

# BOOK OF ABSTRACTS

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## I. SESSION DESCRIPTION

### ID: S8c

Revealing the contribution of protected areas to human well-being through the lens of the ecosystem services concept

### Hosts:

	Title	Name	Organisation	E-mail
Host:		Mateja Šmid Hribar	Research Centre of the Slovenian Academy of Sciences and Arts, Anton Melik Geographical Institute	mateja.smid@gmail.com
Co-host(s):		Ilona Rac	University of Ljubljana, Biotechnical faculty	ilona.rac@bf.uni-lj.si
		Solen le Clech	Wageningen University	solen.leclech@wur.nl
		Anže Japelj	Anže Japelj	anze.japelj@gozdis.si

### Abstract:

"Protected areas are areas specifically dedicated to the protection and sustainability of biodiversity and natural and associated cultural resources, managed through legal or other effective means (IUCN, 1994). Protected areas are a source of multiple ecosystem services (ES) (Stolton al, 2009), provide many social, economic, and environmental benefits to local people and nations (Watson et al, 2014), and are critical instruments for achieving long-term conservation and sustainability goals (Dudley, 2020). By definition, they are subject to restrictions or even prohibitions and are therefore subject to two main assumptions by experts: they are biodiversity hotspots and ES, while they are sometimes perceived as a constraint to local development.

In this section, we invite short papers from researchers and practitioners to explore case studies testing the hypothesis that protected areas provide more abundant ES with higher variability to diverse beneficiaries. ES studies on the identification, mapping and assessment of ES in protected areas across Europe are most welcome.

#### References:

IUCN, Guidelines for Protected Area Management Categories. 1994, IUCN and the World Conservation Monitoring Centre: Gland, Switzerland and Cambridge, UK.

Stolton, S. and N. Dudley, The Protected Areas Benefits Assessment Tool: A Methodology. 2009, World Wide Fund for Nature

Watson, J.E.M., et al., The performance and potential of protected areas. Nature, 2014. 515(7525): p. 67–73.

Dudley, N., Forest Protected Areas, in Encyclopedia of the World's Biomes, M.I. Goldstein and D.A. DellaSala, Editors. 2020, Elsevier: Oxford. p. 146–152."

### Goals and objectives of the session:

"The main goal is to estimate whether and to what extent protected areas provide more numerous ES to different beneficiaries across several spatial levels and diverse geographical areas.

Specifically, this session will focus on the following objectives, keeping in mind differences across geographical contexts and types of protected areas:

- to identify (sub)ecosystems and spatial units related to natural heritage that provide ES in protected areas and identify the most important ES in protected areas,
- to analyse the relationships and mis-matches between ES providers and ES beneficiaries in protected areas,
- to explore whether and how the concept of ES can be used to mitigate conflicts over land use in protected areas and contribute to the more inclusive management of protected areas,
- to discuss the mapping of ES in protected areas (e.g. approaches, scales, indicators), and
- to examine how the assessment of ES can contribute to more transparent and effective designation, management, and governance of protected areas."

### Planned output / Deliverables:

Following the session, and in case of sufficient interest of workshop participants, we would aim to prepare a Special Issue on this topic.

### Session format:

Standard session (presentations)

### Voluntary contributions accepted:

Yes, I allow any abstract to be submitted to my session for review

### Related to ESP Working Group/National Network:

[Sectoral Working Groups: SWG 8 – ES in Conservation](#)

## II. SESSION PROGRAM

**Date of session:** Tuesday, 11 October

**Time of session:** 11:00–12:30

### Timetable speakers

Time	First name	Surname	Organization	Title of presentation
11:00–11:05	Introduction			
11:05–11:15	Chrysovalantis	Malesios	Warwick University, Institute for Global Sustainable Development	Protected Areas and their impact on human wellbeing: do geographical boundaries matter?
11:15–11:25	Jana	Kachler	Helmholtz Centre for Environmental Research	Can we have it all? The role of protected grasslands in offering

Time	First name	Surname	Organization	Title of presentation
				provisioning and regulating ecosystem services.
11:25– 11:35	Anže	Japelj	The Slovenian Forestry Institute	Identification, Assessment and Mapping of Ecosystem Services in the Logar Valley Landscape Protected Area
11:35– 11:45	Marta	Sylla	<a href="#">Click here to enter text.</a>	Participatory mapping of ecosystem services provided by protected areas: uncovering the differences in the hierarchy of importance of ES to stakeholders
11:45– 11:55	Jan	Daněk	Global Change Research Institute of the Czech Academy of Sciences	Socio-cultural valuation of ecosystem services in large-scale protected areas in the Czech Republic
11:55– 12:05	Padmanav	Pallavi	Indian Institute of Technology Bombay	A qualitative study on the loss of coastal ecosystem services and its impacts on the livelihood and well-being of fisher's community: A case study on Mangroves of Mahim, Mumbai, India
12:05– 12:15	Noemi	Rota	<a href="#">Click here to enter text.</a>	Evaluation of Carbon Stock in alpine protected areas: a comparison of different methods
12:15 – 12:30	Discussion			

### III. ABSTRACTS

*Abstracts are ordered based on the session program. The first author is the presenting author unless indicated otherwise.*

#### *1. Type of submission: Abstract*

[S. Sectoral Working Group sessions: S8c – Revealing the contribution of protected areas to human well-being through the lens of the ecosystem services concept](#)

Identification, Assessment and Mapping of Ecosystem Services in the Logar Valley Landscape Protected Area

*Presenting author:* Mateja Šmid Hribar

*Other author(s):* Anže Japelj, Ilona Rac, Suzana Vurunic

*Affiliation:* ZRC SAZU, Slovenia

*Contact:* [mateja.smid@zrc-sazu.si](mailto:mateja.smid@zrc-sazu.si)

Ecosystem services (ES) are the benefits that people derive from ecosystems. Conceptually, they are one of the key tools for assessing the sustainability of natural resource use. It is assumed that the ES of protected areas, characterized by high biodiversity and frequently rich cultural heritage as well, are of great value to society. For an effective implementation of the ES concept, the assessment and monitoring of ES dynamics, and a high-quality database that allows for a reliable quantification of ES are crucial.

Based on that, this study examines ES in the Logar Valley Landscape protected area in Slovenia. The conceptual framework builds on the cascade model (Haines-Young and Potchin 2010), which we enriched by adding elements of identification of (sub)ecosystems and other spatial units supported by available GIS data at the national scale. The latter were included in the study to examine smaller spatial units that have been previously recognised for their conservation significance and are represented by valuable natural features (i.e., natural heritage) and woody landscape features. All (sub)ecosystems are linked to the MAES ecosystem typology.

Once the (sub)ecosystems and other spatial units were identified, an assessment process was conducted that included three aspects: 1) the supply of ES was assessed via deliberative valuation by a group of experts who discussed the potential for ES provision of the identified (sub)ecosystems and other spatial units for ES, as listed in the CICES v5.1 classification; 2) for actual use and demand for ES, semi-structured interviews were conducted with land-owners in May 2022, and a visitor survey is taking place during the summer tourist season. Based on the results, we will create maps of the most commonly recognised ES and identify trade-offs and synergies. However, after the initial results, we have already found that 1) that a more detailed typology of (sub)ecosystems than currently accepted in the MAES typology is needed to more accurately identify ES and understand the flow of supply, use, and demand of ES, furthermore 2) other spatial units represented by valuable natural features contribute mainly to cultural ES (and not as much to regulation ES as initially assumed); and finally 3) ES associated with valuable natural features in one area (e.g., protected area) cannot be generalised to similar valuable natural features in other areas.

*Keywords:* ecosystem services in protected areas, ecosystem services assessment, Logar Valley, Slovenia

## *2. Type of submission: Abstract*

S. Sectoral Working Group sessions: S8c – Revealing the contribution of protected areas to human well-being through the lens of the ecosystem services concept

Socio-cultural valuation of ecosystem services in large-scale protected areas in the Czech Republic

*Presenting author:* Jan Daněk Jan

*Other author(s):* Luboš Slovák, Tomáš Daněk, Jiří Pánek

*Affiliation:* Global Change Research Institute of the Czech Academy of Sciences, Czech Republic

*Contact:* [danek.j@czechglobe.cz](mailto:danek.j@czechglobe.cz)

Protected areas safeguard species and habitats, but also provide ecosystem services (ES) and quite often simultaneously protect landscape character and associated cultural values. In this contribution, we present selected results from two different projects addressing socio-cultural valuation of ES in large-scale protected areas as perceived by their managers and also visitors (in the latter case focused on cultural ES). The methods used include semi-structured interviews, intercept questionnaire surveys with participatory mapping, and focus groups.

Managers of protected areas perceive cultural and regulating ES as most important while cultural benefits were a more referenced group than regulating benefits. The single most frequently referenced category of benefits was habitat creation and maintenance. Regarding challenges in governance of protected areas, habitat creation and maintenance and supporting identities were two of the most negatively influenced benefits by various types of land-use management (esp. agriculture and forestry).

Visitors of protected areas perceive and value a broad range of non-material benefits from local nature and landscape. Preliminary findings from a preference assessment exercise point to a key role of therapeutic and aesthetic benefits. Further results from qualitative analysis of open-ended questions regarding a) reasons to visit nature and specific places, b) places connected with emotions and c) eudaimonic values are still being processed and are expected to be presented at the conference. Participatory mapping allowed to map point, line and polygon features and therefore the resulting maps present a unique and inclusive spatial visualization of actual use of cultural ES in protected areas.

*Keywords:* Ecosystem services, non-material values, protected landscape areas, participatory mapping, socio-cultural valuation

### *3. Type of submission: Abstract*

S. Sectoral Working Group sessions: S8c – Revealing the contribution of protected areas to human well-being through the lens of the ecosystem services concept

Can we have it all? The role of protected grasslands in offering provisioning and regulating ecosystem services.

*Presenting author:* Jana Kachler

*Other author(s):* Felipe Benra, Roman Isaac, Berta Martin-Lopez

*Affiliation:* Helmholtz Centre for Environmental Research, Germany

*Contact:* [jana.kachler@ufz.de](mailto:jana.kachler@ufz.de)

Forage production in Europe has more than doubled in the last 30 years. This has been accompanied by a loss of biodiversity, turning grasslands into the most affected habitats by land-use intensification. Low-intensity grasslands managed under national nature protection laws or the guidelines of the EU Birds and Habitats Directives aim to revert this trend but there is little evidence of their performance. In this study, we analysed to what extent protected grasslands can simultaneously supply forage, plant diversity, and pollination in comparison to non-protected grasslands in Germany using a structural equation modelling approach. We used data from real managed grasslands inside and outside two biosphere reserves and a national park. Our results show that land-use intensity has a negative effect on plant diversity, and a positive effect on forage production in both, non-protected and protected sites. We also found a positive and significant link between pollination and plant diversity in protected sites that is negative although insignificant for non-protected sites. Furthermore, there is a negative link between plant diversity and forage production that is only significant for non-protected sites. As a conclusion, there seems to be a trade-off between forage production and plant diversity in non-protected grasslands that we did not detect in protected grasslands. In contrast, there seems to be a synergy between plant diversity and pollination in protected grasslands that we did not detect in non-protected grasslands. Our results do not confirm that protected grasslands provide plant diversity and pollination which in turn enhance forage production. Our findings suggest, however, that protected grasslands do support biodiversity.

*Keywords:* Plant Diversity; Grasslands; Pollination; Land-Use Intensity; Forage Production

#### *4. Type of submission: Abstract*

S. Sectoral Working Group sessions: S8c – Revealing the contribution of protected areas to human well-being through the lens of the ecosystem services concept

Evaluation of Carbon Stock in alpine protected areas: a comparison of different methods

*Presenting author:* Noemi Rota

*Other author(s):* Claudia Canedoli, Ioannis N. Vogiatzakis, Emilio Padoa-Schioppa

*Contact:* [n.rota4@campus.unimib.it](mailto:n.rota4@campus.unimib.it)

Despite the fundamental role of alpine areas globally in ecosystem services (ES) provision, knowledge about ES remains scarce. The aim of this study was to evaluate the Organic Carbon (OC) Stock of alpine protected habitats in the Adamello Regional Park, N. Italy, using three different methodologies: fieldwork data, national inventories, and the TESSA Toolkit. We investigated 50 plots from five habitats, the most representative, of the Park namely spruce forests, prairies, *Alnus viridis* shrublands, larch forests, mixed broadleaves forests, to determine OC stock in soil, above-ground biomass (AGB) and litter. We sampled soil at three depths (0–10 cm, 10–20 cm, 20–40 cm), collected litter, and measured Diameter at Breast Height and Height for each tree in the plot. OC stock was estimated using laboratory analyses, pedotransfer functions, and allometric equations. For these habitats, data from the National Inventory of Carbon Stock in Forests (INFC) were collated, followed by an analysis using TESSA with reference to the previous OC pools including an estimation of OC Stock in below-ground biomass (BGB). We mapped results using INVest and QGIS and found that TESSA overestimated OC stock values compared to the other two approaches in all habitats. The highest differences are in AGB, with values twice as high as the ones suggested by the INFC and the field data, in particular in broadleaves forests. The results of field data and INFC were similar for all habitats evaluated with the exception of spruce Forest, which showed higher values with the INFC. Since INFC does not account for prairies, comparisons for this habitat were confined to TESSA and field data. TESSA was useful to estimate trends of OC stock, particularly in habitats where data were not available while field data and INFC are appropriate for a more precise account of OC stock in smaller areas.

*Keywords:* Alpine protected areas, carbon stock, ecosystem services, INVest, TESSA Toolkit.

## *5. Type of submission: Abstract*

S. Sectoral Working Group sessions: S8c – Revealing the contribution of protected areas to human well-being through the lens of the ecosystem services concept

A qualitative study on the loss of coastal ecosystem services and its impacts on the livelihood and well-being of fisher's community: A case study on Mangroves of Mahim, Mumbai, India.

*Presenting author:* Padmanav Pallavi

*Other author(s):* D Parthasarathy, K Narayanan, A B Inamdar

*Affiliation:* Indian Institute of Technology Bombay, India

*Contact:* [pallavipadmanav@gmail.com](mailto:pallavipadmanav@gmail.com)

Mahim is a small fishing village (koliwada) on the confluence between Mithi River and Mahim bay (Arabian Sea). This creates a suitable habitat for the mangroves to flourish. The fishing community of Mahim has been long dependant on the ecosystem services (ES) provided by the mangroves and the bay. Though the mangrove of Mithi River is a reserved forest, with increased pressure from development, pollution, and reclamation, the ecosystem services provided by the mangroves have been decreasing. This decrease of ES in mangrove is strongly felt by the community and we have tried to capture the change in deliverance level of ES. The ESs considered here are with respect to provisioning and regulating services of mangroves. The change in the deliverance level of ES has been captured from the fishers' perspective via an in-depth socio-ecological survey carried out in Mahim koliwada. A set of indicators have been selected which are, "Change in species composition" (both mangroves and aquatic faunas), "Change in observed health of the mangroves and breeding grounds" and, "Impact on water quality"; in order to understand the present ecosystem health. Another set of important indicators were considered and those are; "Change in frequency of flooding and damage from flood", "Loss/profit due to change in species composition", "Alteration in aesthetic properties" and, "Modification in local climate". These added indicators will provide the understanding of the deliverance level of ESs of mangroves which has been compromised due to change in the health of the mangrove ecosystem. The objective is to understand the impact on the community in terms of livelihood and wellbeing from the loss of ESs provided by Mangroves. Such studies at local scale are essential to identify the weaknesses of ecosystem conservation strategies already in place.

*Keywords:* Ecosystem, Ecosystem Services (ES), Deliverance level, Socio-ecological system, wellbeing



*6. Type of submission: Abstract*

S. Sectoral Working Group sessions: S8c – Revealing the contribution of protected areas to human well-being through the lens of the ecosystem services concept

Participatory mapping of ecosystem services provided by protected areas: uncovering the differences in the hierarchy of importance of ES to stakeholders

*Presenting author:* Marta Sylla

*Affiliation:* Institute of Spatial Management, Wrocław University of Environmental and Life Sciences, Poland

Contact: [marta.sylla@upwr.edu.pl](mailto:marta.sylla@upwr.edu.pl)

Protected areas constitute hotspots for biodiversity and ecosystem services and therefore human activities and impacts need to be limited there. Strict environmental protection regime significantly limits human economic activities of communities living in the proximity to protected areas. This creates conflicts of interest for different stakeholders, even though the importance of protected areas for preserving natural resources is commonly recognised. The aim of this work is to uncover the perception of different active stakeholders and inhabitants of municipalities where protected areas are present concerning ecosystem services provision. The stakeholders' hierarchy of importance of ecosystem services provided by Natura 2000 protection sites in Poland is analysed in regard to ES contribution to their individual well-being as well as to local economic activities. The results provide insights about which ES are important as well as the spatial distribution of ES mapped by stakeholders. The data for the research was collected during 10 workshops for about 150 local stakeholders on ecosystem service valuation, conducted within the project regarding the human - nature coexistence instead of competition in Lower Silesia region in Poland in 2019. The results contribute to the discussion on designing tools to strengthen acceptance for nature conservation and ES recognition

*Keywords:* Natura 2000, Poland, conflicts, stakeholders involvement



*7. Type of submission: Abstract*

S. Sectoral Working Group sessions: S8c – Revealing the contribution of protected areas to human well-being through the lens of the ecosystem services concept

Protected Areas and their impact on human wellbeing: do geographical boundaries matter?

*Presenting author:* Nikoleta Jones

*Other author(s):* Chrisovaladis Malesios, Alfie Begley, Juraj Svajda

*Contact:* [nikoleta.jones@warwick.ac.uk](mailto:nikoleta.jones@warwick.ac.uk)

In the past decade studies focusing on social impacts of Protected Areas (PA) have increased significantly capturing a number of aspects such as the impact on people's quality of life, income and connectedness to nature. A main concern in the literature is that issues around social equity are often neglected by PA management authorities referring to how social impacts are distributed within local communities of PAs. Despite an increase of studies exploring how impacts are distributed across different stakeholders, there are very limited studies discussing the spatial distribution of impacts in a PA. In the current study we address this gap and explore the spatial variation of social impacts in 4 European Protected Areas using primary data from 1251 households. We apply a new modelling framework and reveal that social impacts flow outside the boundaries of a PA and are often unevenly distributed between local communities. Our results highlight the need to consider issues of spatial social equity when designing the boundaries of PAs alongside ecological criteria.

*Keywords:* protected areas, social-spatial equity, wellbeing, social impacts