SESSION DESCRIPTION

Session ID:
O10

Title of session:
Pathways to Impact for Ecosystem Services in Decisions

Hosts:

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<th>Name</th>
<th>Organisation</th>
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<tr>
<td>Host:</td>
<td>Associate prof.</td>
<td>Becky Chaplin-Kramer</td>
<td>Natural Capital Project</td>
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<tr>
<td>Co-host:</td>
<td>Dr.</td>
<td>Nadia Sitas</td>
<td>CSIR</td>
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<tr>
<td>Co-host:</td>
<td></td>
<td>Jeanne Nel</td>
<td>CSIR</td>
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Abstract:

As 50 million people are born each year and similar numbers seek to raise their standard of living, our society is faced with urgent decisions about how to meet the needs and desires of a growing population. Socio-ecological research has demonstrated many ways in which the outcomes of these decisions will substantively affect and be affected by natural capital and the goods and services that flow from it to sustain and fulfill human life. However, critical information about these relationships often remains outside the major decision-making processes that are shaping the future of our lands and waters and the benefits we derive from them.

This session will highlight current advances in research and science-policy engagements that are beginning to bridge the gaps between ecosystem service knowledge and action. We intend to bring together a diverse group of speakers to present on the results of innovative interdisciplinary collaborations among scientists, businesses, governments and multi-lateral institutions that are integrating ecosystem service science into transformative, large-scale decisions. It will provide novel examples of the benefits that result from ecosystem services research that both informs and is informed by contemporary global issues and the demand for scientific information on managing natural capital. By identifying and prioritizing science for the decisions that affect land, water, ocean, and natural resource use, the speakers will demonstrate pathways to impact for more rapid uptake and more radical shifts to sustainable paradigms.

The session host will coordinate among speakers to ensure that presentations remain tightly linked to the session theme and address a set of unifying questions. These questions will include: How is ecosystem service science providing decision makers with new insights and changing outcomes? And what does it take to make new ecosystem service science decision relevant? During the second half of this session we will introduce a framework developed by the Natural Capital Project to generate policy-relevant science and enhance uptake of information about nature’s benefits in decisions. Organized by standard decision and analytical steps in a science-policy process of engagement, this framework will be used to dive further into common successes, challenges, and lessons learned, and to outline a path forward to continue to advance
ecological science and its application. Audience participation in the concluding two hours will also be encouraged.

Additional information:

This session will integrate researcher and practitioner perspectives on advances in ecosystem service science and assessments that inform large-scale, transformative decisions. Selected speakers will represent a set of interdisciplinary initiatives that are targeting large-scale, influential decisions in order to scale-up the promise and potential of natural capital approaches and tools.

Voluntary contributions accepted:

Yes

SPEAKERS

Invited speakers (if applicable)

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<td>Moving toward mainstreaming: Integrating ecosystem services information in transportation development planning</td>
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<td>Knowledge co-production for water security: Identifying and protecting South Africa’s Strategic Water Source Areas</td>
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<td>Ciara</td>
<td>Raudsepp–Hearne</td>
<td>Consultant, Canada</td>
<td>Ecosystem service assessment: knowledge and tools to support management of multi-functional landscapes</td>
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<td>Nadia</td>
<td>Sitas</td>
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Oral presentations

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<td>Förster</td>
<td>Helmholtz Centre for Environmental Research – UFZ</td>
<td>Making ES assessments relevant to decision making in policy and practice: a problem-oriented approach</td>
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<td>Helen</td>
<td>Michels</td>
<td>Research Institute for Nature and Forest</td>
<td>Walk the talk: from ESS knowledge to implementation</td>
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<td>Petina</td>
<td>Pert</td>
<td>CSIRO</td>
<td>Climate change impacts and adaptation pathways on key regional ecosystem services in the Wet Tropics NRM Cluster Region, Australia.</td>
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**Poster presentations**

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<tr>
<td>Ben</td>
<td>Delbaere</td>
<td>University of Edinburgh</td>
<td>Oppla: a web portal assisting people in making nature work for the benefit of humankind</td>
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Making ES assessments relevant to decision making in policy and practice: a problem–oriented approach

Presenting author: Johannes Förster

Other authors: Jan Barkmann, Roman Fricke, Stefan Hotes, Michael Kleyer, Susanne Kobbe, Daniel Kübler, Christian Rumbaur, Marianna Siegmund–Schultze, Ralf Seppelt, Josef Settele, Joachim H. Spangenberg, Vera Tekken, Tomáš Václavík, and Heidi Wittmer

Affiliation: Helmholtz Centre for Environmental Research – UFZ, Germany

Contact: johannes.foerster@ufz.de

Although the concept of ecosystem services (ES) is increasing in popularity in environmental science, ES assessments have not yet proven to effectively change land management and policies in public and private sectors (Ruckelshaus et al. 2013, Abson et al. 2014). It is questioned whether ES assessments generate knowledge that is relevant for decision makers (Honey–Rosés and Pendleton 2013, Laurans et al. 2013, Martinez–Harms et al. 2015). The majority of ES assessments tend to generate knowledge on ecological functions and economic values (Abson et al. 2014) with little consideration of the information demand by decision makers for addressing a particular land use problem (Honey–Rosés and Pendleton 2013). For example, only 8 out of 340 cases of ES valuation published in scientific literature actually report how information on the value of ES is used in local decision making (Laurans et al. 2013).

To improve the applicability of ES assessments in practice, we compared existing concepts of ES assessments with focus on informing land use decisions and identified opportunities for enhancing the relevance of ES assessments for decision making. In a process of co–design, building on experience of four projects in Brazil, China, Madagascar, and Vietnam, we developed a step–wise approach for better targeting ES assessments toward information needs in land use decisions. Our problem–oriented approach aims at (1) structuring ES information according to land use problems identified by stakeholders, (2) targeting context–specific ES information needs by decision makers, and (3) assessing relevant management options. We demonstrate how our approach contributes to making ES assessments more policy relevant and enhances the application of ES assessments as a tool for decision support.

The presented approach is accepted for publication in Ecology & Society:

*Keywords*: Decision support, ecosystem service assessment, land use, problem-oriented
Type of submission: Invited speaker

O10 Pathways to impact for ecosystem services in decisions

Moving toward mainstreaming: Integrating ecosystem services information in transportation development planning

Presenting author: Lisa Mandle
Affiliation: Natural Capital Project, United States of America
Contact: lmandle@stanford.edu

Roads, railways and other transportation infrastructure make an important contribution to economic development and improved human well-being, increasing access to markets, health care and education. Recent global economic growth projections estimate that $23.8 trillion in transportation infrastructure investment will be needed by 2030, and road network length is expected to increase 60% by 2050. Transportation development decisions being made now will therefore shape outcomes for both society and nature over the long term. Accounting for ecosystem services when planning transportation development has the potential to significantly improve these outcomes, minimizing losses of ecosystem service benefits that are both critical to human well-being and valuable to the durability and function of infrastructure itself. Only recently, however, have government and financial institutions begun to make deliberate efforts to include ecosystem services in transportation investment decisions. Here, I synthesize lessons learned from the Natural Capital Project’s engagement with multi-lateral development banks, governments and other partners to mainstream ecosystem service information into transportation development. I highlight advances from several collaborations, including with the Inter-American Development Bank to produce guidance for transport specialists on integrating natural capital into road investment decisions; in Colombia, where we developed a decision-support tool for including ecosystem services in offset portfolio design; and most recently in Myanmar, where we are evaluating the role of ecosystem services at both project-level and national infrastructure planning scales. These interdisciplinary collaborations with close linkages to decision-making processes have allowed us to jointly advance the science and application of ecosystem services knowledge. To increase the uptake of ecosystem service information by the governments and financial institutions involved in transportation development, we must continue to build evidence for the value of accounting for ecosystem services in early planning while improving the data and tools available for ecosystem service analysis.

Keywords: Transportation infrastructure investment, development planning, multi-lateral development bank, road development
An ongoing population growth, urbanization and congestion of land claims are putting the open space in Flanders under pressure. In Flanders, but also in rest of North West Europe, this creates a scarcity of space as a resource, putting pressure on policy makers to rethink land use policy. Implementing the concept of ecosystem services (ESS) could facilitate pathways towards this transformation. Flanders Regional Ecosystem Assessment (REA) created in a first stage a vast amount of information and knowledge on the state and trend of the current ESS in Flanders (REA-T). In a second stage of this assessment (REA-P) we look for ways to account for ESS in policy and present a method on how to bridge the gap between information and practice. The main question in this next step of the assessment is how the ESS-concept could contribute to a more integrated, shared land use policy that is able to capture the full value of biodiversity and non-marketed ecosystem services, rather than just the market value of ecosystem services and their related land uses.

We have a twofold approach: 1) in three case studies, from local to regional scale, we explore together with local policy makers and stakeholders how land use issues can be solved using the ESS concept; 2) indicators for state of ecosystem services and ecosystems, resilience of the ecosystem and green infrastructure are further explored and refined on different scales and applied in each case study. Dealing with the different indicators on different levels of scale might shed a light on how an ESS approach changes on different policy levels, which values to use in different cases and how services can be captured on different scales. These insights result in recommendations to policy makers on the use of ESS in land use policy.

**Keywords:** Land use, policy, ecosystem services, socio-ecological system, multiple scales
Knowledge co-production for water security: Identifying and protecting South Africa’s Strategic Water Source Areas

Presenting author: Jeanne Nel  
Other authors: Belinda Reyers, Nadia Sitas  
Affiliation: CSIR, South Africa  
Contact: jnel@csir.co.za

South Africa is among the top water-scarce countries in the world, further confounded by the fact that a tiny fraction of the country produces most of the water. Managing this small proportion of land is vital for South Africa’s water security, and requires cross-sectoral cooperation at local, national and regional scales. Several maps of water source areas have been developed over the years since 1959. However, the uptake of these maps has been poor, if not lacking in many cases. We explored how maps of strategic water source areas, often called ‘water towers’, could be developed in a way that would improve their uptake into policy and practice. To accomplish this, we used a knowledge co-production approach to improve the effectiveness of integrating knowledge on water source areas into policy. Knowledge co-production involves stakeholders from diverse knowledge systems working iteratively towards common visions and action. Initial surveys of the limitations of previous water source maps were used to develop new data and maps, which in turn were refined together with stakeholders through 2 years of successive workshops. Stakeholder groups were initially relatively broad in scope, becoming more focussed at a later stage when specific policy tools were targeted. These groups included water and conservation scientists, provincial and local government authorities, and environmental NGOs. The resultant outputs quantified ecosystem service flows from strategic water source areas, as well as identifying downstream beneficiaries and quantifying associated economic activity. Drivers of change threatening water security in these areas were also assessed to identify key intervention strategies. Multiple policy and planning processes were targeted to promote the uptake and use of the maps at both local and national levels. Inputs into each of these processes were tailored in a different manner by co-developing guidelines with the specific stakeholder groups. In the three years since their initial development, uptake of the strategic water source areas products has been promising, with significant mainstreaming into policy, strategy and actions of National Development Planning, Department of Water and Sanitation, and environmental NGOs.
Keywords: Knowledge co-production, water security, ecosystem service flows, mainstreaming
Climate change impacts and adaptation pathways on key regional ecosystem services in the Wet Tropics NRM Cluster Region, Australia.

Presenting author: Petina Pert  
Other authors: Mohammed Alamgir, Rosemary Hill, Catherine Moran, Stephen Turton  
Affiliation: CSIRO, Australia  
Contact: petina.pert@csiro.au

Climate change alters the functions of ecosystems and as a result, the provision of ecosystem services and wellbeing of people that rely on these services. The concept of ecosystem services is aimed at supporting this broad and open dialogue in ways that allow potential synergies and tradeoffs among social, economic and ecological objectives to be identified and addressed with due reference to the multiple perceptions that people have about benefits and beneficiaries from the environment. In this paper we discuss insights about the impacts of climate change on key regional ecosystem services for the Wet Tropics. Syntheses of published ideas and approaches are presented with key climate change messages for NRM groups to enable them to incorporate into their new regional plans for the Wet Tropics Cluster Region.

Keywords: Climate change, tropics, carbon abatement, adaptation options
Type of submission: Invited speaker

O10 Pathways to impact for ecosystem services in decisions

Ecosystem service assessment: knowledge and tools to support management of multi–functional landscapes

Presenting author: Ciara Raudsepp–Hearne
Other authors: Elena M. Bennett
Affiliation: Consultant, Canada
Contact: ciara.rh@gmail.com

The southern Quebec landscape, like many peri–urban landscapes, has been through many changes and will continue to change in response to local and regional decision–making and pressures from climate change and larger–scale economic forces. Regional planners striving to maintain a healthy, multifunctional landscape need new tools to decide which landscape patterns can best maintain the health of the landscape for the maximum number of stakeholders. Ecosystem services can be an effective organizing principle for meeting the needs of growing populations while maintaining resilient provision of multiple services across landscapes. The ecosystem service concept compels us to consider more than one service and to consider the interactions and relationships among services on the landscape. A decade of research in this region by the Bennett lab at McGill University has yielded knowledge about historical variations in ecosystem service provision, trade–offs and synergies among services, and drivers of change. The lab is now working with local and provincial government bodies to develop and use a modeling framework to improve land use decision–making. The framework shows how landscape configuration, and especially the connectivity of forest patches in the agricultural and peri–urban milieu, affects biodiversity and the provision of several ecosystem services. Working closely with local communities to develop the framework has built strong bridges between groups, has enabled the modeling framework to be built to suit local needs, and has fostered strong local interest in the project and its results. The models will be linked to stakeholder–developed scenarios of potential futures of the region to help decision–makers objectively quantify the effect of today’s resource and land management decisions on the current and future provision of multiple ecosystem services. Knowledge and experience generated from research in this region have influenced decision–oriented ecosystem service assessment in other provinces and at the federal level in Canada.

Keywords: Ecosystem services, assessment tools, trade–offs, model, multifunctional
Fostering knowledge and action for collaborative ecosystem–based disaster management in South Africa

*Presenting author:* Nadia Sitas  
*Other authors:* Belinda Reyers, Jeanne Nel, Georgina Cundill, Heidi Prozesky, Karen Esler  
*Affiliation:* CSIR, South Africa  
*Contact:* nadiasitas@gmail.com

A recent rise in natural disasters related to flood events, drought, storms and fire in South Africa has increased the urgency to explore new approaches to addressing these complex social–ecological issues. However, engaging diverse actors from different disciplines, as well as society, in collaborative processes designed to integrate environmental information into decision–making is important, but challenging. Part of the challenge centres on how to design effective collaborations that co–produce legitimate, credible and salient knowledge that is geared for impact. Such work requires working at the boundaries between academic disciplines and between knowledge types, which is inherently complex given the different value systems, norms, and mental models of diverse stakeholders. Recent learning suggests that this type of integrative work requires multiple stakeholder engagement processes that facilitate the co–production and exchange of knowledge. This imperative brings with it a need to better understand the social conditions and processes that facilitate or impede knowledge production and exchange. Toward this end, we present the findings of a transdisciplinary project carried out in the Eden District of the Southern Cape region of South Africa, which collaboratively generated new knowledge, awareness and action for ecosystem–based disaster management in South Africa. The project resulted in numerous successes in terms of moving from research to impact, especially relating to new investments in ecosystem restoration, institutional changes in the private and public sectors, and the development of new partnerships between scientists, practitioners and decision makers. Furthermore, it assisted in the identification of the critical factors that are perceived to be essential for fostering action–oriented knowledge exchange between different actors from science, society, policy and practice.

*Keywords:* Transdisciplinarity, regulating services, boundary work, ecosystem services, impact
Oppla: A web portal assisting people in making nature work for the benefit of humankind

Presenting author: Ben Delbaere
Other authors: Mark Rounsevell, Ana Aldescu, Claire Brown, Matthew Brown, George Cojocaru, Eeva Furman, Paula Harrison, Paul Mahoney, Marc Metzger, Marta Pérez-Soba, Jonathan Porter, Heli Saarikoski, Adrian Smith, Peter Verweij, Bas Vanmeulebrouk, Tim Wilkinson
Affiliation: University of Edinburgh, United Kingdom
Contact: mark.rounsevell@ed.ac.uk

Oppla is a web portal that will provide a number of facilities to support communities of science, policy and practice in operationalising the ecosystem services and natural capital concepts. It will facilitate the practical application of cutting-edge research; linking the outputs of the scientific community with those capable of utilising and maximising their value. Oppla aims to help with practical advice, guidance, tailored solutions, and tested tools and techniques for a range of potential users. It will feature a database of information and case studies, as well as a Question & Answer facility (“Ask Oppla”) through which questions about natural capital and ecosystem services will be answered by experts. Oppla also aims to establish a community of practice that shares resources, new ideas and practical experience, and to function as a marketplace by enabling members to find consultants specialising in natural capital and ecosystem services. The Oppla website will be complemented by events, training courses and other services on demand. All of which will combine to help users to find the gap between ecosystem service knowledge and action.

Oppla is currently being developed as part of a joint activity between the OPERAs and OpenNESS projects (http://www.operas-project.eu & http://www.openness-project.eu) with combined funding from the European Commission FP7 Programme of ca. €18m. A prototype version of Oppla will be released in September 2016 with the launch of the fully functional version expected in April 2017. Potential users can sign up to receive further information or to help develop Oppla and benefit from its services by filling in a survey at: www.oppla.eu.

Keywords: Ecosystem services, science–policy–practice nexus, web–based platform, decision making