BOOK OF ABSTRACTS

This Book of Abstracts provides a comprehensive overview of the session content and is structured into three main sections:

I. Session Description – an introduction to each session, including its objectives and expected outputs
II. Session Program – a detailed schedule for each session, including speakers and timing
III. List of Abstracts – a complete compilation of all accepted abstracts

I. SESSION DESCRIPTION

ID: T2c

Meeting the international biodiversity targets for spatial planning with ecosystem services science

Hosts:

	Name	Organisation	E-mail
Host (s):	Luis Inostroza	Mendel University in Brno	luis.inostroza@mendelu.cz
Co-host(s):	Maria José Martínez Harms	Universidad Santo Tomás, Santiago de Chile.	mmartinez-harms@ieb-chile.cl
	Peter Verburg	Vrije Universiteit Amsterdam	p.h.verburg@vu.nl

Abstract:

The Biodiversity Conservation International agenda aims to protect biodiversity and ecosystems in substantial ways. The Kunming Montreal Biodiversity Framework (KMBF) establishes several targets that have to be met by 2030. At the same time, IPBES is currently preparing an ambitious assessment on integrated biodiversity-inclusive Spatial Planning and Ecological Connectivity that must respond to KMBF Targets 1, 2, and 3. This policy ambition requires best-in-class scientific evidence on how to articulate biodiversity and spatial planning. In this context, ecosystem services science has been demonstrated to be a robust framework for incorporating biodiversity into decision-making across various contexts and scales, including restoration and landscape planning. In this session, we invite contributions that specifically address the integration of biodiversity considerations into spatial planning through the lens of ecosystem services science.

We welcome conceptual and methodological contributions, as well as case studies that demonstrate biodiversity-inclusive spatial planning through the lens of ecosystem services science, across temporal and spatial scales in various regional and national settings. We will give special attention to less-studied, less-represented continents, regions, and habitats. Expected contributions may include methods, tools, scenarios, models, data and or case studies for biodiversity & ES inclusive spatial planning. Case studies presenting best practices for identifying, restoring and enhancing ecological connectivity, focusing on how ES contributes to biodiversity conservation, restoration, sustainable use and management are highly welcome.

Questions

- How effectively can spatial planning be improved to avoid adverse effects on biodiversity, ensuring conservation, restoration, and sustainable provision of ES?
- How effective is the inclusion of biodiversity and ES into spatial planning in different contexts?
- What is required to ease the inclusion of biodiversity and ES into spatial planning?
- What are the enabling factors determining a biodiversity-inclusive spatial planning?

Goals and objectives of the session:

To collect best-in-class research outcomes addressing the inclusion of biodiversity and ecosystem services into spatial planning across the globe

Planned output / Deliverables:
A special issue in Ecosystem Services journal (IF 6,6) will collect the best presentations of this session

Related to ESP Working Group:
TWG 2 – Biodiversity & Ecosystem services

II. SESSION PROGRAM

Room: C1
Date of session: Tuesday, 19 May 2026
Time of session: 16:00 – 17:30

Timetable speakers:

Time	First name	Surname	Organization	Title of presentation
16:00-16:10	Luis	Inostroza	Mendel University in Brno	Introduction to the session
16:10-16:20	Donna	Teske	Naturalis Biodiversity Center	Debunking the myth of data deficiency
16:20-16:30	Apostolos	Karteris	KartECO	Advancing biodiversity conservation in Moldova in line with EU Nature Directives: The LIFE RENATA preparatory project as a transformative model
16:30-16:40	Smit Rajshekhar	Pate	University of Twente, Netherlands	Linking Landscape Configuration and Biodiversity to Drought Resilience in the Netherlands
16:40-16:50	Jakob Pelle	Rauch	Department of Sustainable Development, Environmental Science and Engineering (SEED), KTH Royal Institute of Technology, Stockholm, Sweden	Quantifying the barrier effects of linear infrastructure on large herbivores: A comparison of expert-based and data-driven connectivity models in Sweden
17:00-17:10	Mathew	Tello	Thünen Institute of Forestry	Beyond Forests: Implications of Mapping Uncertainty for the EU Deforestation Regulation
17:10-17:30	Luis	Inostroza	Mendel University in Brno	Discussion and further steps

III. LIST OF ABSTRACTS

The first author is the presenting author unless indicated otherwise

1. Debunking the myth of data deficiency

First author: Donna Teske
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One of the most frequently cited arguments against the inclusion of biodiversity in business is that "there is no data available". Although there is truth in this argument (TNFD, 2025), this presentation challenges this narrative. Rather than treating data deficiency as a purely factual limitation, we argue that it often reflects deeper structural, organisational, and conceptual barriers, given that substantial biodiversity, ecosystem services, and pressure data already exist and are increasingly relevant for decision-making.

Building on findings from recent research on the use of public biodiversity- and nature-related data in the private sector, this presentation demonstrates that existing biodiversity, ecosystem services, and pressure data can already support biodiversity-inclusive spatial planning. However, difficulties arise from how such data are accessed, interpreted, and applied within decision-making processes.

The presentation structures these difficulties around five interrelated themes that shape the use of biodiversity data: (1) limited knowledge, capacity, and organisational culture to engage with ecological information; (2) constraints related to data availability, quality, and affordability at decision-relevant scales; (3) complexity and fragmentation across datasets, standards, and platforms; (4) uncertainty linked to evolving policy, regulatory, and incentive frameworks; and (5) persistent integration and application barriers that hinder the timely and effective use of biodiversity and ecosystem services data.

By reframing the "no data" narrative, this presentation highlights how perceived data gaps can obscure actual obstacles to integrating biodiversity into business decision-making. It illustrates how existing data can be used more effectively when attention shifts from data availability alone to questions of usability, integration, and institutional readiness.
In doing so, this presentation shifts the discussion from the availability of biodiversity data to the underlying factors that limit its effective use in decision-making.

Keywords: Biodiversity data use, Business decision-making, Ecosystem services, Data integration barriers

2. Advancing biodiversity conservation in Moldova in line with EU Nature Directives: The LIFE RENATA preparatory project as a transformative model

First author: Apostolos Karteris
Other author(s): Vasiliki Chrysopolitou, Angela Lozan, Natalia Guranda, Liliana Spitoc, Stefanos Ispikoudis, Ion Talmaci, Lena Hatziiordanou, Artemis Margaritidou
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In June 2022, Moldova was granted EU candidate status. From that point on the country is required to strengthen its legal, technical and operational conservation frameworks to align with EU environmental standards, including Natura 2000 and the Birds and Habitats Directives ("Nature Directives").
LIFE RENATA ("Roadmap for the alignment of EMERALD network establishment and management to NATURA 2000 sTAndards in Moldova", LIFE23-PRE-EL-LIFE-RENATA/101148675, https://liferenata.eu/) is a 2+ year preparatory project (02.2024-05.2026), the first of its kind in the Republic of Moldova. On the legal and institutional aspects, the project team has carried out a comprehensive assessment of the current national framework and through extensive stakeholder engagement and SWOT analysis, the key requirements for EU/NATURA 2000 transition were identified. On the technical aspect, the team thoroughly reviewed the existing Emerald Network database, which contains detailed ecological information for all 61 Emerald sites in Moldova. This complex and challenging task was carried out with the support of local experts and included also correction and refinement of site boundaries to improve spatial accuracy, ecological coherence, and data consistency. This led to a substantial increase of the total area of the Emerald Network from 274,453.54 hectares to 349,518.90 hectares, representing an expansion of 75,065.36 hectares (+27.35%). Operationally, a set of criteria-based prioritization rules and guideline tools for developing species action plans are being developed. A final Strategic document, entitled "Roadmap for aligning Emerald Network sites with Natura 2000 standards" is currently being finalized. This Roadmap

will serve as a critical policy and operational instrument, to guide the gradual harmonisation of national systems with the EU Nature directives and to prioritise actions for institutional, legal, and technical alignment. In conclusion, the revised Emerald Network in Moldova is now better positioned to fulfill its conservation objectives and simultaneously advance the transition toward compliance to EU Nature provisions.

Keywords: LIFE projects, EU transition, Protected areas

3. Linking Landscape Configuration and Biodiversity to Drought Resilience in the Netherlands

First author: Smit Rajshekhar Patel
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To meet the international biodiversity targets under the Kunming–Montreal Global Biodiversity Framework (KMGBF), spatial planning approaches need to explicitly integrate biodiversity conservation, ecosystem functioning, and climate resilience, especially in intensively managed landscapes such as the Netherlands. However, empirical evidence within spatial planning relating to how landscape configuration and biodiversity influence landscape resilience to climate extremes such as drought and heatwaves is lacking. This study evaluates the linkages between landscape configuration, biodiversity, and landscape resilience to drought across sandy soils in the Netherlands, using butterflies (Lepidoptera) as indicator species of biodiversity and NIRv (Near-Infrared Reflectance of vegetation) as an indicator of vegetation functioning and ecosystem productivity. Landscape resilience is conceptualised and operationalised through resistance and recovery indices. The analysis uses long-term butterfly monitoring data (2015–2022) and Sentinel-2–derived NIRv to quantify biological resilience (species resistance and recovery) and functional resilience (vegetation response to drought), respectively.
Landscape configuration is characterised using landscape metrics such as connectivity, heterogeneity, patch size, and fragmentation across multiple spatial scales. The linkages between landscape configuration, biodiversity, and landscape resilience are statistically modelled using generalised linear mixed models (GLMM), while structural equation modelling (SEM) is employed to model indirect pathways. The 2018–2019 drought event in the Netherlands is used as the focal climate disturbance to assess how landscapes with varying configuration and biodiversity resist and respond to the disturbance.
By establishing the empirical connection between landscape configuration, biodiversity, and landscape resilience to drought, this research provides spatially explicit evidence directly relevant to biodiversity-inclusive spatial planning and ecological connectivity targets under the KMGBF and IPBES assessments. The results provide action-oriented insights for ecosystem services–based spatial planning, landscape restoration, and climate-resilient landscape management.

Keywords: Landscape configuration, Biodiversity, Drought resilience, Ecosystem services, Spatial planning

4. Quantifying the barrier effects of linear infrastructure on large herbivores: A comparison of expert-based and data-driven connectivity models in Sweden

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The increasing fragmentation of landscapes by linear infrastructure poses a significant challenge to maintaining ecological connectivity. To successfully integrate international biodiversity strategies, such as the Kunming-Montreal Global Biodiversity Framework (KMBF), into spatial planning, it is essential to precisely and systematically quantify barrier effects. This article presents a research approach that quantifies the habitat functionality (the combination of habitat quality and connectivity) for moose (Alces alces) in Sweden. Using the Randomised Shortest Path (RSP) framework with the open-source software library ConScape, we investigate how linear infrastructure alters ecological connectivity at the landscape level. One focus is on the methodological determination of input parameters (resistance and habitat quality raster). Two approaches are compared:

1. A structured expert workshop based on the IDEA method (Identify, Discuss, Estimate, Aggregate), which ranks the various landscape elements in terms of their resistance to movement and habitat quality using a hybrid Delphi approach.
2. The analysis of high-resolution GPS telemetry data using Step Selection Functions (SSF).
The study aims to assess the impact of roads on wildlife migration and to identify critical areas for the planning of ecoducts and wildlife passages. This involves analysing habitat functionality before and after the construction of a road or railway line. In addition, the work makes an essential contribution to scientific practice by examining the extent to which cost-effective, structured expert surveys can serve as a reliable substitute for expensive and often difficult-to-access GPS data in spatial planning. The results provide decision-makers with tools to effectively integrate biodiversity aspects into national infrastructure projects, thereby ensuring the sustainable provision of ecosystem services.

Keywords: Landscape Connectivity, Habitat Functionality, Road Ecology, Expert Elicitation, Step Selection Functions (SSF)

5. Spatial assessment and valuation of biodiversity-related ecosystem services for sustainable agriculture

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IPBES reports, the Millennium Assessment (MA 2005) along with many other authors all emphases that biodiversity loss today is higher than ever before. This rapid decline has been raising concerns about decline in ecosystem functioning and provision of ecosystem services, because the loss of species often alters the pools and fluxes of materials and energy in nature (ecosystem functioning) (Isbell et al. 2017). At the same time biodiversity is fundamental to agricultural production through its role in supporting ecosystem services such as pollination, biological pest control, soil fertility, nutrient cycling and hydrological services. However, depending on management practices, agriculture can also provide a number of disservices to nature, such as land degradation, loss of wildlife habitat, nutrient runoff, etc. (Zhang et al. 2007). The tradeoffs that may occur should be studied and taken into consideration by farmers and decision makers because they may undermine long-term productivity, resilience, and economic sustainability. This research addresses this gap by conceptualising biodiversity as natural capital and by proposing a spatially explicit framework for assessing and valuing biodiversity-related ecosystem services in agricultural landscapes. The study is part of a PhD work that will adopt an integrated spatial–economic approach by combining GIS-based mapping and modelling, biodiversity indicators, and ecosystem service proxies with economic valuation methods.

The poster will present the first results from a review on economic and spatial assessment approaches in natural capital and biodiversity-related ecosystem services in agriculture. The research will place particular emphasis on methods that are meaningful for both policy and business-oriented decision-making.

Keywords: biodiversity, ecosystem services, agriculture, spatial economic approach

6. Beyond Forests: Implications of Mapping Uncertainty for the EU Deforestation Regulation

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The EU Deforestation Regulation (EUDR) represents a major policy effort to curb global deforestation and to protect forest biodiversity linked to EU consumption. While the regulation currently applies only to forests as defined by the FAO, the European Commission has committed to assessing the inclusion of Other Wooded Lands (OWL) in future revisions. OWL ecosystems, such as savannas and open woodlands, are ecologically significant yet structurally heterogeneous, raising critical challenges for monitoring, mapping, and regulatory enforcement. Using the Brazilian Cerrado as a case study, this

research evaluates how mapping uncertainty and definitional thresholds affect the identification of OWL for potential inclusion under the EUDR. We compare seven widely used national and global land-cover datasets and quantify spatial agreement in OWL representation across the Cerrado. Results reveal substantial disagreement among maps, particularly in regions of intense agricultural expansion, indicating that monitoring outcomes, and thus compliance assessments, depend strongly on dataset choice. We further examine how applying the FAO definition of OWL, including canopy height and canopy cover thresholds, constrains the extent of OWL that would be captured under EUDR. Even when accounting for known uncertainties in remote sensing products, a considerable proportion of ecologically relevant savanna formations remains excluded. Our findings demonstrate that fixed, globally uniform definitions and reliance on single land-cover products risk underrepresenting heterogeneous ecosystems and may lead to spillover effects into less protected landscapes. We argue that effective inclusion of OWL under the EUDR requires regionally validated datasets, explicit treatment of uncertainty, and adaptive definitional criteria that reflect ecosystem condition rather than rigid structural thresholds. Addressing these challenges is essential to ensure that EUDR implementation delivers meaningful biodiversity protection beyond forests.

***Keywords*:** EUDR, deforestation, other wooded lands, savanna, Cerrado