

Downtown Map

Take COTA from Downtown Columbus to The Ohio State University

(and all places in between)

For easy travel between your hotel, the Greater Columbus Convention Center, the Short North and The Ohio State University Campus, take COTA.

Local lines 2, 7, 8, and 18 operate between Downtown Columbus and The Ohio State University. Line 2 operates along N. High St. every six to eight minutes, with several stops in the Downtown, Short North and The Ohio State University area. Line 8 also operates between Downtown and Ohio State's south campus area and lines 7 and 18 operate along N. High St., Neil Ave. and along College Ave in the campus area.

Pay a local fare of $2 when you board the bus by inserting cash into the farebox (drivers do not make change). For unlimited travel, purchase a Day Pass for $4.50. For more information on fixed-route and paratransit service, go to www.cota.com or call (614) 228-1776.

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Columbus photo courtesy of Stephen A. Wolfe

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SSSA is the home for professionals dedicated to advancing the discipline and practice of soil science relating to environmental quality, ecosystem sustainability, bioremediation, waste management and recycling, crop production, and wise land use. A common thread across the programs and services of SSSA is the dissemination and transfer of scientific knowledge to advance the profession and our members.

New!

ACSESS DL

The ACSESS Digital Library is a complete collection of all content published by the Soil Science Society of America, American Society of Agronomy, and Crop Science Society of America. Content includes all journal articles – with complete archives, 4 magazines, 300 books, over 15,000 conference presentations, and more. Features include statistics on journal use, paper downloads, author profiles, binders to save search results, commentary capability, and robust searches. The Digital Library is a vital component in serving our mission and our membership by providing innovative, valuable resources for the betterment of our community, and our world. ***Members receive a substantial discount on this subscription***

Divisions of Interest include *(available to members only)*

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Soil & Water Management & Conservation
Forest, Range & Wildland Soils
Wetland Soils

Annual Meetings

Cincinnati, OH—October 21-24, 2012
Tampa, FL—November 3-6, 2013

CSA News Magazine—*monthly*

With feature article such as: *Soil in the City* and *Why Soil Science Must Embrace an Ecosystems Approach*

Outreach

The Society reaches out to engage K-12 teachers, students, and parents to talk about the importance of soil, through books, websites (www.soils4teachers.org and www.soils4kids.org – in development), workshops, and the traveling Smithsonian Soils Exhibit, opening at the Bell Museum of Natural History November 10, 2012 in Minneapolis, MN.

Discover More and Join Today

www.soils.org

Soil Science Society of America

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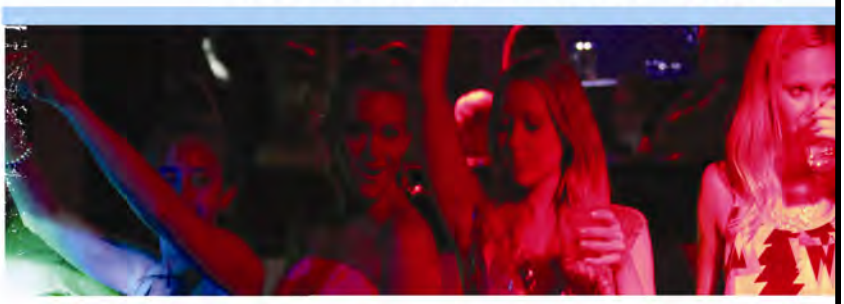

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RECYCLE COMPOST TRASH

ZERO WASTE
AT OHIO STADIUM

The Ohio State Buckeyes have taken bold steps to divert at least 90 percent of all Game Day materials from the landfill. Ohio State has worked with its partners to change the products in the stadium to compostable and recyclable items, changed game day operations and updated stadium signage. Now in its second season, Ohio State is setting a new bar for collegiate sport recycling.

Scarlet, Gray & Green

Thanks for recycling!

For more information, visit go.osu.edu/zerowaste