



Program Booklet

5th Annual
Ecosystem
Services
Partnership
Conference

Ecosystem Services Come of Age:
*Linking Science, Policy, and Participation
for Sustainable Human Well-Being*

31 July – 3 August, 2012
Portland, Oregon, USA



Thank You!



The Ecosystem Service Partnership is grateful to the sponsors that have made this 5th annual conference possible. This support testifies to the importance and relevance of the conference and the concept of ecosystem services.

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e of – Table of – Table of – Table of

2

Welcome Letter

3

Organizing Committee

Program Overview

4

5

Welcome Reception &
Global Policy Forum

Program

6

8

Keynote Speaker Bios

Banquet Speaker &
ESP Co-Chairs

11

12

Parallel Oral Sessions

20

Posters

Working Group Abstracts

23

Participant List & Index

38

Content – Content – Content – Content

Welcome to the 5th annual Ecosystem Services Partnership (ESP) conference

Ecosystem Services Come of Age:

Linking Science, Policy and Participation for Sustainable Human Well-Being

Welcome to Portland, Oregon, one of the most sustainable cities in the US and the world.

Our goal at this conference is to give you ample chances to interact and exchange ideas with practitioners, educators, policy-makers, researchers, and others about ecosystem services.

In addition to hearing inspiring plenary talks from leaders in the field, and introducing your work to a large fraction of the participants, you can be a part of working-groups producing tangible outcomes.

We have developed a unique conference format to allow all this.

The conference has three sections. The first section is made up of plenary talks, parallel oral sessions, and a poster session. There will be only 5 parallel sessions, containing short (5 minute) talks. This allows parallel session speakers to get their message out to a relatively large fraction of the attendees.

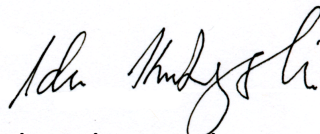
The second section will be devoted to working groups. Working groups are not intended to be just more oral presentations. They will allow small groups of people to interactively work on a product and solution—for example a peer-reviewed paper, a book chapter, database, website, report, or whatever makes sense for that group.

The third section will include plenary synthesis panels and sessions in which each working group will have the opportunity to summarize their outcomes in plenary.

Welcome again to Portland and thank you for helping ecosystem services come of age.



Robert Costanza



Ida Kubiszewski

Conference co-chairs, on behalf of the Conference Planning Committee and the Ecosystem Services Partnership

Conference Organizing Committee

Robert Costanza, *Portland State University, Oregon, USA* (Co-Chair)

Ida Kubiszewski, *National Council for Science and the Environment (NCSE), Washington D.C., USA* (Co-Chair)

James Boyd, *Resources for the Future, Washington D.C., USA*

Darrel Brown, *Portland State University, Oregon, USA*

Benjamin Burkhard, *University of Kiel, Germany*

Frank Casey, *US Geological Survey (USGS), USA*

Neville Crossman, *CSIRO, Australia*

Brent Davies, *EcoTrust, Oregon, USA*

Rudolf de Groot, *Wageningen University, Netherlands*

Sally Duncan, *Oregon State University, Oregon, USA*

Thomas Elmqvist, *Stockholm Resilience Centre, Sweden*

Joshua Farley, *University of Vermont, Vermont, USA*

Thomas Fontaine, *US Environmental Protection Agency (EPA), Oregon, USA*

Robert Frisbee, *Oregon Sustainability Center, Oregon, USA*

Roy Haines-Young, *University of Nottingham, UK*

Dixon Landers, *US Environmental Protection Agency (EPA), Oregon, USA*

Larry Li, *University of California, Riverside, California, USA*

Junguo Liu, *Beijing Forestry University, China*

Michel Masozera, *Wildlife Conservation Society, Rwanda*

Simone Maynard, *SEQ Catchments Ltd, Australia*

Felix Müller, *University of Kiel, Germany*

Lydia Olander, *Duke University, North Carolina, USA*

Trista Patterson, *US Forest Service, Alaska, USA*

Linwood Pendleton, *Duke University, North Carolina, USA*

Irene Petrosillo, *University of Salento, Italy*

Rosimeiry Portela, *Conservation International, Washington D.C., USA*

Marion Potschin, *University of Nottingham, UK*

Rob Scheller, *Portland State University, Oregon, USA*

Olman Segura, *National University of Costa Rica, Costa Rica*

Carl Shaprio, *US Geological Survey (USGS), USA*

Tracy Stanton, *Ecosystem Marketplace, Washington, USA*

Madhu Verma, *India Institute of Forest Management, India*

Giovanni Zurlini, *University of Salento, Italy*

Program Overview

	Monday, July 30	Tuesday, July 31	Wednesday , August 1	Thursday, August 2	Friday, August 3
8:30	Arrival	Opening Plenary Session & Keynote Addresses	Open Space Session and intro to working groups	Key note Addresses	Working Group reports
9:00					
10:00			Working Groups		
11:00					
12:00		Provided Lunch		Working Groups	Provided Lunch
13:00 (1pm)		Parallel, Oral Presentations			Synthesis Panel & closing remarks
14:00 (2pm)					
15:00 (3pm)				Registration Open in Hotel Lobby	Open ESP member’s meeting
16:00 (4pm)					
17:00 (5pm)					
18:00 (6pm)	Welcome Reception & Global Policy Forum at EcoTrust	Reception & Poster Presentations		Banquet Dinner	
19:00 (7pm)					
20:00 (8pm)					

Monday, July 30, 2012

Welcome Reception & Global Policy Forum

Welcome Reception at EcoTrust. Everyone is invited to a conference welcome reception on the roof of the amazing EcoTrust building, food and drink provided, 6:00-7:00PM, directions below. This will be followed by a **Global Policy Forum (7:00-8:30PM) also at the EcoTrust Building.** The global policy forum will be an open discussion that addresses key issues relating to a biodiversity and ecosystem services trends assessment, developed in response to the President's Council of Advisors on Science and Technology (PCAST) July 2011 report on Sustaining Environmental Capital: Protecting Society and the Economy. The forum will provide participants from academia, NGO's, and government an opportunity to discuss needs for a trends assessment and to identify critical questions that it should address. Although the PCAST report focused on the U.S., the perspective in this forum is global because the issues relating to a biodiversity and ecosystem services trends assessment are common across national boundaries and international perspectives. This experience enriches the identification, development, and implementation of an assessment that cuts across the science, policy, and institutional settings needed to inform critical public policy choices.



Location: EcoTrust (721 NW 9th Avenue, Roof Deck, Portland) ~ 15 min

- Take the MAX Green Line Light rail towards City Center/PSU—(Free)
- Get off at Union Station/NW 5th & Glisan St MAX Stn

Tuesday, July 31, 2012

8:00-Onwards	Registration open
8:30-9:00 <i>Lloyd Center Ballroom</i>	OPENING PLENARY SESSION <u>Robert Costanza</u> : Welcome to Portland & the conference <u>Dolf de Groot</u> : Welcome to ESP and update
9:00-9:30 <i>Lloyd Center Ballroom</i>	KEYNOTE ADDRESS <u>Hal Mooney</u> . The very long road to IPBES—but we are there at last.
9:30-10:00 <i>Lloyd Center Ballroom</i>	KEYNOTE ADDRESS <u>Glenn-Marie Lange</u> . Wealth Accounting and Valuation of Ecosystem Services (WAVES) at the World Bank.
10:00-10:30	Coffee Break
10:30-11:00 <i>Lloyd Center Ballroom</i>	KEYNOTE ADDRESS <u>Álvaro Umaña</u> . Payment for Ecosystem Services and Carbon-Neutrality in Costa Rica.
11:00-12:00 <i>Lloyd Center Ballroom</i>	KEYNOTE PANEL Q&A
12:00-13:00 (12-1pm)	Provided Lunch
Afternoon 13:00-18:00 (1-6pm)	PARALLEL, SHORT ORAL PRESENTATIONS A detailed agenda for the parallel oral presentations can be found on pages 12-19.
Evening 18:00-20:00 (6-8pm) <i>Lloyd Center Ballroom</i>	RECEPTION & POSTER PRESENTATIONS Titles for all posters can be found on pages 20-22.

Wednesday, August 1, 2012

8:00-Onwards	Registration open
8:30-9:30 <i>Lloyd Center Ballroom</i>	Open space session and introduction to parallel working groups
9:30-10:00	Coffee Break
Rest of the Day (10:00-Onwards)	PARALLEL WORKING GROUPS Abstracts for all working groups can be found starting on pages 23-37.

Thursday, August 2, 2012

8:00-Onwards	Registration open
8:30-9:00 <i>Lloyd Center Ballroom</i>	KEYNOTE ADDRESS <u>Stephen Polasky</u> . Outreach: Communicating, Coordinating, and Implementing ES.
9:00-9:30 <i>Lloyd Center Ballroom</i>	KEYNOTE ADDRESS <u>Pushpam Kumar</u> . Use and abuse of economic value of ecosystem services: what can be done better?
9:30-10:00 <i>Lloyd Center Ballroom</i>	KEYNOTE ADDRESS <u>Michel Masozera</u> . The role of ecosystem services in Sub-Saharan Africa's transition to a green economy.
10:00-10:30 <i>Lloyd Center Ballroom</i>	KEYNOTE PANEL Q&A
10:30-11:00	Coffee Break
Rest of the Day (11:00-Onwards)	PARALLEL WORKING GROUPS Same working groups as on previous day.
18:00-20:00 <i>Lloyd Center Ballroom</i>	BANQUET <u>Peter Schoonmaker</u> . Guest Speaker. <i>Tickets still available.</i>

Friday, August 3, 2012

8:30-10:00 <i>Lloyd Center Ballroom</i>	WORKING GROUP REPORTS
10:00-10:30	Coffee Break
10:30-12:00 <i>Lloyd Center Ballroom</i>	WORKING GROUP REPORTS, cont.
12:00-13:00 (12-1pm)	Provided Lunch
13:00-14:30 (1-2:30pm) <i>Lloyd Center Ballroom</i>	SYNTHESIS PANEL WITH DISCUSSION <ul style="list-style-type: none"> • <i>Neville Crossman, CSIRO, Australia</i> • <i>Carl Shaprio, US Geological Survey (USGS), USA</i> • <i>Thomas Fontaine, US Environmental Protection Agency (EPA), USA</i> • <i>Linwood Pendleton, Duke University, USA</i> • <i>Jennifer Molnar, The Nature Conservancy, USA</i>
14:30-15:00 (2:30-3pm) <i>Lloyd Center Ballroom</i>	CLOSING REMARKS <u>Robert Costanza</u> and <u>Dolf de Groot</u>
15:00-15:30 (3:00-3:30pm)	Coffee Break
15:30-17:00 (3:30-5pm) <i>Lloyd Center Ballroom</i>	OPEN ESP MEMBER'S MEETING

Conference Keynote Speakers



Dr. Glenn-Marie Lange, an applied environment and natural resource economist, is a Senior Economist, Policy, and Economics, in the Environment department of the World Bank in Washington, D.C. Prior to this position, she was a senior research scholar at the Center for Economy, Environment and Society, part of the Earth Institute at Columbia University. Lange has focused on integrating environmental concerns into policy analysis through the use of environmental accounting.

In 1995, Lange and her colleagues established a long-term regional program in environmental accounting for eastern and southern Africa. She is the senior technical advisor for this project, which includes Botswana, Namibia, South Africa, Swaziland, Tanzania, Ethiopia, Uganda and Mozambique. The program contributes substantially to raising awareness among policy-makers of the economic value of natural resources and policies that promote sustainable resource management, notably in the areas of fisheries, water and forest resources. Lange has worked extensively with Namibia's Ministry of Environment and Tourism to promote biodiversity conservation by quantifying the total economic value of natural resources and various ecosystems under different management regimes. Lange and her colleagues constructed a social accounting matrix for Namibia, quantifying economy-wide linkages between conservation, sustainable utilization of natural resources and poverty reduction, with a special emphasis on nature-based tourism.



Dr. Hal Mooney has played an international leadership role in recent years, especially with problems related to biodiversity and global warming. In addition, he has been active in building up worldwide communities and networks of ecologists and scientists in other disciplines and arranging international conferences on the environment. He played a central role in the International Geosphere-Biosphere Program (IGBP), building up an international organization of scientists and having an influential part in setting the guidelines for the formulation of environmental policies. He has advanced numerous international research programs as Secretary General and Vice-President of the International Council for Science (ICSU). Furthermore, he is working to solicit the interest of the general public in many scientific topics through the media and other channels. As president of the Ecological Society of America he helped launch the publication of a new journal called Ecological Applications that is intended to make use of ecology as a useful tool for management, and worked to promote the designation of the International Biodiversity Observation Year.

Conference Keynote Speakers, cont.



Dr. Pushpam Kumar is Chief, Ecosystem Services Economics Unit, Division of Environment Programme Implementation, UNEP where he works on mainstreaming of the ecosystem services into development policy through the tools and techniques of ecological economics. He is also on Faculty of School of Environmental Sciences, University of Liverpool, UK.

He has been engaged in international scientific assessment efforts on biodiversity and ecosystems and climate change. Dr Kumar was Co-coordinating Lead Author and Co-coordinator, Responses Working Group for Millennium Ecosystem Assessment and Lead Author for the Fourth Assessment of the IPCC (Mitigation). Besides being the member of the Study Leader Team of the Economics of Ecosystems and Biodiversity (TEEB), he was also the Scientific Co-coordinator of the Conceptual Framework for the TEEB. He was Head of the Technical Support Unit of the Responses Working Group, Millennium Ecosystems Assessment (MA) and was instrumental in designing, leading and coordinating the inputs from three hundred natural and social scientists from all over the world that came from different disciplines and cultural backgrounds.



Dr. Álvaro Umaña is senior research fellow of the Environment and Development initiative Center for Central America. He has an important role in promoting the activities for the center, especially for policy makers, and making alliances with international institutions. Dr. Umaña was the first Energy and Environment Minister of Costa Rica from 1986 to 1990. He received international recognition for his contributions to nature conservation and achievements such as the creation of the National Biodiversity Institute (INBio).

Recently he has worked with the International Monetary Fund (IMF) as lead counsel for the Executive Director's office for Central America, Mexico, Spain and Venezuela in Washington, DC. He has had extensive experience in academia, as professor at INCAE Business School in Costa Rica, visiting professor at Yale and a visiting lecturer at universities including American University, UC Berkeley, Duke, Harvard, Johns Hopkins, University of Maryland and University of Washington.

Dr. Umaña received his master in Economics and a Ph.D. in Environmental Engineering and Science from Stanford University. He is the author of numerous books and scholarly articles.

Conference Keynote Speakers, cont.



Dr. Stephen Polasky holds the Fesler-Lampert Chair in Ecological/Environmental Economics at the University of Minnesota with a joint appointment in the Department of Applied Economics and the Department of Ecology, Evolution and Behavior. He received a PhD in Economics from the University of Michigan in 1986. He previously held faculty positions in the Department of Agricultural and Resource Economics at Oregon State University and the Department of Economics at Boston College. Dr. Polasky was the senior staff economist for environment and resources for the President's Council of Economic Advisers 1998-1999. He is a Founding Fellow of the Institute on the Environment at the University of Minnesota, a Research Fellow of the Beijer Institute of Ecological Economics in Stockholm, and a University Fellow at Resources for the Future in Washington, DC. He was elected as a Fellow of the American Association for the Advancement of Science in 2007. He has served on two committees for the EPA's Science Advisory Board: Valuing the Protection of Ecological Systems and Services Committee and the Environmental Economics Advisory Committee. He has also served on the Committee on Natural Resource Damage Assessment and Restoration for the U.S. Department of Interior and is currently serving on the Science Council of The Nature Conservancy.



Dr. Michel Masozera is the country director for the World Conservation Society in Rwanda. He completed his PhD in Natural Resources with a focus on Ecological Economics. While Growing up as a Rwandan refugee in Zaire (now the Democratic Republic of Congo), Masozera began his career in conservation with Dr. Amy Vedder, WCS's vice president of the Living Landscapes Program, in Rwanda's Nyungwe Forest just after the end of 1994 genocide. Since that time, he has focused his efforts on the needs of humans and wildlife alike. His masters thesis examined the needs of local communities in the densely populated districts around Nyungwe, and he subsequently established a number of community support projects across the region.

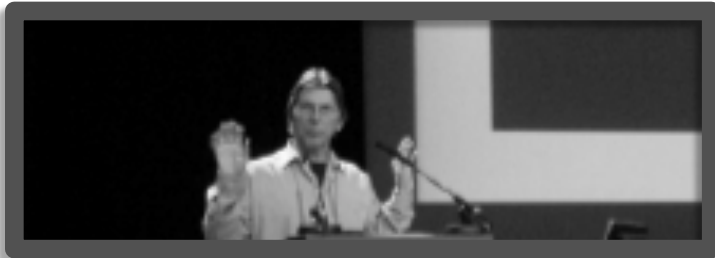
As Dr. Masozera Rwandan country director, he worked ceaselessly to conserve Nyungwe's biodiversity, home for 13 species of primate and some 270 species of bird. He led the first comprehensive biological survey of the forest, which resulted in the reserve being zoned into areas of highest conservation importance and multi-use zones allowing limited resource use by local people. Masozera's efforts were rewarded with the government's creation of Nyungwe National Park in 2004, an enormous commitment for a nation with the highest human population density in Africa.

Banquet Speaker



Peter Schoonmaker is Founding Chair of the MFA in Collaborative Design at Pacific Northwest College of Art, which applies design thinking to complex environmental/social/economic (ESE) problems. He is also president of Illahee, a non-profit organization that provides a forum for environmental innovators to exchange ideas and increase the rigor of public discourse around ESE systems. Peter has held positions at University of Massachusetts, Oregon State University, Ecotrust, Willamette University, Portland State University, and Linfield College. In past positions, Peter developed one of the first web-based environmental news services, assessed the status of Pacific salmon, and led several watershed assessments. He has studied vegetation change and fire history in temperate rainforests, in South America, and in New England. His wildlife experience includes Hawaiian forest birds, Andean condors, peregrine falcons, and Pacific salamanders. His LinkedIn profile lists Honors and Awards as "Not likely."

ESP Co-Chairs



Dr. Rudolf de Groot is associate professor in integrated ecosystem assessment and 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 the impact of land use and climate change on ecosystem services as a tool for sustainable planning and management. De Groot published over 100 scientific papers, including two books, and was involved as coordinating lead author in the UN-supported Millennium Ecosystem Assessment and the recently published TEEB study. He is editor-in-chief of the international journal Biodiversity Science, Ecosystem Services and Management and chair of the Ecosystem Services Partnership.



Dr. Robert Costanza is Distinguished University Professor of Sustainability at Portland State University. 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 society's journal, Ecological Economics from its inception in 1989 until 2002. He is founding editor in chief of Solutions (www.thesolutionsjournal.org). He is also the co-chair of the Ecosystem Services Partnership.

Parallel Oral Sessions

	<u>Outreach</u> <i>Chair: Thomas Fontaine</i>	<u>Policy</u> <i>Chair: Frank Casey</i>	<u>Mapping/ Modeling</u> <i>Chair: Larry Li</i>	<u>Quantifying</u> <i>Chair: Dixon Landers</i>	<u>Valuing</u> <i>Chair: Rudolf de Groot</i>
Room	3 Sisters	Mt. Bachelor	Mt. Hood	Mt. St. Helens	Willamette Ballroom
13:00 (1:00pm)	<u>Bernardo Aguilar-González</u> : ESV and Environmental Conflict Resolution: The Controversial Crucitas Gold Mine Project in Costa Rica	<u>Richard Anderson</u> : New Modeling Approaches Using Influence Diagrams To Improve Management Of Oysters, Oyster Reefs, And The Ecosystem Services They Produce	<u>Soumya Balasubramanya</u> : Economic Incentives in Hydropower Watersheds in the uplands of Nepal.	<u>Yazidhi Bamutaze</u> : Spatial and temporal analysis of vegetation and crop responses to climate risk in Northern Uganda: Implications to food security and livelihoods of smallholder farmers	<u>Roberta Aretano</u> : Landscape change and ecosystem services in small islands: objective vs subjective assessments
13:05 (1:05pm)	<u>Jürg Altwegg</u> : Integrating ecosystem services in sustainable spatial planning—a modelling approach	<u>Cole Atlin</u> : Are invasive alien species pollutants?	<u>Brigitte Lq Baptiste</u> : Self-Designed Rol Games and the building of Ecological Structures as a tool for biodiversity management at the landscape scale: a case study for the Páramo of Rabanal (Colombia).	<u>Richard Barnes</u> : Automated Identification of Remediable Wetlands for Water Filtration and Biofuel	<u>Himlal Baral</u> : Broad-scale reconfiguration production landscape for multiple ecosystem goods and services: a case study of north-central Victoria, Australia
13:10 (1:10pm)	<u>Jack Appleton</u> : Begin by Including Participants' Values in the Eco-Systems Services Process	<u>Muniyandi Balasubramanian</u> : Managing the Ecosystem Services and Poverty Reduction in Irula Tribe Community, Tamil Nadu, India	<u>Nicola Beaumont</u> : The impact of ocean acidification on marine ecosystem services	<u>Thakur Bhattarai</u> : The effectiveness and Efficiency of Forest Carbon Trading under the International REDD+ Scheme for Community-Based Forest Management System: A Case Study from Nepal	<u>Marta Berbes</u> : From ecosystem services to ecosystem benefits: Managing trade-offs in human well-being in agricultural communities in Costa Rica
13:15 (1:15pm)	<u>David Batker</u> : The 21st century utility: accounting for natural capital	<u>Drew Bennett</u> : Local Ecosystem Services Marketplaces: Public Utilities as Development Drivers	<u>Jay Beeks</u> : Cascade Mountains Wind Farm An Exploratory Feasibility Study	<u>Mark Buckley</u> : Economic challenges for no net loss of ecosystem service mitigation, with a Portland case study	<u>Peter Black</u> : Assessing the 75-year-old U.S. Flood Control Program
13:20 (1:20pm)	<u>Helena Bender</u> : Sustainability: from systems to emergence	<u>Corey Bradshaw</u> : iREDD hedges against avoided deforestation's unholy trinity of leakage, permanence and additionality	<u>Sivasankaran Bijoy Nandan</u> : Impact of Global climate change on the biotic production potential in the coastal wetland ecosystems of India and its possible management measures	<u>Isabelle Durance</u> : Probing the link between biodiversity, ecological function and river ecosystem services	<u>Leon Braat</u> : TEEB-Netherlands
13:25 (1:25pm)	Transition & Discussion				

Parallel Oral Sessions, cont.

	<u>Outreach</u> <i>Chair: Thomas Fontaine</i>	<u>Policy</u> <i>Chair: Frank Casey</i>	<u>Mapping/ Modeling</u> <i>Chair: Larry Li</i>	<u>Quantifying</u> <i>Chair: Dixon Landers</i>	<u>Valuing</u> <i>Chair: Rudolf de Groot</i>
Room	3 Sisters	Mt. Bachelor	Mt. Hood	Mt. St. Helens	Willamette Ballroom
13:30 (1:30pm)	<u>Elizabeth Braun De Torrez</u> : Bats, bugs and pecans: the role of insectivorous bats in a pecan agroecosystem in central Texas	<u>Veronika Chobotova</u> : Effects of payment schemes on collective action and ecosystem services	<u>Roelof Boumans</u> : Decision support for ecosystem-based management of the Massachusetts coast: Evaluating ecosystem service tradeoffs in a spatially explicit, dynamic context	<u>Anthony Dvarskas</u> : Valuing Ecosystem Service Benefits From Coastal Restoration	<u>Timothy Buckley</u> : Lake Erie's Public Health-Related Ecosystem Services: Vulnerability and Value for Ohioans
13:35 (1:35pm)	<u>Jos Brils</u> : Eco-Dynamic Design: an innovative way to boost ecosystem services when realizing infrastructure	<u>Neville Crossman</u> : Using ecosystem services to measure the benefits of reducing diversions of freshwater in the Murray-Darling Basin, Australia	<u>Rebecca Chaplin-Kramer</u> : Ecosystem service planning: using InVEST to improve decision-making	<u>Katharine Farrell</u> : History Repeating: a theoretical exploration of Payments for Ecosystem Services as a new form of Intellectual Mercantilism	<u>Mukadasi Buyinza</u> : Ecological-economic models for valuation of Mt. Elgon Forest Park, eastern Uganda
13:40 (1:40pm)	<u>Henry Cole</u> : Nature's Free University: A Course on Economic Success	<u>Sindhu Dhungana</u> : Payment or Participation? Advancing discourses in upstream-downstream communities in light of forest ecosystem commons in Nepal	<u>Sahan Dissanayake</u> : Optimum Land Management for Species Protection Given Alternative Land Uses: Conservation Reserve Design within US Military Installations	<u>Jana Frelichova</u> : Long-term impacts of land use and climate change on agricultural ecosystem services in the Czech Republic	<u>Jacoby Carter</u> : The integration of ecological services and conservation values in a USGS minerals assessment for southeastern Madagascar
13:45 (1:45pm)	<u>Brent Davies</u> : Partners with Nature: Developing Scenarios for Ecosystem Services and Resilience in the Greater Portland Region	<u>Soumyananda Dinda</u> : A Payment Mechanism for Ecological Services: A Case Study	<u>Evangelia Drakou</u> : Mapping of Marine and Coastal Ecosystem Services. The Caribbean case	<u>Lorenzo Gorla</u> : Eco-sustainability of dynamic flow releases generated by considering the environment as a non-traditional water user	<u>Christine Cheyne</u> : The importance of wetlands for resilient urban environments: improving recognition of ecosystem services in land-use planning
13:50 (1:50pm)	<u>Goretty Dias</u> : The Norfolk County Alternative Land Use Services (ALUS) Program as a community-based model for ecosystem services implementation	<u>Meaghan Eastwood</u> : Using a common goal for community well-being as the foundation for the renewal of the Toronto and Region Conservation Authority strategic plan	<u>David Ervin</u> : Rural and Urban Ecosystem Services: Substitutes or Complements?	<u>Cecilia Håkansson</u> : The cost of accidental oil spills in the Arctic	<u>Daniel Clarke</u> : Monetary Valuation of Ecosystem Services for National Accounts
13:55 (1:55pm)	Transition & Discussion				

Parallel Oral Sessions, cont.

	<u>Outreach</u> <i>Chair: Thomas Fontaine</i>	<u>Policy</u> <i>Chair: Frank Casey</i>	<u>Mapping/ Modeling</u> <i>Chair: Larry Li</i>	<u>Quantifying</u> <i>Chair: Dixon Landers</i>	<u>Valuing</u> <i>Chair: Rudolf de Groot</i>
Room	3 Sisters	Mt. Bachelor	Mt. Hood	Mt. St. Helens	Willamette Ballroom
14:00 (2:00pm)	<u>Sahan Dissanayake:</u> Valuing ecosystem restoration: tradeoffs, experience and design	<u>Noah Gaetz:</u> Landscape Character as the foundation for human well-being: A new approach to landscape planning in the Toronto and Region Conservation Authority, Ontario, Canada	<u>Marion Kandziora:</u> Quantification and mapping of ecosystem services in Northern Germany	<u>Ngaio Hotte:</u> Ecological-financial deficits of nations	<u>Xiaobin Dong:</u> Evaluation the changing of ecosystem services and human well-being of north China grassland based on the of herdsman questionnaire
14:05 (2:05pm)	<u>Joseph Ferris:</u> Incorporating ecosystem services valuation with environmental impact assessment for an offshore oil field development	<u>Ahjon Garmestani:</u> Urban water resources, the Clean Water Act and the consent decree process	<u>Kayleigh Karlovits:</u> Epidemiological Modeling of the Mountain Pine Beetle Spread	<u>Kirsten Howard:</u> Stakeholder Engagement in Ecosystem Service Assessments	<u>Abdoulkarim Esmaeili:</u> Valuation of water in hydroelectric generation
14:10 (2:10pm)	<u>Lola Flores:</u> 21st Century Washington	<u>Todd Gartner:</u> Green vs. Grey Infrastructure Analysis: Using Incentives to Connect Forests, Water, and Communities	<u>Keren Klass:</u> Linking ecosystem function, management and decision-making: Israel's National Ecosystem Services Program	<u>Bruce Jones:</u> Landscape Design and Ecosystem Services: Taking Advantage of What's in the Kitchen Cupboard	<u>Travis Greenwalt:</u> Valuation of Benefits of Forest Management Practices in the Santa Ana Watershed
14:15 (2:15pm)	<u>Erica Gaddis:</u> Methodological improvements to local Genuine Progress Indicator Studies based on the Utah GPI study	<u>David González Jimenez:</u> Incorporating ecosystem services into hotel management strategies: A case study analysis of Bahías de Huatulco, México	<u>Leena Kopperoinen:</u> The interrelationship of multiple dwelling and cultural ecosystem services in Finland	<u>Dixon Landers:</u> How to Classify and Measure Ecosystem Services to Connect to Human Well Being? Is there an Answer?	<u>Barbara Wyse:</u> Incorporating Ecosystem Services into Socioeconomic Impact Analysis: A Practical Framework
14:20 (2:20pm)	<u>Bhim Bahadur Ghaley:</u> Valuing Ecosystem Services: Quantification and Valuation in Diverse Ecosystems	<u>Gerry Gray:</u> Opportunities for Urban Forestry Projects in California's Carbon Offset Markets	<u>Larry Li:</u> Fuzzy Modeling Approach to Characterize and Measure Ecosystem Services	<u>Junquo Liu:</u> Ecosystem services and management for human well-being: case studies from China	<u>Mark Haggerty:</u> A Payments for Ecosystem Services Approach to Align County Payments with the U.S. Forest Service 2012 Planning Rule
14:25 (2:25pm)	Transition & Discussion				

Parallel Oral Sessions, cont.

	<u>Outreach</u> <i>Chair: Thomas Fontaine</i>	<u>Policy</u> <i>Chair: Frank Casey</i>	<u>Mapping/ Modeling</u> <i>Chair: Larry Li</i>	<u>Quantifying</u> <i>Chair: Dixon Landers</i>	<u>Valuing</u> <i>Chair: Rudolf de Groot</i>
Room	3 Sisters	Mt. Bachelor	Mt. Hood	Mt. St. Helens	Willamette Ballroom
14:30 (2:30pm)	<u>Tim Gieseke:</u> Symbiotic Demand: An economic means to apportion ecoservice costs and values	<u>Jack Harich:</u> Solving the Sustainability Problem with Root Cause Analysis	<u>Drew Lohrer:</u> Shallow marine habitats contribute productivity in support of spatially separated ecosystem services	<u>Shan Ma:</u> Enlisting Ecosystem Services: Quantification and Valuation of Ecosystem Services to Inform Military Base Management—The Case of Ft. Lewis	<u>Jordi Honey-Rosés:</u> Managing Ecosystem Services To Meet Stream Temperature Objectives In The Llobregat River, Spain
14:35 (2:35pm)	<u>Cecilia Håkansson:</u> International agreements and multifaceted preferences: The case of nitrogen vs. phosphorus in the Baltic Sea	<u>Heidi Huber-Stearns:</u> Linking upstream and downstream priorities: A catalog and typology of incentive-based watershed programs in the western United States	<u>Kenneth Lyons:</u> Incorporating uncertainty in spatially explicit economic valuation and trade off analysis of ecosystem services	<u>Joachim Maes:</u> Mainstreaming ecosystem services into EU policy	<u>Alexander Hellquist:</u> Getting Urban Espa Schemes Off The Ground—Experiences From A Training Program
14:40 (2:40pm)	<u>Kevin Halsey:</u> Balancing Complexity and Simplicity in Ecosystem Services Analysis	<u>Chih Lin:</u> Fallow ground for sustainable dietary patterns: pulses as a source of protein and micronutrients	<u>Livia Madureira:</u> Mapping ecosystem services as an informational tool to support Natural Park conservation policy: An application for the regional NP of Serra da Estrela, Portugal	<u>Simone Maynard:</u> Classifying Ecosystem Services	<u>Evan Hjerpe:</u> Valuation of Tongass National Forest Ecosystem Services
14:45 (2:45pm)	<u>Anna Hermann:</u> A framework for participatory landscape planning, a case study for the sustainable implementation of the redesigned biosphere reserve “Neusiedler See”	<u>Alicia Claire Lloyd:</u> Co-benefits and co-costs of REDD forest carbon offsets: Multiple policies to account for market interactions of multiple ES	<u>Rebecca McClain:</u> Integrating cultural values into ecosystem services mapping: A pilot project on the Olympic Peninsula, Washington, USA	<u>Jos Brils:</u> Key-factors to successful application of ecosystem services in regional water resources management	<u>Peter Hoar:</u> Recommendations on Developing Successful Ecosystem Services Projects to Support Military Training: Soliciting Ideas from Landowners, Conservation Stakeholders, Regulators, and Investors
14:50 (2:50pm)	<u>Jordi Honey-Rosés:</u> Urban Ecosystem Services and Technological Change	<u>Lasse Loft:</u> Who 'should' benefit and why?: Navigating the benefit-sharing debate for REDD+	<u>Joseph Messina:</u> Modeling Ecosystem Services over Space and Time: the case of African Trypanosomiasis in Kenya	<u>Timothy Mcgee:</u> AskPlace : An emergent need for translating the wisdom of ecological information for sustainable development	<u>Anwar Hussain:</u> A Meta-Analysis of Public Willingness to Pay for Riparian Ecosystem Services
14:55 (2:55pm)	Transition & Discussion				

Parallel Oral Sessions, cont.

	<u>Outreach</u> <i>Chair: Thomas Fontaine</i>	<u>Policy</u> <i>Chair: Frank Casey</i>	<u>Mapping/Modeling</u> <i>Chair: Larry Li</i>	<u>Quantifying</u> <i>Chair: Dixon Landers</i>	<u>Valuing</u> <i>Chair: Rudolf de Groot</i>
Room	3 Sisters	Mt. Bachelor	Mt. Hood	Mt. St. Helens	Willamette Ballroom
15:00 (3:00pm)	<u>Aaron Jenkins:</u> Enhancing Ecosystem Service Production: A Case Study of Farmland in Eastern North Carolina	<u>Carsten Mann:</u> Strategies for creating fit of policy instruments to institutional, cultural and biophysical context conditions—The case of conservation banking in California	<u>Anne Neale:</u> Provisional The National Atlas for Sustainability: Mapping Ecosystem Services in the Contiguous United States for Increased Awareness in Science, Policy, and Decision Making	<u>Kristine Nemec:</u> Effect of Diversity and Seeding Density on Ecosystem Services in Grassland Restorations	<u>Hongfang Lu:</u> Donor-Utility value dynamics of ecosystem services provided by subtropical forest following succession in Southeast China
15:05 (3:05pm)	<u>Satoshi Kojima:</u> Welfare implication of stated willingness-to-pay: a new approach to sustainable ecosystem use policy analysis	<u>Jennifer L. Molnar:</u> Seeking solutions for business and nature: Incorporating ecosystem services into corporate decisions	<u>Stoyan Nedkov:</u> Water Regulation Ecosystem Services: Mapping Supply and Demand	<u>Steve Ormerod:</u> Lessons from the UK National Ecosystem for Freshwaters	<u>Livia Madureira:</u> Valuing ecosystem services as an informational tool to support Natural Park conservation policy: An application for the regional NP of Serra da Estrela, Portugal
15:10 (3:10pm)	<u>Tatiana Koveshnikova:</u> The Importance of Ecosystem Services to Human Well-Being in the Credit River Watershed (Ontario, Canada)	<u>Conn Nugent:</u> ES in DC: How to Talk to Washington Politicians	<u>Miren Onaindia:</u> Identifying hotspots or priority areas for multiple ecosystem services to enhance sustainable land management	<u>Octavio Perez-Maqueo:</u> Using four capitals for watershed sustainability	<u>Diniz Marcelo:</u> Valuation of the Ecosystem Services of the Amazon: an estimate proposal on the basis of the opportunities cost of forest conservation
15:15 (3:15pm)	<u>Beria Leimona:</u> Reconciling multiple ecological knowledge systems for rewarding watershed services in the uplands of Indonesia	<u>Martin Persson:</u> Payments for Ecosystem Services (PES): understanding the determinants of impact and behavioral responses to policy intervention	<u>Ignacio Palomo:</u> Land use change and ecosystem services simplification around protected areas	<u>Marion Potschin:</u> Modelling the ecosystem service cascade	<u>Summer Martin:</u> Is fishing really worth more than biodiversity? A case study in the oceanic eastern tropical Pacific
15:20 (3:20pm)	<u>Simone Maynard:</u> It's Alive! The SEQ Ecosystem Services Framework comes to life!	<u>Joanna Piwowarczyk:</u> Ecosystem Services Provided by the Polish Marine Areas (Southern Baltic Sea) in the face of Climate Change	<u>Maurice Rawlins:</u> Implementing the Project for Ecosystem Services in Trinidad and Tobago	<u>Susan Preston:</u> Making Sense of ES Values for Decision-Making: Towards an Interdisciplinary 'Toolkit' for Managers	<u>P. Timon Mcphearson:</u> Non-economic ecosystem services assessment of urban land in the New York City social-ecological system
15:25 (3:25pm)	Transition & Discussion				
15:30 (3:30pm)	Coffee Break				

Parallel Oral Sessions, cont.

	<u>Outreach</u> <i>Chair: Thomas Fontaine</i>	<u>Policy</u> <i>Chair: Frank Casey</i>	<u>Mapping/Modeling</u> <i>Chair: Larry Li</i>	<u>Quantifying</u> <i>Chair: Dixon Landers</i>	<u>Valuing</u> <i>Chair: Rudolf de Groot</i>
Room	3 Sisters	Mt. Bachelor	Mt. Hood	Mt. St. Helens	Willamette Ballroom
16:00 (4:00pm)	<u>David Mcneil:</u> Bridging the interface between academia and business: Methodological approaches for aiding decision making in the context of the health and wellbeing benefits of the natural environment	<u>Leander Raes:</u> Environmental and socio-economic impacts of three mechanisms that finance nature conservation and rural development in the buffer zone of Podocarpus National Park in Ecuador	<u>Marc Russell:</u> Ecosystem goods and services mapped at a neighborhood scale	<u>Rowan Schmidt:</u> Using ecosystem service valuation to support markets for riparian areas: Eugene Water and Electric Board case study	<u>Jon Orvar Geirsson Jonsson:</u> Framework for valuing soil ecosystem services
16:05 (4:05pm)	<u>Harry Nelson:</u> Introducing PES on Public Lands: the experience from BC	<u>Patricia San Miguel:</u> A policy framework of REDD-plus for sustainable forest and water management in the state of Pahang, peninsula Malaysia	<u>Peter Schweizer:</u> Ecosystem Goods and Services: Monetizing Fish Species Richness in Ecosystem Valuation	<u>Zita Sebesvari:</u> Ecosystem services and food security in the Mekong Delta, Vietnam	<u>Igone Palacios:</u> The Millennium Ecosystem Assessment in Biscay: a local and integrative approach to enhance the link between science, policy-making and society
16:10 (4:10pm)	<u>Chet Orloff:</u> Museum of the City: Presenting Sustainability to International Audiences	<u>Nikola Smith:</u> Applying an Ecosystem Service Framework to Collaborative Land Management	<u>André Serrenho:</u> Natural resource accounting: exergy to useful work analysis in Portugal from 1856 to 2009	<u>Lisa Smith:</u> A U.S. Human Wellbeing Index (HWBI) for evaluating the influence of economic, social and ecological service flows	<u>Ram Pandit:</u> The effect of street trees on property value in Perth, Western Australia: A spatial hedonic analysis
16:15 (4:15pm)	<u>Siyoun Park:</u> How to Save Endangered Tidal Environments: A Solution to Recover from Environmental Mismanagement in Saemangeum Seawall, Korea	<u>Nancy Steele:</u> Sustainable water management: the critical role for non-governmental organizations in development of multiple benefit projects	<u>Charles Sims:</u> How Ecosystem Service Provision Can Increase Forest Mortality from Insect Outbreaks	<u>Joachim H. Spangenberg:</u> The role of demand for defining, determining and quantifying ecosystem services	<u>Nalini Rao:</u> Ecosystem based Adaptation or Engineering Solutions for Storm Protection: An Economic Framework to Aid Decision-making
16:20 (4:20pm)	<u>Anna (Any) Phelan:</u> Social Sustainability comes of age: incorporating social capital into project planning	<u>Meine van Noordwijk:</u> Efficient and fair incentives for supporting landscape-level environmental services: evolving practice and paradigms of Payments for Ecosystem Services	<u>Sanjeev Kumar Sobhee:</u> Myopia, Real Wage Effects And Eco-System Degradation	<u>Richard Thomas:</u> Economics of Land Degradation (ELD) Initiative	<u>Md Shammin:</u> A study of the economic, social, and ecological value of urban agriculture in Cleveland
16:25 (4:25pm)	Transition & Discussion				

Parallel Oral Sessions, cont.

	<u>Outreach</u> <i>Chair: Thomas Fontaine</i>	<u>Policy</u> <i>Chair: Frank Casey</i>	<u>Mapping/ Modeling</u> <i>Chair: Larry Li</i>	<u>Quantifying</u> <i>Chair: Dixon Landers</i>	<u>Valuing</u> <i>Chair: Rudolf de Groot</i>
Room	3 Sisters	Mt. Bachelor	Mt. Hood	Mt. St. Helens	Willamette Ballroom
16:30 (4:30pm)	<u>Danielle Pieranunzi:</u> Using Economics to Value Ecosystem Services in Site Design	<u>Madhu Verma:</u> Eco-Efficient Business Leads to Sustainable Urban Infrastructure Development	<u>Tim Sullivan:</u> Application of Critical Loads and Ecosystem Services Principles to Assessment of the Effects of Atmospheric Sulfur and Nitrogen Deposition on Acid-Sensitive Aquatic and Terrestrial Resources	<u>Paul Thomassin:</u> Counting Ecological Goods and Services in an Ecosystem Accounting Framework	<u>Barbara Wyse:</u> Potential and Pitfalls of Benefits Transfer to Value Ecosystem Services
16:35 (4:35pm)	<u>Rondi Schei:</u> Evaluating the Demand for Ecosystem Service Credit Markets	<u>Yoseph Woldeamanuel:</u> The impact of in biodiversity and rehabilitation of the degraded areas of Semen (Northern) Shewa, central highlands, Ethiopia Yoseph Assefa, Asnake Atakure and Melaku Wondafrash	<u>Aysequel Tanik:</u> Analysis of urban environments using V-I-S components model	<u>Michael Townsend:</u> Using an "Ecosystem Principles Approach" to integrate ecological information into Goods and Services	<u>Michalis Skourtos:</u> Operationalizing ecosystem services: Framing non-market, stated preference surveys on the basis of Service Providing Units
16:40 (4:40pm)	<u>Tobias Schultz:</u> Addressing Ecosystem Impacts in LCA-based Ecolabels	<u>Sven Wunder:</u> Payments for environmental services: revisiting definitions and institutional preconditions	<u>Stephanie Tomscha:</u> Shifts landscape multi-functionality: Mapping historical and contemporary ecosystem services in an Interior Columbia floodplain	<u>Louise Willemen:</u> Understanding ecosystem service dynamics; linking ecosystem services to people	<u>Li Sun:</u> Using remote sensing to quantitatively evaluate the ecological assets of populous forest in Tarim River Basin
16:45 (4:45pm)	<u>Anne Solgaard:</u> Vital Graphics on Payment for Ecosystem Services: Realising Nature's Value	<u>Runsheng Yin:</u> Designing and Implementing Payments for Ecosystem Services Programs: Lessons Learned from China's Experience of Cropland Restoration	<u>Madhu Verma:</u> Measuring and Incentivizing Agroecosystems to ensure Food and Livelihood Security	<u>Barbara Wyse:</u> Prioritizing Natural Resource Management Planning Using Ecosystem Service Valuation: Case of Tennessee Valley Authority	<u>Sandra Werner:</u> Framework for characterizing environmental sensitivities through the application of ecosystem services
16:50 (4:50pm)	<u>Tomoki Takada:</u> Civil Construction: An Approach to Community-Based Environmental Restoration	<u>Mary Younkin:</u> Examining the relationship between ecosystem service characteristics and their management: A case study of Hawaii's watersheds and coasts	<u>Christina Von Haaren:</u> Application Context, Challenges and Solutions for Assessing Biodiversity Services in Agro-Ecosystems	<u>Travis Greenwalt:</u> Water Rights Valuation	<u>Sudhakar Yedla:</u> Urban Forestry and Ecological Services in an Indian Metropolitan City—A Review and Assessment
16:55 (4:55pm)	Transition & Discussion				

Parallel Oral Sessions, cont.

	<u>Outreach</u> <i>Chair: Thomas Fontaine</i>	<u>Policy</u> <i>Chair: Frank Casey</i>	<u>Mapping/ Modeling</u> <i>Chair: Larry Li</i>	<u>Quantifying</u> <i>Chair: Dixon Landers</i>	<u>Valuing</u> <i>Chair: Rudolf de Groot</i>
Room	3 Sisters	Mt. Bachelor	Mt. Hood	Mt. St. Helens	Willamette Ballroom
17:00 (5:00pm)	<u>Daniel Williams:</u> Ecosystem Services and Watershed Planning	<u>Xueying Yu:</u> Policy Certainty and Sustainable Supply of Ecosystem Service—Evidence from China's Reforestation Projects	<u>Rintaro Yamauchi:</u> Genuine savings of renewable resources: the case of an earthquake impact valuation	<u>David Batker:</u> The economics of change: catalyzing the investment shift toward a healthy, restorative built environment	<u>Dandan Yu:</u> A new estimate for Changbai Mountain Natural Reserve in Supporting Services and Human Well-being
17:05 (5:05pm)			<u>Richard Barnes:</u> Tracting the Intractable: Efficient Methods for Modeling Ecosystems at the Level of Individuals	<u>Noah Gaetz:</u> The evolving role of Conservation Authorities in helping to ensure sustainable human well-being at the local landscape, Ontario, Canada	<u>Yan Zhou:</u> Assessment of China's Ecosystem Service and Its Diver of Changes



Poster Titles & Authors

- Insects Associated With Plantations Of Some Exotic And Indigenous Tree Species In Ondo State *by Sunday Adeduntan, The Federal University of Technology Akure Nigeria, Nigeria*
- Comparative Assessment of Insecticidal Effect of Some Wood Treated With Plant Extract on Termite *by Sunday Adeduntan, The Federal University of Technology Akure Nigeria, Nigeria*
- A site-scale methodology to complement InVEST biodiversity modeling in the Willamette Valley *by Terrance Anthony, Portland State University, USA*
- Biodiversity and Ecosystem Service Sustainability (BESS): Delivering multiple ecosystem service benefits in real landscapes *by Zoe Austin, University of York, United Kingdom*
- Spatial Targeting Cement industry growth for best practice and socio-ecosystem governance in Nigeria *by Hakeem Bakare, University of Birmingham, United Kingdom*
- State of Watershed Payments 2012: Preliminary Findings *by Genevieve Bennett, Forest Trends' Ecosystem Marketplace, USA*
- Ecological disparity & social inability through unplanned livelihood recovery support among the coastal vulnerable community *by Satchidananda Biswas, Shushilan, Bangladesh*
- Mapping of Water Related Ecosystem Services in Mountain Catchments *by Kremena Boyanova, National Institute of Geophysics Geodesy and Geography, Bulgarian Academy of Sciences, Bulgaria*
- The Journal of Ecosystem Services (Elsevier Publ. Company) *by Leon Braat, Alterra, Wageningen UR, Netherlands*
- Listening to children: Perceptions of nature and Biophilia at Mountain School *by Don Burgess, Western Washington University, USA*
- Environmental benefits and monetary value of wooded parks in Memphis *by Rosanna Cappellato, Rhodes College, USA*
- Perception Of The Ecosystem Services Provided By The Bilbao Metropolitan Greenbelt (Northern Spain) *by Izaskun Casado, University of the Basque Country, Spain*
- Ecosystem Service Shifts with Changing Vegetation in Semi-Arid Riparian Zones *by David Chan, University of Arizona, USA*
- Loss of climate regulation ecosystem service causes decline in pasture and crop productivity in Amazon agriculture frontier *by Marcos Costa, Federal University of Viçosa, Brazil*
- Kazakhstan's Steppe as a Model of Sustainable Economy *by Sholpan Davletova, International Academy of Business, Kazakhstan*
- Can we sustain tropical homegradens through carbon trading? Exploring the possibilities *by Indira Devi, Kerala Agricultural university, India*
- Poverty Linkage On Climate Change In Sub-Sahara Africa *by Oyebola Adebola Elemide, federal college of agriculture akure ondo state Nigeria, Nigeria*
- Life Satisfaction and Air Quality: Case study, Shiraz, Iran *by Abdoukarim Esmaeili, Shiraz University, Iran*
- Economic impacts of HABs on fishery in the Northern Persian Gulf *by Abdoukarim Esmaeili, Shiraz University, Iran*
- The ecosystems knowledge network: embedding an ecosystems approach into UK policy and practice *by Robert Fish, University of Exeter, United Kingdom*
- Integrated Assessment of Ecosystem Services in the Czech Republic *by Jana Frélichová, Charles University in Prague, Czech Republic*
- An Applied Case Assessment of the Development of Harmony Station 2011 Strategic Sustainability Plan *by Terry Gibson, Marylhurst University, USA*
- He Mo'olelo ko ka Nahele (The Forest Has a Story): Cultural Ecosystem Services in Kona, Hawai'i *by Rachelle Gould, Stanford University, USA*
- Landscapes as boundary objects for transdisciplinary synthetic assessment of ecosystem services *by John Graham, University of Michigan, School of Natural Resources and Environment, USA*
- Ecosystem Services and Political Ecology: An Integrated Framework *by Jamaal Green, Portland State University, USA*

Poster Titles & Authors, cont.

- Payments for Ecosystem Services as a Driver of Climate Compatible Development: What Works and Why? *by Kevin Green, Rare, USA*
- Monetary and environmental (ecosystem services) distributional impacts of water quality improvements on different socioeconomic groups *by Cecilia Håkansson, Swedens Royal School of Technology, Sweden*
- Expert perception of ecosystem services in mountain regions *by Christin Haida, alpS GmbH, Austria*
- Water, Health, and Economy: an Integrated Ecosystem Services Approach to Sustainable Development in Urbanizing Deltas *by Sarah Holmen, Portland State University, USA*
- Functional traits as predictors of resilience of riparian ecosystem processes and services *by Moira Hough, University of Arizona, USA*
- Modeling Possible Shifts in Ecosystem Services Supplies for the Tualatin and Yamhill Basins, Oregon, USA: A Scenario Based Approach *by Robert Hoyer, Portland State University, USA*
- A study on possibility of Ecotopian society through a Ta-shizen-kawa-dukuri (Japanese Nature-Oriented River Works) project in Metropolitan area *by Masami Kato, Tokyo Institue of Technology, Japan*
- Assessments of ecosystem services and rarity of the endemic flora in the western Himalayas *by Shujaul Mulk Khan, University of Leicester, UK, United Kingdom*
- Effect of structural development on ecosystem services; A case study of Halda River System in Bangladesh *by Pronab Kumar Halder, Centtre for Environmental and Geographic Services, Bangladesh*
- The Ecosystem Services Triad: Linking stakeholder engagement, biophysical models, and ecological production functions to develop indices of ecosystem services for biodiversity *by Sheryl Law, Exponent, USA*
- Insect pollinator diversity of urban green roofs and adjacent ground-level habitat *by Jeremy Law, Columbia University, USA*
- Ecosystem Services Value of Grassland in China *by Xiao-Bing Li, College of Resources Science and Technology, Beijing Normal University, China*
- Assessing the value of carbon fixation and oxygen release by the terrestrial ecosystems of the Guanzhong-Tianshui economic region using GIS data *by Jing Li, Shaanxi Normal University, China*
- Modeling the production of multiple ecosystems services from agricultural and forest landscape in Rhode Island *by Tingting Liu, university of Rhode Island, USA*
- Carbon retention by check dams: Regional scale estimation *by Yihe Lu, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China*
- Improving the application of vertebrate trait-based frameworks to the study of ecosystem services *by Gary Luck, Charles Sturt University, Australia*
- Full Spectrum Resilience Monitoring—Telling the Whole Story *by Andrea Malmberg, The Savory Institute, USA*
- Bayesian Network Decision Support for Multiple Models and Experts *by Paul Manson, Portland State University, USA*
- Using a MCA approach to biodiversity and ecosystem services offset design and selection *by Mervyn Mason, Golder Associates Pty Ltd, Australia*
- Wood—the world's sustainable structural material *by Robert Meyer, SUNY College of Environmental Science and Forestry, USA*
- Quantifying carbon sequestration and storages in Finnish Forest Lapland—Linking National Forest Inventory measurements with land cover and habitat datasets *by Laura Mononen, University of Eastern Finland, Finland*
- Economic Valuation by Using CVM Case study: Siberian the Crane (Fereydounkenar International wetland) *by Behnaz Moradi Ghasabadi, Department Of Environment, Iran*
- Monitoring and evaluation: could this be the only savior to realizing environmental sustainability in low income countries *by Viola Nampeera, HIPO-Africa, Uganda*
- Effect of Diversity and Seeding Density on Ecosystem Services in Grassland Restorations *by Kristine Nemec, University of Nebraska, Lincoln, USA*
- Spatial Congruence Between Biodiversity and Ecosystem Services in the Basque Country Region (North of Spain) *by Lorena Peña, University of the Basque Country (UPV/EHU), Spain*

Poster Titles & Authors, cont.

- Integrated Ocean Data and Information Management System as a tool to support ecosystem-based management *by Joanna Piwowarczyk, Institute of Oceanology, Polish Academy of Sciences, Poland*
- Gulf of Mexico Ecosystem Services Valuation Database (GecoServ): a one-stop shop for Ecosystem Services Valuation Literature *by Carlota Plantier Santos, Harte Research Institute, USA*
- Mapping pollination services for British agriculture *by Chiara Polce, University of Leeds, United Kingdom*
- Economic value of mitigation of plant invaders in a subsistence economy: Incorporating labour as a mode of payment *by Rajesh Rai, Deakin University, Australia*
- Optimizing the Delivery of a basket of Ecosystem Services provided *by the Eastern Northern Range, Trinidad by Maurice Rawlins, The Cropper Foundation, Trinidad and Tobago*
- Continuously productive urban landscapes and EcoDistrict implementation *by Joseph Readdy, Schemata Workshop, USA*
- An Economic Evaluation of the Ecosystem Services of Green Roofs in Cincinnati *by Michael Rinaldi, University of Virginia, USA*
- Can Ranchers Profitably Provide Ecosystem Services? An STM Approach *by John Ritten, University of Wyoming, USA*
- An economic based mechanism to produce environmental services in degraded areas in the Brazilian Amazon *by Alexandre A. F. Rivas, Federal University of Amazonas and Piatam Institute, Brazil*
- Carbon sequestration Vs. other forest ecosystem services: are they in conflict? *by Gloria Rodríguez-Loinaz, University of the Basque Country, Spain*
- Moving from Understanding to Action—From Science to Design *by Thomas Russ, College of Southern Maryland, USA*
- Environmental Governance for Carbon Neutrality: Issues for Externality Sharing Mechanism *by Rakesh Kumar Sharma, Himachal Pradesh Institute of Public Administration (HIPA), India*
- Critical Success Factors to Enable Payment for Ecosystem Services to Improve Marine Fisheries *by Katherine Short, Imperial College, New Zealand*
- Modeling Hydroelectric Production Costs: Market-Based Tools to Mitigate External Sources of Cost and Boost the Integrity of Ecosystems *by James Siderius, Portland State University, USA*
- Optimal Fishery Management for Mitigating External Costs in Hydroelectric Production: An Analysis of Market Based Instruments *by James Siderius, Portland State University, USA*
- Ecosystem Services Provisioning of an Extensive Green Roof in Semi-arid Denver, Colorado *by Thomas Slabe, U.S. EPA Region 8 Laboratory, USA*
- The Political Economy Of Conservation Of Forestry Resources *by Sanjeev Kumar Sobhee, University of Mauritius, Mauritius*
- Cooling effects of wetlands in an urban region: the case of Beijing *by Ranhao Sun, Chinese Academy of Sciences, China*
- Are we creating Malthusian Cities in SubSaharan Africa? *by Haley Swanson, The New School, USA*
- Knowledge Modeling for Designing Natural Symbiotic Oriented Product and Service in Industries *by Matsui Takanori, Osaka University, Japan*
- Diverse Ecosystem Services for Diverse People: Mapping ecosystem service heterogeneity from multiple perspectives *by Stephanie Tomscha, University of British Columbia, Canada*
- An approach to evaluate ecosystem services in an agricultural landscape—a study case in Rio de Janeiro, Brazil *by Ana Turetta, Brazilian Agricultural Research Corporation's - Embrapa, Brazil*
- Evaluating the environmental and social impacts of Ecuador's national payments for ecosystem services program *by Kelly Wendland, University of Idaho, USA*
- An evaluation of water transactions for environmental benefits in the Pacific Northwest *by Kelly Wendland, University of Idaho, USA*
- Connecting a Region through shared Ecosystem Services: A Regional Watershed Sustainability Assessment Framework for the Spokane River Watershed *by Kara Whitman, Washington State University, USA*
- Assessing sustainability of an intensive agroecosystem with high yield in Northern China *by Guishen Zhao, China Agricultural University, USA*

Working Group Abstracts

Title: Establishing a new thematic area on 'Capturing ecosystem service values: Governance, instruments and decision making'

Host: Christoph Aicher (Helmholtz Centre for Environmental Research - UFZ, Germany)

Co-host: Bernd Hansjürgens, (Helmholtz Centre for Environmental Research - UFZ, Germany) — Christoph Aicher (Helmholtz Centre for Environmental Research - UFZ, Germany) — Stephen Polasky (University of Minnesota) — Tracey Cumming (Resource Economics and Stewardship Policy Advisor South African National Biodiversity Institute)

The concept of ecosystem services is increasingly used in policy design and decision making. In order to ensure that the values of ecosystem services are properly accounted for in actual decisions, it is crucial to integrate them into relevant decision-making processes, to identify and design appropriate policy and management tools, and to ensure that values and tools are embedded in governance structures at all levels. As highlighted by the TEEB reports, there is increasing experience with the successful implementation of policy instruments considering ecosystem services as well as ongoing multi- and transdisciplinary research efforts aimed at 'capturing value' of ecosystem services and at enabling decision makers from policy, business and civil society to integrate the available knowledge on ecosystem services into their decisions.

Against this background the working group will take stock and identify and discuss important potentials and challenges of using concept of ecosystem services in policy making. Possible issues include: under what specific conditions is a monetization of ecosystem services values necessary and helpful for designing and implementing policy instruments? How can ecological thresholds or tipping points be taken into account and how are distributive implications addressed by different instruments?

While ESP is encouraging research and networking activities on policy implementation, these issues are so far under-represented in ESP network and its activities. The intention of this working group is to explore the option of establishing a Thematic Working Group within ESP that focuses explicitly on integrating ecosystem services and their values into governance, instruments and decisions. The sessions should provide room to discuss how such a Thematic Working Group within ESP could look like, for instance what should be its concrete goals, specific thematic content, activities, working mode, etc.

Title: The Economics of Ecosystems and Biodiversity for the Oceans: valuing ocean ecosystem services as part of a green economy in a blue world

Host: Yannick Beaudoin (UNEP/GRID-Arendal, Norway)

Co-host: Anne Solgaard (UNEP.GRID-Arendal) — Linwood Pendleton (Duke University) — Benjamin Simmons (TEEB Secretariat, UNEP)

Globally, decision makers are awakening to the economic and societal importance of the world's ecosystems and biodiversity. In the context of establishing a green economy, values and services derived from healthy ecosystems are having a more prominent role in influencing the choices made by governments, markets, industry and individuals.

Policymakers are using an increasingly broader view of human wellbeing and economics that includes 3 core capitals: social, natural as well as financial capital. This expanded view, forwarded by both the TEEB and the Millennium Ecosystem Assessment, enable the development of new socio-economic frameworks that support intelligent growth, build resilience, and establish truly sustainable livelihoods, communities, industries and societies. In recent months, this rising awareness has led to the promotion of a TEEB For Oceans concept that is now in development.

To promote a co-development approach and participatory, open architecture process for a TEEB for Oceans study, this working group proposal calls for a 1.5 day session designed to engage with a transdisciplinary audience of experts and capture relevant and valuable insight, knowledge and information. The captured knowledge would be used to further refine the TEEB for Oceans study and broaden the concept ownership across as many social and scientific spheres as possible.

The proposed process would:

1. be based on an experiential, group-based approach examining our current relationships to the oceans from social, natural and economic perspectives
2. identify and clarify the essential questions needed to be addressed within the context of a TEEB for Oceans
3. immerse participants in a co-creative process leading to the elaboration of desired pathways that would empower a TEEB for Oceans to clearly affect our future relationships to the oceans, and henceforth foster more sustainable management of human activities on the oceans
4. prototype components, essential expert groups, processes etc for a TEEB for Oceans study; how can we achieve maximum impact measured in concrete change?

Working Group Abstracts, cont.

Title: Can I Get Credit For This? Markets for Ecosystem Services Provided by Shellfish Aquaculture

Host: Susan Burke (Cardno ENTRIX, USA)

Co-host: Gretchen Greene (ENVIRON International Corporation)

Shellfish provide numerous essential ecosystem services that are valuable to humans including nutrient uptake, water filtration, and provision of habitat. Yet Pacific Northwest Shellfish growers have not yet been able to receive credit or payments or participate in markets for ecosystem services despite substantial scientific documentation of the services provided. Meanwhile, the region suffers from growing water quality concerns as exemplified by the creation of the Puget Sound Partnership, which is directed at restoring and enhancing these very ecosystem functions. The purpose of this working group will be to bring together shellfish growers, researchers, regulators, environmental organizations and other interested parties to develop mechanisms through which payments or other credits for ecosystem services to commercial growers and conservation groups could become a reality. The group will meet for 6 hours over the course of two days, developing a plan for securing the ecosystem services provided by shellfish aquaculture production or understanding why the idea is not worth pursuing. A report will be delivered to the wider conference body on Friday, August 3rd.

The workshop will begin with a few brief overview presentations on such topics as: shellfish nitrogen uptake estimates, river basin water quality management, why and how markets can bring about least-cost solutions, political economy, etc. Following the overview, facilitated discussions will focus on obstacles and opportunities to bringing ecosystem service markets into the regulatory toolkit. The second day will focus on solutions and action plans with commitments from participating entities.

Title: Solutions to Mitigate Flood Risk and Benefit Ecosystems: Incorporating Ecosystems Services Tools and Methods

Host: Jeanne Christie (Assoc. of State Wetland Managers, USA)

Co-host: Andrew Warner (The Nature Conservancy) — David Conrad (Clean Water Network) — David Batker (Earth Economics) — Rowan Schmidt (Earth Economics)

Flooding losses in the United States can be expected to exceed \$20 billion annually. Many players contribute to decisions in floodplain management and flood mitigation and reduction. By and large, however, the current economic assessments of flood damages, and actions to reduce those flood damages, consider only a narrow range of costs and benefits. This narrow scope may preclude innovative flood-risk reduction projects and hinder the development of more holistic flood management that can both counter rising flood damages and provide a broader range of values than current approaches. In this session we will examine existing U.S., and potentially other nations', policies and methods for assessing flood loss and mitigation and develop recommendations for alternatives that support more holistic and resilient solutions. For example, Federal Emergency Management Agency (FEMA) post-flood damage evaluations of flood loss and replacement costs are generally evaluated on a building-by-building basis and only include construction replacement and evaluation of historically based flood probabilities. Cumulative impacts to the community, including social and environmental costs and ecosystem service benefits, are not factored in. The U.S. Army Corps of Engineers (Corps) takes a somewhat broader approach, but also does not consider a comprehensive suite of physical, social, and environmental costs and benefits that could be evaluated. For example, the benefits of ecosystem services are not yet considered in federal Benefit-Cost Analysis, which contributes to a focus on structural flood protection measures. Pragmatic and integrated tools and methods are needed to support more holistic and lasting solutions that significantly reduce future flood risk and reverse the ever increasing escalation of damage to human health and property as a result of floods globally.

This work group will be briefed on current FEMA and Corps benefit-cost analysis approaches, and a sample of local approaches to project implementation, then be tasked with: expanding on these to identify the full range of physical, social, and environmental costs and benefits associated with alternative approaches to floodplain management; synthesizing tools and methods for evaluating a full suite of ecosystem services associated with floodplains; and offering a framework for integrating tools for programmatic implementation and assessing which would or would not require statutory or regulatory changes.

We will facilitate discussions on a range of related issues, such as the relative benefits of structural and nonstructural approaches and opportunities and challenges of working at a system (watershed) scale. The revised approach will be compared to existing federal policies and the work group will develop recommendations for programmatic changes. The end product will offer flood-risk management agencies at various levels of government a set of specific recommendations for using a more comprehensive framework for evaluating costs and benefits. Following the conference the product will also be used to create a paper for the Solutions Journal.

Working Group Abstracts, cont.

Title: Modelling and Mapping Ecosystem Services

Host: Neville Crossman (CSIRO Ecosystem Sciences, Australia)

Co-host: Benjamin Burkhard (University of Kiel, Germany) — Stoyan Nedkov (Institute of Geography Bulgarian Academy of Sciences) — Wieteke Willemsen (JRC-ISPRA, Italy).

Ecosystem services need to be quantified and mapped if they are to be considered in planning and policy decision making. This working group will continue the activities of the evolving Ecosystem Services Partnership Mapping and Modelling Working Group. Two of the organizers (Crossman and Burkhard) manage this ESP Working Group.

Background

Policy that commodifies the production of ecosystem services, such as PES, biodiversity and wetland banking, carbon offsets and trading, and conservation auctions, depend on robust quantification and flow of services. To understand the stocks and flows of ecosystem services we need to know where ecosystem services are provided (supply), where are the beneficiaries (demand), and what are the rates of consumption. Markets for biodiversity and ecosystem services will fail if buyers and sellers have no confidence in the transaction. At a broader level of sustainability policy, we need to understand where and what services are provided by a given piece of land, landscape, region, state, continent and globally, so that we can monitor and manage the level of provision of services. We need to understand trade-offs within bundles of ecosystem services supplied by a landscape following implementation of resource management and conservation policy. We need to know the condition of natural capital providing those services so that finite resources can be targeted to where the enhancement of services is needed most. Maps and models are a very powerful tool to process complex data and information from ecosystem service quantification in a spatial manner and thereby, support resource and environmental management.

Topics

- Land cover and land use mapping and its central (or otherwise) role
- Challenges in modelling and mapping in marine ecosystems
- Data - using data to its fullest; proxies in cases where data is poor or absent; spatial and non-spatial databases
- Spatial scale - local versus regional versus continental versus global
- Ecological function - Mapping biodiversity and function and links to ES; species distribution models
- Footprints: spatially-explicit levels of supply, demand and consumption of ES
- Trade-offs: win-win; win-lose; multifunctionality
- Indicators of change - describing function and process linkages; benefits and beneficiaries; changes in service provision; climate change; development scenarios
- Standards - development of accounting and measurement standards (e.g. ISO) - essential if market transactions of ES are going to be reliable and robust
- Spatially-explicit ES Values - market; dollar; non-market; qualitative
- Tools - GIS and remote sensing; biophysical process models; integration and multi-disciplinarity; decision sciences (e.g. MCA)
- Dealing with uncertainty - Monte Carlo; Bayesian Belief Networks; Info-gap theory
- Representing temporal issues - changes in service provision over time e.g. seasonal dynamics; climate change; land use change
- Participatory processes - qualitative techniques to fill data gaps; local knowledge; expert opinion.

Working Group Abstracts, cont.

Title: Towards a global network of Ecosystem Services Assessment, Implementation and Demonstration sites

Host: Rudolf De Groot (Wageningen University, Netherlands)

The aim of the Working Group is to further develop, strengthen and formalize a global network of ecosystem services research and training sites in all major biomes (marine systems, coastal & inland, wetlands, tropical forests, etc.). These should be sites where people are actively applying the concept of ecosystem services to achieve ecosystem conservation, restoration and sustainable management.

Building on various existing initiatives (see below), the 'event' will enable participants to share experiences on the practical application of ecosystem services assessment and valuation and discuss lessons learnt and steps to be taken to both advance the science and strengthen the network.

Several concrete examples of experiences with ecosystem assessment and implementation will be presented.

The current status, and future plans, regarding a global network of research and training sites will be presented, building on activities from the Commission on Ecosystem Management (www.iucn.org), the Sub-Global Assessment (SGA) Network (www.ecosystemassessment.net), and the National TEEB Studies (www.teebweb.org).

Ideally, 'key sites' should be selected in each major biome or ecosystem type and one of the aims of the workshop is to engage the audience in the selection of sites and discuss this network which is being developed by the Ecosystem Services Partnership (ESP) (www.es-partnership.org) in collaboration with the above mentioned organisations, notably UNEP-WCMC and UNEP-TEEB.

The workshop will also discuss user-needs (eg. knowledge exchange and collaboration, access to databases, bibliographies, organisations, etc.) and explore options to engage with the newly established Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Representatives of the above initiatives are actively involved in and/or endorse the organisation of this workshop.

Title: Cultural Ecosystem Services: Progress towards application

Host: Robert Fish (University of Exeter, United Kingdom)

Co-host: Andrew Church (University of Brighton)

Incorporating consideration of "cultural ecosystem services" (CES) into ecosystem assessments and decision making is a challenging, and arguably rather underdeveloped, aspect of ecosystem based approaches to natural resource management. The purpose of this working group is therefore to provide a space for exploring both theoretical and practical issues arising from operationalising the concept of CES and to scope out the emerging interdisciplinary research agenda for taking work in this area forward.

The working group will:

1. Examine and assess the utility of different approaches to the classification of CES and how these have been applied within policy & academic discourse;
2. Highlight key issues and challenges arising from interest in quantifying, mapping, modelling and value CES; and
3. Explore the institutional/governance contexts that foster or impede consideration of CES in decision making.

The working group will be discussion based but will include 10-15 minute stimulus presentations exploring the research agenda for each of these 3 areas. Participants will be invited to offer short 2-3 minute responses to these stimulus talks based on own understanding and experience of progress in each of these areas (and suggest others) as the basis for wider group discussion. This discussion process will be supported by critical evaluation and refinement of a draft written statement of the emerging research agenda for each these three themes. The output from the workshop will be a short agreed statement and proposals for future events and activities to address the emerging research agenda for CES.

Working Group Abstracts, cont.

Title: Ecosystem Services of the Columbia River Basin

Host: Thomas D. Fontaine (Director, Western Ecology Division, National Health and Environmental Effects Laboratory. USEPA)

The Columbia River Basin is shared by the US and Canada, several States and Provinces, and first nations. Ecosystem services in the basin support power generation, economic and urban growth, recreation and fisheries, agriculture, and a variety of other needs. Tradeoffs amongst these services abound and multiple layers of legal considerations (western water law, state's rights, international treaties, etc.) overlay decision making. Climate change scenarios affect all aspects of hydrology and ecosystems. The group is asked to develop a framework for decision making within this context.

Title: Does Participation Fit in Ecosystem Services Valuation?

Host: Rachelle Gould (Stanford University, USA)

Co-host: Kai M.A. Chan (Institute of Resources, Environment, and Sustainability, University of British Columbia) — Sarah Klain (Institute of Resources, Environment, and Sustainability, University of British Columbia)

'Participation' has for years been a buzzword in environmental policy and research. Conventional wisdom tells us that if decisions and policies are arrived at through participatory processes, processes and outcomes will be more appealing and projects will more successfully achieve their goals. Hundreds of on-the-ground efforts at participatory planning have shown us that participation in the real world is complex. We have numerous examples of both glowing successes and total flops. This working group will push questions of participation into the ecosystem services discussion; we will explore how we might design participatory processes to increase engagement with ecosystem services frameworks, and how this might change ES research & practice. We ask if increased participation in ecosystem services planning might have two outcomes: to help us make 'better' decisions and to encourage interest and commitment to ecosystem stewardship.

Our overarching questions will be: What does participation mean for ecosystem services planning? What does ecosystem services planning mean for participation? And, Does ecosystem services planning need participation to achieve lasting and meaningful outcomes, whatever those may be? We hope to explore sub-questions such as: What could a participatory ecosystem services planning process look like? What role would participation play; where would it enter the picture? Would its role be different with respect to different services? In this working group, we seek to combine the expertise of: (1) practitioners and academics with experience with participatory processes; (2) practitioners and academics with experience with ecosystem services planning processes, participatory or not; (3) people with thoughts on how participation in ES decision-making processes might encourage interest and participation in ecosystem stewardship; and (4) people interested in participation as a potential (or necessary?) tool for ecosystem services work.

Title: Resolving a Key Root Cause with Common Property Rights

Host: Scott Durlacher (Thwink.org, USA)

Co-Host: Jack Harich (Thwink.org, USA)

This group will be working on a solution hypothesis described in the parallel session presentation on Solving the Sustainability Problem with Root Cause Analysis. The hypothesis is that according to root cause analysis, Common Property Rights (CPR) cleanly resolves a key root cause so it should work well.

Here's our problem to solve in two days:

1. Is the above hypothesis sound? Does CPR resolve the main root cause of improper coupling between the economy and the environment?
2. If it's unsound or we can't tell, what should we do?
3. If it is sound, then how can we proceed with iterative refinement of CPR via test implementations until CPR is good enough to solve the improper coupling problem?
4. How can we ensure successful post-conference action?

To initiate a productive work effort we will first review this information:

1. How root cause analysis works.
2. The System Improvement Process (SIP). SIP was designed from scratch to solve difficult social problems. SIP is a wrapper for root cause analysis so that this powerful tool can be applied outside its normal domain of technical and business problems to social problems.
3. Analysis results of applying SIP to the sustainability problem.
4. The key solution element of Common Property Rights. CPR is a systemic approach to sustainable management of ecosystem services in a generic, efficient, self-replicating manner.
5. How CPR can be implemented, with emphasis on the four key requirements for a successful stewardship startup.

Working Group Abstracts, cont.

Title: The Past, Present, and Future of Software for Ecosystem Services

Host: Lucas Joppa (Microsoft Research, United Kingdom)

Valuing ecosystem services, or 'natural capital,' is a potentially transformative way to prioritize and manage environmental systems at a landscape scale. Efforts to calculate the current worth of environmental services, and to predict the corresponding change in value with a change in the state of the service, are underway. Much of this work is still locked in the confines of academia, missing the most important potential beneficiaries of the research: land planners, managers, and policy-makers. Capturing the valuation and prediction of ecosystem services in simple, intuitive, and powerful land-use planning software is necessary to empower these important end-users. Several successful software efforts are ongoing, including perhaps the two most well known packages inVest and Aries. The purpose of this session is to take a constructively critical perspective ecosystem service software to date, identifying the various projects, (previous, current, or planned), and asking what has been successful (and unsuccessful) in these prior efforts. This in-depth review and discussion will help define the next generation of these important computational tools. The outcome of this working group will be an agenda-setting review of ecosystem service software. This will, for the first time, provide a one-stop list of these software packages, along with associated functionality. More importantly, it will serve to point the way forward for optimizing success in the creation of future ecosystem service software tools.

Title: Developing an indicator-based framework to monitor and communicate the links between human health and well-being and environmental quality at the watershed scale

Host: Tatiana Koveshnikova (Credit Valley Conservation Authority, Canada)

Natural areas provide many benefits to local residents and visitors. However, the exact links between local natural environment and human health and well-being are not well understood. Over the past several years, Credit Valley Conservation (CVC) has been engaged in an effort to develop an understanding and build awareness of the linkages between ecosystem services and human well-being at the watershed scale. In Phase I of this initiative, CVC completed a study that identified ecosystem services that were most important to the local residents, though it did not specify how changes in the quantity and/or quality of the ecosystem services translate into changes of the residents' health and well-being.

In Phase II of the research, we are hoping to develop a comprehensive indicator framework linked to watershed management activities that will help to monitor changes in the residents' health and well-being over time. However, there are several challenges that remain to be addressed, which include: need for appropriate models and measures to forecast changes in well-being; dealing with overlapping scales and boundaries; dealing with communities vitally dependent on ecosystems though less so for basic provisioning services; understanding tradeoffs between optimizing ecological functions and the economic benefits from residential/industrial development; involving stakeholders in mapping the linkages between environmental and human systems; etc.

Since the links between ecosystem services and human well-being have been studied by a number of disciplines, we feel strongly that establishing an interdisciplinary working group on quantifying, monitoring and reporting these relationships will be instrumental in advancing research and practical applications in this area. We would like to invite practitioners, academics and community leaders with expertise and interests in the relationship between ecosystem services and human health and well-being.

The working group will start with a brief overview of the past research, including its key findings and recommendations as well as the gaps and challenges identified. It will be followed by several brainstorming and commentary sessions and small group discussions to allow exchanging ideas and getting valuable feedback from all participants. At the end of the workshop, the group will summarize recommendations for developing an indicator framework for monitoring resident's health and well-being at a watershed level. Following the conference this summary will be used to produce a brief report and/or paper in a peer-reviewed journal. This working group also aims at exploring new opportunities for future cooperation, both in terms of research and its practical applications.

Working Group Abstracts, cont.

Title: Modeling and Quantifying Ecosystem Services for Trading

Host: Harbans Lal, USDA/NRCS, USA

The over exploitation of natural resources by increasing population has lead to the stage where we -the humans living on the planet earth can no longer take them (the natural resources) and/or services provided by them for granted. For our future generations to enjoy the life style that we and our recent ancestors have enjoyed, we need to start paying more attention to conserving natural resources and valuing the services provided by them in monetary terms. This would enable them to be integrated into balance sheets of the corporate business economic analyses. One of the limiting factors to achieve these goals is the lack of tools and techniques for quantifying the services provided by different natural resources. This working group aims at identifying matrices of ecosystem services along with their units. We would also discuss the types of tools needed for qualifying and/or quantifying these services and the best approaches to develop them and make them available to for the practitioners and stakeholders. We would also review and discuss NTT (Nutrient Tracking Tool) of the USDA/NRCS and other similar tools being developed by different agencies around the nation. This working group would provide the participants a platform for sharing their knowledge and learning from other experiences about an important component of ecosystem services. We hope to come up with an inventory of currently available tools and developing specifications for additional tools for evaluating and quantifying ecosystem services.

Title: Complementarity in ecosystem services: Creating a vision for agriculture, energy, and society

Host: Clarence Lehman, University of Minnesota, USA

Co-host: Shelby Williams (University of Minnesota) — Jacob Jungers (University of Minnesota)

Motivation. The twentieth century was an anomaly in the history of energy and agriculture. Since its earliest days, agriculture supplied both food and fuel for a developing society. Woodlands grew heating and cooking fuels while cultivated fields grew crops and hay, with hay the fuel that sustained our draught animals. But food and fuel divorced as mechanization ushered enormous growth through fossil fuels. In our present century this is reversing, with ethanol and other bioenergy again distributing fuel fields across the rural landscape. But in the meantime the world changed and we now must address landscape issues, including carbon sequestration, habitat fragmentation, wildlife and pollinator decline, and widespread effects of fertilizer run-off. **Topics.** This workshop will explore complementarity in services among whole ecosystems, natural and artificial. For example, corn fields inevitably emit nitrogen. With judicious landscape design, those fields can supply an otherwise unintended ecosystem service to neighboring prairies, forests, and similar systems needing nitrogen. Those systems in turn can provide ecosystem services to the emerging bioenergy industry by complementing, rather than competing with, food production. **Scope.** Workshop interactions will sketch broad geographic visions addressing the long term, up to fifty years or more. Through discussions of conceivable future directions, such as decoupling watersheds, fuels for land, air, and sea, integrated smart grids, and utilizing that inevitable byproduct of electrical generation, heat. Formulating visions that integrate ecosystem services from salient sectors will help landscape ecology anticipate and meet the needs of a planet sustainable for future inhabitants. **Format.** The workshop will start with a brief discussion of framework, followed by introductions, an overview presentation, reaction and commentary, planning and brainstorming, selection of issues, organization of papers, and close with planning for future development. **Outcomes.** We will design a survey and vision paper for publication and coordinate contacts for future work.

Working Group Abstracts, cont.

Title: The Sub-Global Assessment Network: Tools and approaches for monitoring and measuring ecosystem services at national and sub-national levels

Host: Matthew Ling (UNEP-WCMC, United Kingdom)

Co-host: Lucy Simpson (UNEP-WCMC, United Kingdom) — Keisha Garcia (The Cropper Foundation, Trinidad) — Roy Haines-Young (The University of Nottingham, United Kingdom)

The Sub-Global Assessment (SGA) Network (www.ecosystemassessments.net) seeks to create a common platform for practitioners (individuals and organizations) involved in ecosystem assessment at regional, sub-regional, national and sub-national levels with the intention of promoting and facilitating improved capacity in undertaking and using assessments.

This working group, convened by members of the SGA Network Secretariat, will present and discuss the tools and approaches for monitoring and measuring ecosystem services, with specific focus on the pros and cons of the tools available, as well as an identification of knowledge gaps in these tool-sets. The session will also examine the challenges involved in applying tools within sub-global assessments as a means of identifying specific steps and solutions required to address these challenges.

The specific objectives of the 1.5 day-long working group session are to: Identify the knowledge gaps in (up to three) selected tool-sets available to assessment practitioners;

- Identify the challenges in applying these tool sets in sub-global assessments;
- Identify and prioritize the specific steps and solutions required to fill knowledge gaps and address challenges in application of these tools;
- Increase participants' awareness of the SGA network and its purpose; and
- Promote exchange and networking amongst practitioners involved in developing and applying assessment tools

It is anticipated that the session will generate information which will be of direct benefit to SGAs within the SGA Network, as well as practitioners who work in the areas of developing and applying assessment tools at the sub-global scales.

Title: Assessing and managing multiple global ecosystem services

Host: Junguo Liu (Beijing Forestry University, China)

Co-host: Michael Obersteiner (International Institute for Applied Systems Analysis (IIASA))

Ecosystems provide important services and bring about tremendous benefits to human society ranging from food and timber, climate regulation and nutrient cycling to cultural amenities. However, in the past decades, humans have changed agricultural and natural ecosystems more rapidly and extensively than in any comparable period of time in human history. The use of natural resources to satisfy global consumption of goods and services has triggered severe ecological and environmental consequences, and pushed several biogeochemical processes out of their safe planetary boundaries. This Working Group will provide an investigation of multiple ecosystems services on a global scale, with a focus on freshwater supply, food and timber production, climate regulation, and nitrogen, phosphorus and carbon cycling. Consequences of human appropriation of natural resources will be reported, such as land use change, overuse of water resources, biodiversity losses, pollution, deforestation, greenhouse gas emissions, among others. We will analyze trade-offs between different ecosystem services as well as between ecosystem services and other components of human well-being. Ecosystem services and their management will be discussed in the context of global change. The Working Group plans to publish major findings identified during the conference in a high-impact scientific journal with a special issue or a synthesis article.

Title: Interrelating the components of the ecosystem service cascade

Host: Felix Müller (University of Kiel, German)

Co-host: Marion Potschin (The University of Nottingham, United Kingdom)

The 'ecosystem service cascade' has become an acknowledged conceptual outline for ecosystem service analysis, indication and application. This model might remain a nice metaphor if we do not take a more detailed look at the relationships between the components, what is planned throughout the "INTERRELATIONS" workshop. In this introducing presentation the framework will be described, some basic workshop problems and questions will be proposed and a theoretical analysis of the demanded interrelations will be presented. Thereby the interactions between the components "biophysical structures/processes", "ecosystem functions", "ecosystem services", "human benefits", "values" and the sub systems of the adaptive management cycle will be examined by relational matrices. The interactions between biodiversity and the listed components will be considered with special emphasis. As a consequence some hypotheses on the role of biodiversity for ecosystem service provision will be proposed.

Working Group Abstracts, cont.

Title: Ecosystem Services and Livelihoods—the Power of Grasslands and Pastoralists

Host: Andrea Malmberg (The Savory Institute, USA)

Cohost: Jason Selwitz (Agriculture Center for Excellence) — Elaine Eisenbraun (Northfork of the John Day Watershed Committee)

Soil carbon sequestration is gaining global attention because of the growing need to offset the rapidly increasing atmospheric concentration of carbon dioxide (CO₂). Addressing soil carbon sequestration in the world's grasslands through increases in soil organic matter across the soil horizon, will result in mitigation of global climate change and simultaneously, in increases in soil water retention.

The ultimate outcome will be a more resilient environment. It also represents an opportunity for the 1 billion pastoralists that inhabit these landscapes to be empowered to improve their livelihoods and play a key role in providing these ecosystem services.

For many years, large areas of grasslands around the world have been turning into barren deserts. This process, called desertification is happening at an alarming rate. An estimated one-third of the Earth's surface is covered with grasslands that are facing the threat of desertification.

Degraded grasslands present an opportunity for pastoralists around the globe. They can be restored using properly managed livestock under Holistic Management. From a social perspective, using properly managed livestock as the restoration tool in a pastoralist society represents a sound approach. The ability to sustainably increase stocking rates while restoring the natural resource base, sequestering carbon, increasing soil organic matter and improve water retention capacity constitutes an economic incentive and an opportunity to provide valuable ecosystem services.

This working group will explore innovative and adequate means for pastoralist groups (from commercial ranches to communal land settings) to measure, verify and market two key grasslands ecosystem services: Water and Carbon.

Title: Ecosystem Services in Southern Africa: Closing the Gap between Supply and Demand

Host: Christo Marais (Department Environment Affairs, Environmental Programmes Branch, South Africa, South Africa)

Co-host: Tracey Cumming (South African National Biodiversity Institute) — Maura Andrew (Rhodes University Environmental Sciences)

The South African government is making substantial investments into the restoration and maintenance of natural resources through its Environmental Programmes Branch of the Department of Environment Affairs. These investments have three main objectives, improving the natural capital/infrastructure of the country, the creation of jobs and the development of rural economies. More often than not the economic potential of rural areas lies in the land, either in the form of agriculture and/or nature based tourism. These aren't the only activities that holds potential for economic growth in rural areas though. The ecosystem services from the land add significant value to downstream communities and industries. Recently the Development Bank of South Africa (DBSA), the Industrial Development Corporation (IDC) and Trade and Industrial Policy Strategies (TIPS) published a report on Green Jobs. It estimated that there is a potential to create 230, 000 jobs in the natural resource management sector which is basically the core function of the Environmental Programmes. To unlock these jobs, restore and maintain the country's natural capital though will need an annual turnover to the value of around R57 billion. It will be near impossible for government to foot this bill. Government therefore needs to take its place as sector leader and to use its own resources to unlock private industry sustainability investment, water sector, international and land user resources. To develop the market to its full potential will need some interventions. These can be put into four basic work streams:

1. Primary ecological research into the impacts of land management practices on the quality and quantity of ecosystem services,
2. The translation of the impacts in 1 above into it economic and social consequences.
3. The development of an institutional and governance framework for the market,
4. The development of awareness and an advocacy programmes to introduce the sellers (land users and local communities) of ecosystem services to the buyers (e.g. government decision makers, the water sector, local private sector decision makers, international agencies and multinational companies) in order to build trust and healthy business relations.

The concept note deals with initiating some preliminary steps towards the development of the market. The idea is to engage with experts from other countries to get inputs to the development of a market for ecosystem services for South Africa but also its neighboring countries, Lesotho, Swaziland, Mozambique, Zimbabwe and possibly Botswana.

Working Group Abstracts, cont.

Title: Mainstreaming ecosystem services values into environmental management: some preliminary evidence from Eastern Africa
Host: Eric Mungatana (University of Pretoria, South Africa)

Economists engage in ecosystem services (ESS) valuation studies to facilitate environmental policy formulating processes make better (more informed) choices rather than for the sake of simply generating numbers. The literature however shows that as we move from provisioning to regulating to cultural and finally to supporting ESS, our ability to assign such values in a manner that all of us (e.g. academics especially in ecology and economics, politicians, policy makers etc.) would find acceptable significantly diminishes. The values so produced are subject to practical and methodological criticisms, thus limiting their use in environmental decision making. It follows that there is great difficulty in defining prices of non-market ESS that can enable private individual utility and profit maximizers to exchange goods and services to the point that maximizes social welfare. How then can we mainstream ESS into individual and societal decision making? The literature recognizes that ESS valuation that is closely tied to policy evaluation raises the need: (i) to generate information (for the economist to generate economic values) that provide the scientific basis to better understand trade-off analysis and (ii) to suggest how such information could be used to enhance environmental governance. This paper provides some preliminary findings working with stakeholders in Eastern Africa, in a process designed to institutionalize environmental values in decision making.

Title: Workgroup for US National Atlas for Sustainability: Indicators Review and Preliminary Expert Weighting to Create Indices for Ecosystem Services

Host: Anne Neale (U.S. Environmental Protection Agency, USA)

Co-host: Ann Pitchford (USEPA, Las Vegas, USA)

A group of US Federal agencies and other organizations are creating the National Atlas for Sustainability, a web-based, easy-to-use, mapping application which will allow users to view, interact, and analyze multiple ecosystem services for the contiguous United States. The overall goal of the Atlas is to develop the science to map indicators of ecosystem services production, demand, and drivers of change for the Nation and use these indicators to build indices for use in multiple ecosystem services trade-off analyses. The Atlas currently has a suite of indicators, some completed, and others in development. Participants in the workgroup will receive an overview of the indicators being used in the Atlas and will be asked to provide their expert opinion on the contribution of each of the indicators to the overall index for each particular category of ecosystem service, to include: Clean air; Clean water for drinking; Clean water for recreation and aquatic habitat; Adequate water supply; Food, fuel and fiber; Recreation, cultural and aesthetic amenities; Climate stabilization; Protection from hazardous weather; Habitat, and the maintenance of biodiversity. If time allows, we will also discuss gaps in our current suite of indicators and how these gaps could be filled.

Title: Groundwater Ecosystem Services, Stakeholder Participation, and Policy

Host: Rima Petrossian (Texas Water Development Board; University of Texas at Austin, USA)

Goals: How do we transform the cacaphony into three-part harmony?

Problem: In Texas, artesian features used to be common throughout the state. In the Texas Hill Country, Jacob's Well is an artesian feature where groundwater upwells from more than 300 feet deep and provides perennial flow to Cypress Creek. Recently Jacob's Well was the focus of discussion between groundwater policy makers, the technical community, and area residents. The regional groundwater management area—a large area consisting of all or parts of 9 counties served by the Trinity Aquifer—adopted a regional "desired future conditions" statement that would allow from 5 to 21 feet of drawdown in Hays County, the location of Jacob's Well. Some stakeholders living nearby protested this desired future condition through a petition process, maintaining that the spring flow stops after only 2-3 feet of aquifer drawdown. This has occurred several times over the past decade, due to drought and increased groundwater pumping. The Texas Water Development Board reviewed the petition and decided to uphold the desired future condition adopted by the groundwater management area, concluding that it was reasonable.

Questions will be answered:

- How can scientists and researchers better inform policymakers about ecosystem services, specifically related to groundwater withdrawals and recharge?
- Is there a universal methodology already developed that ties good groundwater science, economic and social impacts to ecosystem services? Can MODFLOW or similar groundwater flow models incorporate ecosystem services impacts? If not, how can we incorporate them?
- Does groundwater need a monetary value to inform ecosystem services policy? How can groundwater be monetized? What is the cost of inaction?
- How is existence value and intergenerational consideration incorporated into ecosystem services?
- If it is too difficult, expensive, etc. to include ecosystem services into decisions about groundwater extraction, is there a good proxy that can be used to simulate them?

Working Group Abstracts, cont.

Title: SITES™ Rating System: Influencing Landscape Performance using an Ecosystem Services Framework

Host: Danielle Pieranunzi (Sustainable Sites Initiative, USA)

Co-host: Ed MacMullan (Senior Economist, ECONorthwest)

The Sustainable Sites Initiative (SITES™) is an interdisciplinary effort to address the pressing need for land design and development standards that are less reliant on fossil fuels and more attuned to climate change, and to the growing awareness that healthy landscapes need to be integrated within every community. Additionally, SITES was developed because there have been no national standards, until now, to guide those who want to create sustainable landscapes, despite the growing green building movement and the guidance and motivation provided by the U.S. Green Building Council and other organizations.

Constructed landscapes, like buildings, can conserve resources or they can degrade and waste them. Landscapes, however, are unique in that they also have the additional capacity to enhance and regenerate our collective natural resources, often termed "natural capital" or "ecosystem services." Because a sustainable site can provide these essential services for human health and well-being, it can actually improve environmental quality rather than simply minimizing the damage to natural systems. The opportunity to quantify human benefits from ecosystem services represents a paradigm shift in the way society relates to the environment.

SITES has spent several years developing guidance and benchmarks for sustainable land practices that are grounded in rigorous science and can be applied on a site-by-site basis nationwide. Released in 2009, Guidelines and Performance Benchmarks (i.e., SITES Rating System) are based on the concept of ecosystem services.

This workshop will provide an overview of the SITES program and more specifically, provide a sneak preview to the new proposed rating system anticipated for release in 2013 at which time, certification will be made available for any project who is interested. Credit revisions made to date are based on feedback from the 150+ pilot projects currently testing to the 2009 rating system as well as additional research and science. Presenters will also share new research into how SITES credits directly and indirectly impact ecosystem services and will engage the audience in a discussion on how to overcome challenges associated with valuing ecosystem services on a site-specific level. Ultimately, the goals of the workshop are to increase the knowledge base and to understand the potential solutions and opportunities for more clearly conveying the link between land design, construction and maintenance and the protection and enhancement of ecosystem services.

Title: Ecosystem Services and Development Planning: Prioritizing, Planning and Reconciling Critical Needs

Host: Nalini Rao, Conservation International, USA

Co-host: Rosimeiry Portela (Conservation International) — Rachel Neugarten (Conservation International) — Hedley Grantham (Conservation International)

The primary goal of landscape or seascape planning is to enhance the sustainability of spatial configurations of human land uses, minimizing the perceived conflict between goals such as development and ecological integrity. Indeed, while development planning can often mean dams, roads, and other hard-engineering solutions, it can also include green or 'soft' solutions, which preserve critical natural capital. Natural capital delivers vital ecosystem services to communities, increasing their resilience to external pressures such as sociopolitical conflict or natural disasters. A planning framework that incorporates geographic priorities for ecosystem service provision, targeting areas where natural capital can be conserved, can ensure that communities will have both the advantages of built and natural capital. An important feature in planning are the multiple competing perceptions of stakeholders representing different sectors, interests and ecosystem service needs, as determined by their spatial location, and their economic, social, and spiritual interests. For this working group, we propose collaborating to create a framework to address the critical role that natural capital and ecosystem services play in fostering development and planning pathways in developing countries. We will discuss practical solutions to the following questions: Which forms of critical natural capital should be targeted for conservation? How can ecosystem services provided by critical natural capital be measured and valued? What are the important thresholds and targets for communities, and how can those targets guide planning? What kinds of tradeoffs between services may be required, and how can decision making process be inclusive of different values and perceptions? This session will both benefit and inform efforts towards an applied landscape planning framework, supporting the development of guidelines for incorporation of ecosystem services into planning, with the ultimate goal of reconciling economic development with sustainability goals. A concrete example will be provided to facilitate brainstorming and discussion.

Working Group Abstracts, cont.

Title: Ecosystem Services in the context of Disaster Risk Reduction: Addressing Scientific Gaps and Improving Uptake

Host: Fabrice Renaud, United Nations University - Institute for Environment and Human Security, Germany

Co-host: Marisol Estrella (UNEP) — Karen Sudmeier-Rieux (IUCN-CEM) — Zita Sebesvari (UNU-EHS) — Michael Beck (TNC)

The role of ecosystems and ecosystem services is recognised as an important aspect in the context of disaster risk reduction (DRR) and is integrated into the Hyogo Framework for Action (HFA) 2005-2015 on "Building the resilience of nations and communities to disasters". However, the mid-term review of the HFA has shown that the least acted upon priority for action at the national level is the one that considers the role of improved ecosystem management for DRR. Global environmental changes (including climate change), demographic growth, continued rapid urbanisation, and growing social and economic disparities globally, contribute to increasing exposure and vulnerabilities of societies as well as the occurrence, increased intensity and/or magnitude of some types of hazards. The impacts of these hazards will likely continue to increase in the decades ahead and a broad range of solutions are needed to reduce overall risks on societies and communities.

Often neglected in DRR interventions and policy agendas is the fact that ecosystems and ecosystem services can greatly contribute to the reduction of risks faced by communities. Healthy and well-managed ecosystems mitigate the hazards themselves (e.g. through adapted land use), reduce the exposure (e.g. creation of buffer zones), and the vulnerability (e.g. ecosystem services linked to livelihoods). There are various reasons for this gap including (i) limitations in the scientific evidence on the links between ecosystems and disaster risk reduction for some hazards; (ii) the misinterpretation of scientific evidence when it exists; (iii) the inadequate communication between the scientific community, practitioners and policy makers on the subject; and the perceived lack of incentives for implementing natural solutions. Our Partnership on Environment and Disaster Risk Reduction (PEDRR) has begun to compile examples of the links between ecosystems, livelihoods and disaster risk reduction (the first cases to be published in 2012).

It is proposed that the working group should aim to address the following two objectives:

1. To identify and discuss emerging examples on the nexus between ecosystems and DRR in terms of services and benefits and document them in view of presentations and discussions at the next Global Platform on Disaster Risks in 2013.
2. Identify specific opportunities to improve communication between the scientific community, environmental and DRR specialists and policy makers and propose a plan for action to address them (and present them at the 2013 Global Platform).

Title: Development of a community sustainability visualization tool through integration of US EPA's Sustainable and Health Community Research Program tasks

Host: Marc Russel (U.S. Environmental protection Agency, Gulf Ecology Division, USA)

We propose a 2-day session combining multiple components of an ongoing integrative research program in USEPA's Office of Research and Development into a functional community sustainability visualization and assessment tool. The working group will include project leads for a US Human Wellbeing Index, a National Ecosystem Services Classification System, final ecosystem goods and services, an ecosystem services production function library, modeling efforts linking management alternatives to ecological production functions, national atlas and community-scale mapping, community typology, community engagement tool development, and select USEPA regional community sustainability representatives, stakeholders, and other interested parties. We will integrate these components to develop a surface of community sustainability, based on the Economic, Social, and Environmental pillars of sustainability, to enable any community to place themselves on a "surface" of sustainability in a simplified, visual manner. A community's current state of wellbeing quantified by an eight domain scoring system and combined into a US index, will be compared to predicted future scores from modeling wellbeing trajectories based on alternative management scenarios and their consequences for the sustained production of ecosystem goods and services. Value hierarchies will be adjustable to refine score weighting for different community types identified in our typology. Visualization includes a "surface" of sustainability zones derived from potential combinations of economic, social, and environmental elements. Each community's current wellbeing index score will be represented by a symbol superimposed over the surface. The comparison between a community's score and its location over a zone represents how resilient or vulnerable that community is to changes in their wellbeing state.

Working Group Abstracts, cont.

Title: A Valuation Platform for the ESP Community (SERVES)

Host: Jonathan Kochmer (Earth Economics, USA) — Corinne Cooley (Earth Economics, USA) — Sander van der Ploeg (Wageningen University, The Netherlands)

Co-host: David Batker (Earth Economics) — Jennifer Harrison-Cox (Earth Economics) — Kellen Hawley (Earth Economics)

Natural capital is too often excluded from decision-making or given default values of zero. To enable valuation of essential ecosystem services, a consortium of partners including ESP and Earth Economics is developing the world's largest and most rigorous and verified web-based repository of published and unpublished economic values for ecosystem services. This new community-based, collaborative and innovated tool called is called SERVES (Simple Effective Resource for Valuing Ecosystem Services).

SERVES version 1.0 will be released in December 2012 for use by land managers, government agencies, utilities, academics, NGOs and private industry and will include a computational engine for conducting and collaborating on ecosystem service valuation by users anywhere in the world. It is being designed to function on multiple scales (local, regional and national levels; or by biomes, land cover classes or economic sectors) to meet specific needs of SERVES' users. It will address our global dilemma by driving standards in ecosystem valuation and classification, refining the science of ecosystem service transferability, and by exposing gaps in our collective knowledge. SERVES will exponentially reduce the cost of ecosystem services valuation and collaboration, and significantly advance the applications of ecological economics.

This workshop provides an opportunity to preview the tool in development, identify and discuss community needs and opportunities and explore partnership and research opportunities.

This four hour workgroup will start with a 20 minute preview of the SERVES v. 1.0 Portal and brief feature review. Then, as a group, we choose three feature areas in which to focus, develop use case and test validation requirements. We at the end of the session, we will identify community opportunities for further development and refinement of the SERVES tool.

Feature areas that may be discussed include:

- The 'Rosetta Stone' database of translation tables within SERVES
- Value Credibility Scoring and Ranking
- Application Program Interface (API) set for programmatic access to the SERVES databases
- Report Generator

Title: An integrated ecosystem services framework for fostering transdisciplinary doctoral education

Host: Vivek Shandas (Portland State University, USA)

Co-host: Darrell Brown (Portland State University) — Heejun Chang (Portland State University) — David Ervin (Portland State University) — Elise Granek (Portland State University) — Alan Yeakley (Portland State University)

A widely held belief is that only through inter- or transdisciplinarity can today's complex social and ecological problems be effectively addressed jointly by academics and practitioners because these problems demand and the integration of specialized knowledge from natural and social scientists and engineers. For decades, innovative transdisciplinary research and curricula have been created to train a new generation of scientists to engage with complex issues at the intersection of nature-society interactions. Despite this enthusiasm for training new researchers, educators and practitioners in 'science at the leading edge,' limited guidance exists for educators to effectively link social, economic, and environmental curricula to address the complex environmental challenges facing society. In this working group, we offer an opportunity to evaluate and refine an emerging and integrated ecosystem services framework that can enable researchers and educators in collaboration with community partners to incorporate the values of varying perspectives and disciplines to understand nature-society interactions. We contend that an integrated ecosystem services framework presents an ideal arena for the cultivation of transdisciplinary pedagogical approaches, given that it represents a nexus of fields as varied as economics, business, sociology, ecology, spatial sciences, urban studies, and engineering. As facilitators of this workshop, we draw on experiences from a National Science Foundation-funded Ecosystem Services for Urbanizing Regions IGERT (Integrative Graduate Education and Research Traineeship) program housed at Portland State University. We will discuss aspects of the framework that provided the most beneficial transdisciplinary perspective in the curriculum, and aspects to be improved. We will also identify institutional barriers and disciplinary challenges that can thwart the effective implementation of transdisciplinary curricula and explore options to surmount those barriers.

Working Group Abstracts, cont.

Title: Responding to the PCAST Report on Sustaining Environmental Capital: Identifying key issues to be addressed in a biodiversity and ecosystem services trends assessment

Host: Carl Shapiro (US Geological Survey, USA)

This working group will develop a paper outlining key issues that need to be addressed in a biodiversity and ecosystem services trends assessment, developed in response to the President's Council of Advisors on Science and Technology (PCAST) July 2011 report on Sustaining Environmental Capital: Protecting Society and the Economy. The paper will build on the expertise of work group participants as well as results from (1) the Global Policy Forum, held at the ESP conference on Monday, July 30; (2) a workshop on the topic for U.S. governmental stakeholders held at the Department of the Interior on May 9 in Washington, DC; and (3) a policy forum on ecosystem services convened by the National Ecosystem Services Partnership (NESP) and A Community on Ecosystem Services (ACES) on May 8, in Washington, DC.

This working group is being convened on behalf of the National Science and Technology Council (NSTC) Subcommittee on Ecological Services (SES) of the Committee on Environment, Natural Resources, and Sustainability (CENRS). SES is responsible for developing a plan to respond to the PCAST recommendations. The working group will synthesize ideas and recommendations on developing a biodiversity and ecosystem services trends assessment into a paper to be submitted to a peer-reviewed journal for publication.

Title: Property—A Help Or Hurdle to a Sustainable Economy?

Host: Jeffery Smith (Forum on Geonomics, USA)

Policy proposals for goals such as more efficient land use often lose out to arguments that protect 'private property' (if not actually private privilege). Must wanna-be sustainers counter the 'property rights' argument? Just as the Prairie Rebellion and others who put profit (a good thing) ahead of stewardship are not shy, should wanna-be sustainers boldly extol the commons? Is common wealth a necessary part of a sustainable economy? Payments for locations and natural resources are the largest stream in the economy. As long as we let land remain an object of speculation, can we rationally expect any other results than those we now endure? BC passed a carbon tax attached to a tax cut and rebate; would Americans listen to such a balanced proposal?

Title: Can multiple paradigms synergize in Payment for Environmental Service (PES) initiatives in Asia, Africa and Latin America?

Host: Meine Van Noordwijk (World Agroforestry Centre, Indonesia)

Co-host: Sven Wunder (World Agroforestry Centre) — Terry Sunderland (World Agroforestry Centre) — Beria Leimona (World Agroforestry Centre)

While the initial framing was primarily one of market-based instruments, a growing body of multidisciplinary knowledge has emerged from Payment for Environmental Service (PES) initiatives that promote and support the establishment of PES schemes in a range of contexts in Asia, Africa and Latin America. Conceptually, PES has matured with comprehensive debates on integrating the dual goals of poverty alleviation and environmental conservation. Biophysical science contributes knowledge on how environmental service provision realistically relates to human land use practices. Social science analyses of PES arrangements identify actors involved in PES schemes, their motivation, interactions and power balance in negotiation that can lead to voluntary contracts with a conditionality that, if things are to work out, is to be understood by all contract partners. Economists focus on the price levels at which willingness to pay by ES buyers matches willingness to accept contracts by ES providers. Institutional aspect of PES need to cross the cognitive, social, cultural, political and economic gaps between largely urban 'buyers' and largely rural 'sellers' have emerged as a major constraint to any progress in the field.

The working group is a medium for exchanging experiences among participants from Latin American, African and Asian countries, and in comparison with European and North America. We will focus on similarity (i.e. in targeted outcomes of improving environmental and livelihood conditions) and divergence of PES mechanisms (i.e. in context, articulation and practices). The expected outcome of the discussion will be to position PES relative to concepts beyond the use of market-based instrument for environmental policy, to analyze multiple paradigms emerging within the broad PES domain, and to recommend the future pathway of PES as an improved tool for natural resource management in the contexts of both developed and developing countries.

The structure of the working group will be 4-5 short-presentations from experts (each 5 minutes) led by a moderator to trigger discussions with the participants. The facilitators (2 persons) will assist in classifying the discussion points for sub-groups to explore in greater depth. At the end of the session, points will be summarized and shared to the participants for the overall synthesis on ways forward. The session will be coordinated by the World Agroforestry Centre and its partners: University of Alberta, Michigan State University and CIFOR.

Working Group Abstracts, cont.

Title: Trade-offs and synergies between food security and ecosystem services.

Hosts: Madhu Verma (India Institute of Forest Management, India) — Pushpam Kumar (UNEP)

Agricultural ecosystems produce food, fiber, and non-marketed ecosystem services (ES). Agriculture also typically involves high negative external costs associated with, for example, fossil fuel, fertilizer, and pesticide use. This working group will discuss the market and nonmarket ES values of agro-ecosystems and the possibilities to design system that simultaneously produce food, fodder, and bioenergy. Such agro-ecosystems may provide a significantly increased net food crop, energy, and nonmarketed ES, compared with conventional agriculture, and may require markedly less fossil-based inputs. Such integrated food and bioenergy systems can thus provide both food security and other valuable ecosystem services.

Title: Quantifying access to ecosystem services

Host: Mosheh Wolf (University of Illinois at Chicago, USA)

Co-host: Ning Ai (Dept. of Urban Planning and Policy, University of Illinois at Chicago) — Tanya Berger-Wolf (Department of Computer Science, University of Illinois at Chicago) — Amélie Y. Davis (Institute for Environmental Science and Policy, University of Illinois at Chicago) — Emily Minor (Department of Biological Sciences, University of Illinois at Chicago) — Moira Zellner (Department of Urban Planning and Policy, University of Illinois at Chicago)

We propose a workshop to discuss strategies and methodologies to quantify, calculate, and spatially map access to ecosystem services.

There has been much research regarding the identification, description, and the sources of ecosystem services. Ecosystem services have been identified, evaluated, and the sources of ecosystem services have been mapped. However, much of the importance of ecosystem services is in the access of the public to these services. Furthermore, while it is obvious that access to ecosystem services is not equitable, and is uneven at all scales, it is difficult to evaluate the nature, extent, and impact of this without the ability to quantify access to ecosystem services. Quantification and mapping of access to ecosystem services will enable scientists, planners, policy makers, developers, and other stakeholders to evaluate and increase access to ecosystem services to all, and to provide actionable strategies to mitigate inequalities in access to these services.

We hope to produce a position paper outlining strategies and methodologies to quantify, calculate, and spatially map access to ecosystem services.

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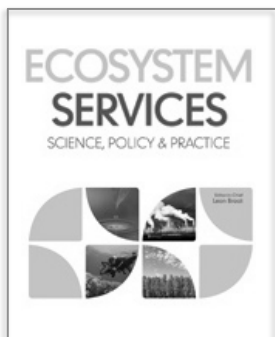
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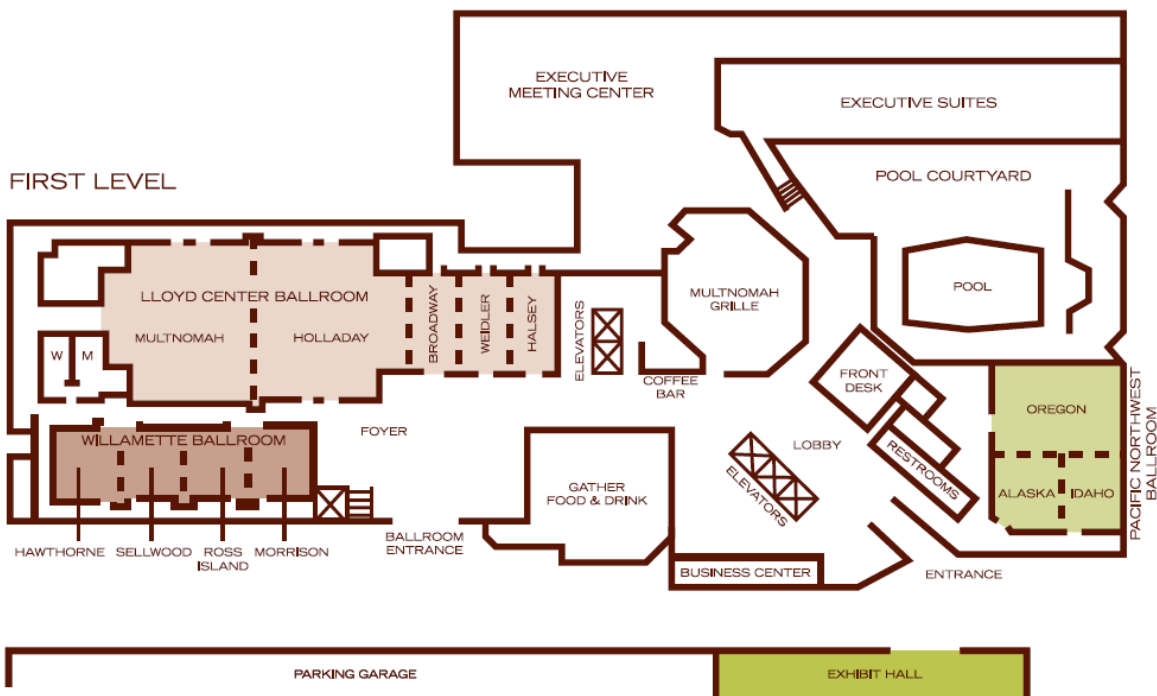


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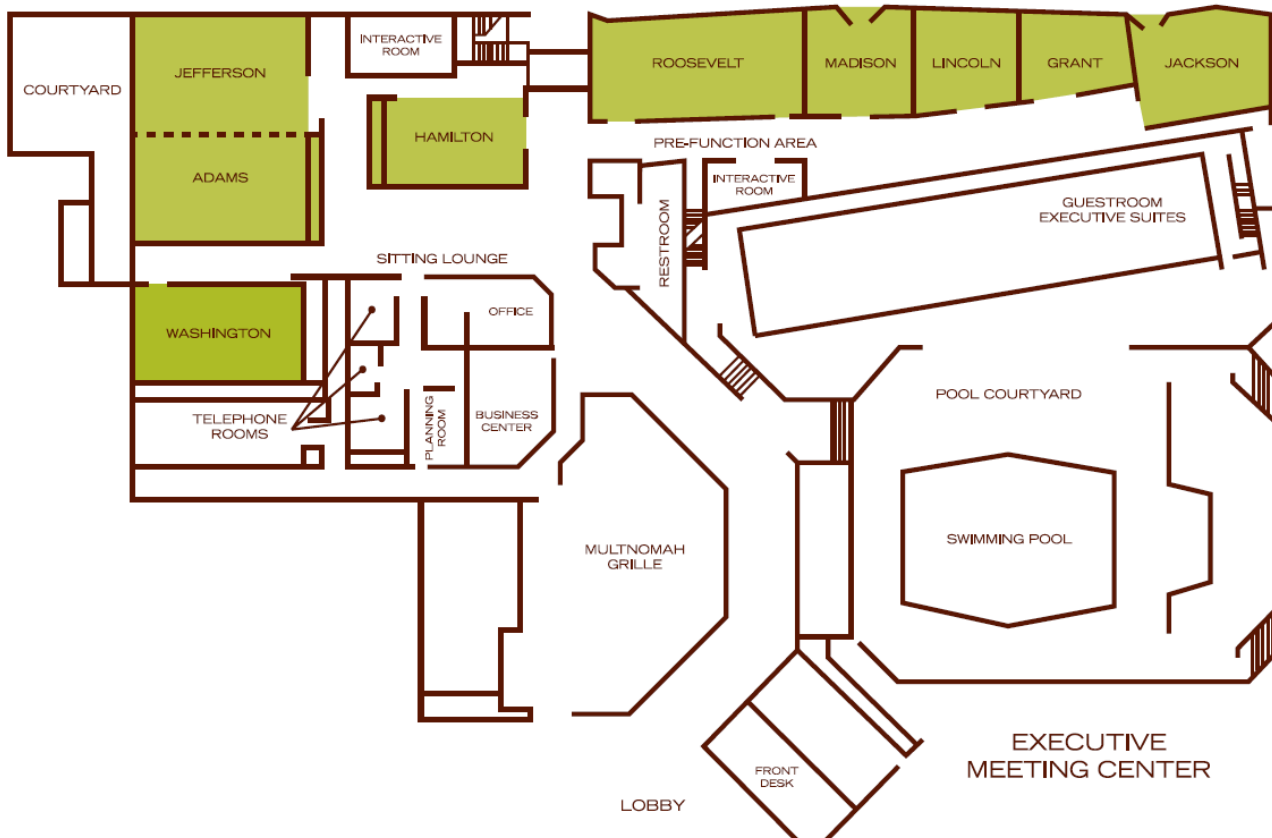
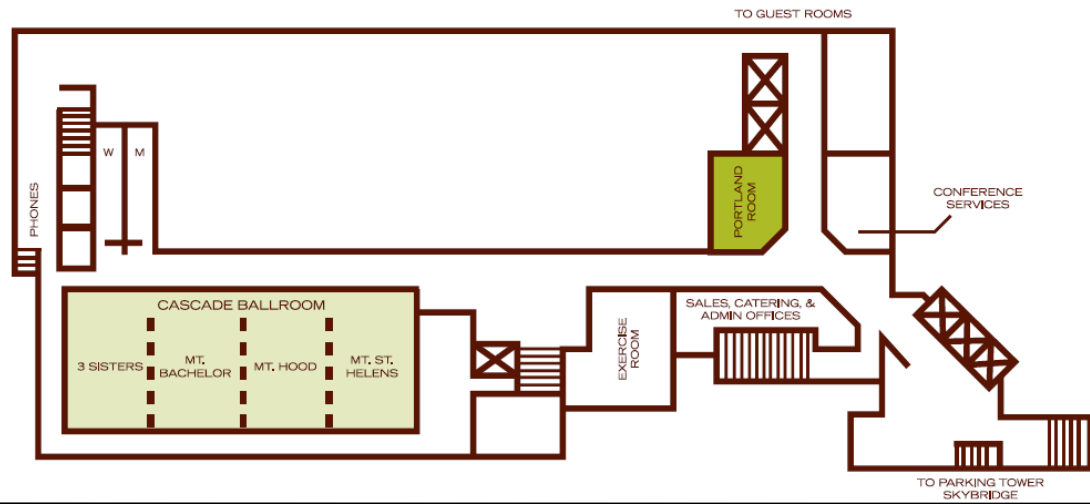
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