



BOOK OF ABSTRACTS

1. SESSION DESCRIPTION

ID: T8

Title of session:

Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

Hosts:

	Title	Name	Organisation	E-mail
Host:		Pedro Clemente	CENSE - Center for Environmental and sustainability Research, NOVA School of Science and Technology NOVA University Lisbon	pedroclemente@fct.unl.pt
Host:		Rita Lopes	CENSE - Center for Environmental and sustainability Research, NOVA School of Science and Technology NOVA University Lisbon	rjl@fct.unl.pt

Session description:

Ecosystem Services have been increasingly attracting the interest of scientific research and policy-making as they may potentially respond to



the needs for a more integrated approach to ecosystems management and for a balance between human needs and conservation, as it stands in the interaction of ecological and social spheres.

Cultural ecosystem services (CES) are a key pillar in existing conceptual frameworks for ecosystem services classification. CES embrace direct benefits people obtain from ecosystems, such as recreation or aesthetic experience, as well as other benefits resulting from the interaction of natural and human/cultural capital, like cultural heritage.

Integrating cultural dimensions into the ecosystem service assessments is essential for appraising non-material benefits of social-ecological systems. They have been absent from decision-making due to their intangible and subjective making it difficult to capture the diversity of cultural dimensions.

This growing demand to integrate CES requires new innovative methods to assess the full range of services, complementing the current research mostly focused on analysing the contributions of recreational activities or aesthetic values. Different methods have been tested, most based on monetary assessments and socio-cultural preferences through interviews or participatory mapping. More recent indices based on geographic data have been used for rapidly assess CES over wide geographic areas.

To provide an integrated and complete assessment of both material and non-material benefits across several dimensions derived from CES is necessary to promote interdisciplinary collaboration among different academic areas and interest groups, but also to develop flexible and innovative conceptual frameworks, methodologies and practical tools that promote the articulation of different value dimensions. This embodies several challenges and caveats that require a wide discussion and cooperation effort between researchers, practitioners and decision makers.



Understanding what are the common criteria among the already tested frameworks and new approaches, looking into different disciplines, and identifying what are the main differences, will help to pave the way towards a common view on how to proceed with the integration of these ecosystem services into decision-making processes.

Goals and objectives of the session:

This session aims to fuel the debate on cultural ecosystems services' integration in decision-making and planning processes, by bringing into the light and discussing the potential of new interdisciplinary and disruptive approaches being applied and developed at different scales. With this session, a common arena is created where new ideas on how to assess and value CES to support decision-making processes will be shared.

The intangible and subjective nature of CES requires flexible and innovative conceptual frameworks or practical tools that capture all cultural dimensions stemming from different social-ecological interactions. How to design/develop integrative methods that articulate different value dimensions? What is the potential of comparability and transferability of these disruptive and innovative methods? Can cultural ecosystem services research bridge the gap between ecological, social and economic dimensions, promoting interdisciplinary collaboration and providing reliable information to stakeholders and decision-makers?

Alongside the presentation and discussion of practical cases this session aims to capture the audience perceptions and knowledge to develop a collaborative debate on the current efforts to address cultural ecosystem services, such as cross comparability, bias and difficulties, conflicts, identified gaps, most promising approaches and potential areas for future



research.

Planned output / Deliverables:

The presentations of case studies will set the scene for a wider debate on cultural ecosystem services assessments and valuation, that will build on a collaborative exercise where the audience will be asked to provide their inputs and expertise to discuss key issues, such as the need for interdisciplinary collaboration, capacity to use flexible and innovative methods, potential for cross comparability and on how to integrate and articulate different value dimensions. By using interactive tools the audience will have real time feedback and capacity to discuss and reflect on the collective opinions and perceptions.

This interactive tool will provide a flow of outputs picturing the collaborative discussion key conclusions, lessons learned or potential future areas of research. These outputs will be analyzed and synthesized on a discussion paper.

Related to ESP Working Group or National Network:

[TWG 8 – Cultural services & Values](#)

2. SESSION PROGRAM

Date of session: 12 December 2017

Time of session: 14:00 – 17:30



Timetable speakers

Time	First name	Name	Organization	Title of presentation
14:00	Tae Kyung	Yoon	Division of Environmental Strategy, Korea Environment Institute	A systematic review of valuing cultural ecosystem services
14:15	Sonali	Ghosh	UNESCO Category 2 Centre on World Natural heritage Site Management and Training in the Asia Pacific Region, Wildlife Institute of India	Integrating cultural ecosystem services into natural heritage site management – opportunities and challenges
14:30	Derek	Van Berkel	United States Environmental Protection Agency	Mapping cultural ecosystem services for the continental US using social media
14:45	Luis	Inostroza	Ruhr University Bochum, University of Catania	Indicators for cultural ecosystem services in urban contexts: a critical review for urban planning



ESP 9

WORLD CONFERENCE

● Shenzhen, China ● 11-15 Dec 2017

Ecosystem Services for Eco-civilization

Restoring connections between people & landscapes through nature-based solutions

Time	First name	Name	Organization	Title of presentation
15:00	Harvy	King	Ho'i Ho'i Ea: Return to Your Roots	An immersion of ancient Hawaiian Ahupua'a resource management and our modern ecological awareness
15:15	Rita	Lopes	CENSE – Center for Environmental and Sustainability Research, NOVA School of Science and Technology NOVA University Lisbon	Puzzling out cultural ecosystem services multiple values: a participatory framework to support decision-making
15:30	Silvia	Ronchi	Department of Architecture and Urban Studies – Politecnico di Milano, European Commission. Joint Research Centre (JRC), Directorate D – Sustainable Resources, Unit D3 – Land Resources	A cross-scale assessment for integrating cultural ecosystem services in the planning process



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Time	First name	Name	Organization	Title of presentation
15:45	Pedro	Clemente	CENSE – Center for Environmental and Sustainability Research, NOVA School of Science and Technology NOVA University Lisbon	Combining social media photographs and species distribution models to map cultural ecosystem services: the case of a Natural Park in Portugal
16:00	Discussion			



3. ABSTRACTS

Type of submission: Invited speaker abstract

T. Thematic Working Group sessions: T8 Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

Using social media photographs to model the distribution of cultural ecosystem services

Author(s): Pedro Clemente

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Developing spatial explicit models of Ecosystem Services (ES) distribution and diversity across the territory has been increasingly attracting the interest of researchers and policy-makers due to its potential to implement and mainstream the ES concept into existing planning and policy



tools.

In this paper we explore the use of social media photographs to model the spatial distribution of people preferences for cultural ecosystem services (CES), map their hotspots, identify the determinant variables as well as the spatial correlation between CES. This research was applied in the Sudoeste Alentejano and Costa Vicentina Natural Park (PNSACV) located in Southwest Alentejo, Portugal.

A collection of 1378 geo-tagged digital images taken inside the Park and posted in the Flickr web platform between 2004 and 2015 were analyzed and classified according to a tailored list of CES. To model CES spatial distribution it was used a species distribution model – Maxent – adapted to combine the observation of CES occurrence with biophysical and infrastructural variables.

This method allowed us to identify and map the social preferences for CES in this area. The distance to the ocean and distance to touristic and cultural infrastructure were the most determinant variables to explain CES distribution in PNSACV. Another relevant result of this study was the identification of pairs of CES (such as Recreation & Aesthetics services; or Cultural Heritage & Spiritual services)



with a significant spatial overlap.

Using social media data can be an expedite and cost-effective way to identify and map CES, although this approach embodies some challenges and biases that need to be considered. The use of species distribution models, such as Maxent, can be particularly valuable to support the design of future scenarios and assist decision-making on land use planning.

Keywords: cultural ecosystem services, social media, territorial planning, species distribution models



Type of submission: Abstract

T. Thematic Working Group sessions: T8 Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

Integrating cultural ecosystem services into natural heritage site management – opportunities and challenges

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The World Heritage Convention is a unique environmental instrument that encapsulates ten cultural and natural criteria for inscribing the Outstanding Universal Value (OUV) of a physical monument or site for the present and future generations. Such is the relevance of this unique convention that it encourages and blends the use of



cultural aspects (including intangible benefits such as spiritual beliefs and aesthetic beauty) into the management of Natural heritage sites (largely managed as Protected Areas for preservation of wild species of flora and fauna). In this case study, we present the acknowledgement of cultural services in some of the natural heritage sites in Asia-Pacific region that helped in gaining larger public support and therefore better management of such sites. We argue that the 'sense of pride' as a recognized cultural ecosystem service can be measurable and hence effectively be monitored for achieving long term goals of Protected Area management.

Keywords: cultural ecosystem services, sense of pride, UNESCO natural world heritage, operational guidelines, protected areas



Type of submission: Abstract

T. Thematic Working Group sessions: T8 Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

Indicators for cultural ecosystem services in urban contexts: a critical review for urban planning

Author(s): Luis Inostroza, Daniele Larosa

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Urban systems, like any other ecosystem, provide specific services to their inhabitants and communities and they are benefited by surrounding ecosystems as well. Among the different categories, typical ES categories such as food production and erosion control usually have a lesser importance within urban contexts. On the contrary, the very diverse range of land uses in urban contexts provide



specific cultural ES including recreational, cultural and educational values. However, up to date, a limited attention has been given to the provision of cultural ES, especially considering the relevant benefits that communities and urban planning processes can get from them. Assessing the value of culture in terms of benefits or services is a complex and sometimes even controversial issue, as it makes necessary a mix of qualitative and quantitative approaches. Finding a proper way of assessing these services can provide essential insights for urban planning and management of different urban systems, especially for specific urban contexts where history, location and other features play a central role for the social identity and cohesion. In this manuscript, we review the existing approaches for the assessment of Cultural Urban Ecosystem Services (CUES), and provide a critical overview of how indicators are used to assess and measure CUES, looking at its applicability in urban planning. By querying to some academic databases, the review records the state of art of scientific literature about indicators used for CUES in urban contexts. Our results shows that existing CES indicators have limited usability for urban planning and management. Moreover a lack of appropriate data use is a



significant obstacle for proper CUES assessment. This impacts the potential for sustainable decision-making concerning CES in urban contexts. These issues, together with fact that most identified indicators are proxy ones, identify an urgent need to develop proper assessment indicators for CUES.

Keywords: decision support, decision making, spatial planning, SCOPUS, Web of Science



Type of submission: Abstract

T. Thematic Working Group sessions: T8 Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

An immersion of ancient Hawaiian Ahupua'a resource management and our modern ecological awareness

Author(s): Harvy King

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Like many indigenous cultures, the indigenous Hawaiian/ Polynesian culture is based on orally passed down traditions and value systems. Hawaii has the uniquely complex responsibility of connecting the east and west hemisphere. The Hawaiian word for responsibility is Kuleana. A person's Kuleana is to their family (ohana) and the land (aina) where they live, all intertwined around a



system of resource management called the Ahupua'a. An Ahupua'a is a geographical valley within any of the Hawaiian Islands. The ahupua'a is also the flora & fauna and every species of life within the ecosystem, from the mountain to the sea, Mauka to Makai.

Central to each ahupua'a, is the fresh water source, or Wai. The root of the resource management is the food and the livelihood of the people. This is true richness, Wai Wai. The very connection between the people and the natural environment is food. Everyone collectively contributes through a system of caregiving. The only responsibility is to take good care. To Malama.

Ahupua'a is all encompassing and recognizes the simple concept that a whole Ahupua'a can be affected by the slightest change. Ahupua'a can be easily understood as the homeostasis of the land and people, measured in abundance of food. The notion of wealth becomes the vitality of the people. A hierarchical system of stewardship, chiefs, priests, and prophets maintained the spiritual connection to the land, the Aina. Immersion between STEM research, governmental planning, and the ancient Ahupua'a in order to establish healthier



interconnectedness of natural resources and people that will generate prosperity of generations to come. It's prime time in the place where east meets west to integrate the convenience of modern advancements with ancient wisdom and share it with the world. With Aloha.

Keywords: sustainability, conservation, water, cultural, interdisciplinary



Type of submission: Invited speaker abstract

T. Thematic Working Group sessions: T8 Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

Puzzling out cultural ecosystem services multiple values: a participatory framework to support decision-making

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Integrating and articulating different values of Ecosystem Services (ES) is acknowledged by several authors as a critical step to promote people's understanding of ES, highlight the importance of considering a broad range of ecological, social and economic ES values, and to avoid the risks and biases of only looking into one dimension of



value. Among the different types of ES, cultural ES are particularly complex. This calls for adequate methods and participatory processes that are able to capture and integrate their multiple values.

In this paper we present a three-step participatory framework developed to assess and articulate cultural values of ES through the combination of different participatory tools. This framework was tested in Arrábida Natural Park (ANP), a Portuguese marine and coastal protected area.

In the first stage of the framework implementation, we conducted a collaborative scoping process to “set the scene”, where cultural ES were identified together with the screening of their importance, and the identification of threats. In the second stage a systems mapping workshop was conducted to promote a “deepen understanding’ of ES provided by the protected site. Insights from these two workshops revealed that local stakeholders give high importance to cultural services. In the final stage, we implemented an multi-criteria approach to articulate the value dimensions of the identified cultural ES in the context of a decision-making process that was relevant for local



managers. Workshop participants were engaged in a sequence of exercises to understand ES values interplay when comparing alternatives to regulate access to protected beaches and recreational activities, without stressing the natural functions of ANP.

Results showed that new insights are created and a shared understanding is possible when participants are brought together to appraise decision alternatives based on the integration of scientific information and tacit knowledge on functioning of the underlying socio-ecological systems.

Keywords: cultural ecosystem services, participatory framework, protected areas, integrated assessment



Type of submission: Abstract

T. Thematic Working Group sessions: T8 Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

A cross-scale assessment for integrating cultural ecosystem services in the planning process

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Despite the wide recognition of the relevant benefits delivered by Cultural Ecosystem Services (CES) for communities and their overall well-being, they are not fully integrated into an operational framework. Their real applicability is still a promise. Their integration in the planning process could improve the management of



ecosystems which provide CES and support policy formulation considering the importance of human perception, sense of place, spiritual connections, health and aesthetical values. The lack of integration of CES in planning processes often relates to complexity of a planning exercise that requires a careful selection of research methods, approaches and indicators based on appropriate data. The involvement of stakeholders and practitioners with territorial knowledge can contribute in the co-production of maps and data to deliver a spatially explicit analysis of nature-based recreation opportunities. A practical application of CES integration in the planning process has been tested in the Lombardy region (north-west Italy) with the aim to demonstrate how a co-created CES map can support the policy and planning process in a cross-scale policy framework.

We adopted a sequential, qualitative, multi-method approach to explore the opportunities in the co-production of maps (Recreation potential and Recreation opportunity spectrum) for planning purposes. The co-produced maps were next combined with the new Lombardy Green Infrastructure (LGI) layer designed to incorporate a multifunctional use of natural capital, especially its



naturalistic, recreational and landscape vocation.

The LGI strategy requires a cross-scale assessment framework to include the different scales of CES management: The European one with the CES assessment elaborated in the framework of the EU Biodiversity strategy to 2020, the regional scale with LGI promoted by the Landscape Regional Plan, and the local planning for the definition of urban policies considering Nature-based recreation opportunities.

Keywords: cultural ecosystem services, cross-scale approach, planning process, policy support



Type of submission: Abstract

T. Thematic Working Group sessions: T8 Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

Mapping cultural ecosystem services for the continental US using social media

Author(s): Derek Van Berkel

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There is increasing recognition of the positive impact of landscape on the health and well-being of individuals. As the backdrop of outdoor activities they offer many societally beneficial cultural ecosystem services (CES) contributing to rest and relaxation, restorative and cognitive wellness, as well as inspiration. Across societies, families and individuals there is diverse appreciation of



these benefits, but also common core beliefs about the location of special places and the scenic qualities that make these landscapes attractive. These perceptions are based on emotional responses, cognitive constructs and culturally embedded values that are difficult to unravel due to diversity among individuals and variation and character of landscapes. Investigating this diversity has become increasingly possible with the massive amounts of georeferenced content volunteered through social media outlets. Being both crowdsourced and geographically representative, social media data offers insight into attitudes and perceptions of interactions with nature. In this paper, we present a methodology developed for the US Environmental Protection Agency's EnviroAtlas that leverages social media to map CES for the continental US. We evaluate Panoramio and Twitter as data sources for understanding American landscape values. While there is high diversity, results confirm that certain iconic features – e.g. the 'open road' and desert landscapes – are highly appreciated. We also investigate the relationship between the sentiment of Tweets related to landscapes, which offers insight into emotional responses of specific locations. Social media allows for both qualitative and quantitative



evaluation of CES, at fine scales unlikely to be possible through traditional survey and participatory mechanisms.

Keywords: Twitter, Panoramio, happiness, landscape values



Type of submission: Abstract

T. Thematic Working Group sessions: T8 Innovative and interdisciplinary routes towards cultural ecosystem services' integration into decision-making

A systematic review of valuing cultural ecosystem services

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Cultural ecosystem services (CES) are defined as the nonmaterial benefits that ecosystems contribute to people. Appreciating CES, which represents the remainders of ecosystem services not held by provisioning, supporting, and regulating services, allows the ecosystems service concept to be comprehensive, integrated, and complete; however,



the intangible, subjective, psychological, and sometimes, collective and unconscious nature of CES brings difficulties in valuation of its practices. Methodologies for valuing CES vary, depending on the type of service, spatio-temporal context, investigators' discipline, and data availability; a lack of methodological consensus and guideline is observed. A systematic review presents as an effective approach to overview the past progress, status, and future challenges regarding the research topic, question, and evidences. Previously, several efforts have been made to systematically review CES literatures; however, enhancement and update on the knowledge is called upon to reflect the recent development in studies of CES. In this study, the latest systematic review compiling CES studies, with a focus on its methodologies, is presented. Over 700 literatures, which were screened from over 3000 literatures, were data-extracted. Service provider and beneficiary, spatio-temporal scale, valuation method, place of measure along the ecosystem service cascade, study design, drivers of change, and the form of measured value were analyzed. The systematic review reveals recent trends in CES studies



and maps the research landscape. Especially, the increase in the number of studies using public participatory GIS, social media analysis, qualitative analysis, choice experiment, etc. are notable. Nevertheless, the discrepancy between expectations and reality in valuing CES needs to be discussed. The systematic review and the meta-database arises as a prospective reference in the development of methodological consensus, selection of appropriate methodology for given research case, appreciation of CES in real-world environmental management, and in the designing process of future strategies of CES studies.

Keywords: drivers of change, ecosystem service cascade, literature review, nature's contribution to people, self-organizing map