Discussion Panel 1: Opening the Scene (60 minutes):

Session concerns panel discussion of 2 panellists moderated by chair to open key workshop topics:
(10 minutes presentation each + 40 minutes discussion along following topics)

- ***Adaptation and Transformation in NBG***
- ***Institutions of NBG***
- ***Transformative Learning and Behavioural change towards NBG***
- ***More-than-humans perspective***
- ***Co-creation***

Moderated by Katriina Soini

Title of contribution:	Authors	Abstract:
How can a national biodiversity strategy contribute to a social-ecological transformation	**Yves Zinngrebe**, Elsa Cardona Santos, Ulrich Brand, Jennifer Hauck, Heidi Wittmer (et al), Thomas Hickmann, Gregor Hagedorn, Elisabeth Henn, David Lam, Marion Mehring	The failure to meet global and national biodiversity targets suggests that our political, economic and social actions must change significantly more than they have in the past in order to halt the decline in biodiversity and reverse the negative trend. In light of the update of the National Biodiversity Strategy and Action Plan (NBSAP) 2030, the question arises as to how such a transformation can be initiated and shaped in Germany. In this article, we present findings from an evaluation of key elements of a transformative biodiversity policy and make recommendations for all fields of action of the NBSAP 2030. We show that a successful transformation requires new forms of inclusive planning and a coherent realignment of the regulatory framework for biodiversity-related action. The paradigm shift required for this cannot be achieved by the environmental sector alone, but requires a high political, social and legal status for biodiversity in all sectors. The associated learning process can only be successful through concrete planning of objectives, measures and responsibilities as well as regular evaluation.

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Normative sciences in the design and governance of nature-based solutions	**Juha Hiedanpää,** Carsten Herrman-Pillath, Timo Maran	Nature-based solutions (NBS) are already being delivered with increasing evidence on their effectiveness, but implementation issues persist. It has become evident that implementation is not a technical issue, but a complex combination of economic, social, political, moral, cultural, material, and discursive issues that shape and condition NBS design and implementation. Our theoretical perspective points at two directions: values are communicative devices that become tangible in problematic situations (i.e. a need for NBS) and the fair and actionable remedy for these problematic situations calls for normative science of specific kind (i.e. design and implementation of NBS). Our approach to normative sciences leans on the pragmatist philosophy of Charles S. Peirce (1839–1914). To him, normative sciences include aesthetics, ethics, and logic (science, semiotics). Aesthetics is concerned with what sorts of ends are admirable to pursue, ethics with how people should act, and logic with how they ought to reason. Transdisciplinary science is always normative as it attempts to solve practical problems and improve existing conditions. We argue that the purpose of transdisciplinary NBS science is to integrate ethics into aesthetics the way that signs (needs and values) create potentially a virtuous web of interactions, in the sense of fostering and nurturing a process of creative symbiosis, and that this process can be experienced as an admirable world for all species.

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Thematic Session 1: From Adaptation to Transformation (120 minutes)

Session addresses adaptive and transformative potential of nature-based governance in individual presentations (20 min semi-plenary and 15 minutes other presentations) and plenary discussion (30 min).

Key themes to discuss:

- ***Through which mechanisms and pathways, and under which conditions, transformative interventions and actions are realised?***
- ***What is the target of NBG transformation?***
- ***What are the implications of adaptation/ transformation for enhancing global sustainability in diverse cultural and economic contexts?***

Moderated by Ina Lehman

Title of contribution:	Authors	Abstract:	Key words:
How Transformative is the Nature Restoration Law? SEMI- plenary (20')	**Jerneja Penca**	Policy makers are exploring ways to design and enact transformative actions that promote the long-term health of ecosystems. Nature restoration has been identified as one such measure. While the concept of restoration has a long history in biodiversity governance and restoration ecology, its heightened policy attention—especially in the EU with the Nature Restoration Law—has not been adequately examined in relation to transformative change, as envisaged by the scientific community. This contribution will examine nature restoration as a possible case of transformative regulatory action. It seeks to bridge the gap between the discussion of transformative change (which often remains an elusive and abstract concept in policymaking) and concrete policy measures. The objective is to consider the recent EU Nature Restoration Law and the conditions under which it can have transformative power in its upcoming implementation, while also appreciating restoration as a contested approach. Legal analysis of the law will be combined with recent knowledge from sustainability science and observations from two case studies in the Slovenian coastal region: an attempt at seabed restoration and governance challenges in Salina, a Natura 2000 and Ramsar site.	transformative governance; people and nature; natural and cultural heritage; laws; institutions; actors; paradigms

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Climate smart rewilding implementation enhancing human and non-human co-benefits	Olena Shelvytska, **Stanislava Brnkaľáková,** Zuzana Sarvašová, Tatiana Kluvánková	Climate-smart rewilding in Horizon Europe project wildE develops as a holistic approach that considers climatic, economic and societal challenges. This approach makes ecological restoration financially feasible, promotes social-environmental co-benefits, safeguards cultural, socio-economic values, while enhancing rewilding's climate benefits. Empirical basis is Tatra Mountains positioned on the Slovak-Polish border. Despite being a significant conservation area of NATURA 2000 framework, the inhabited parts of these mountains are heavily impacted by human activities. To ensure the ecological integrity of the park, it is important to have a comprehensive strategy, insuring balanced coexistence between conservation efforts and community well-being. Due to the lack of preparation in existing policies and governance structures to handle climate-smart rewilding initiatives, our study primarily delves into an extensive institutions examination. The goal is to uncover both the potential drawbacks and opportunities for integrating rewilding policies with others on various levels across Europe. Furthermore, the choice experiment method can assess complex decision-making, values and public preferences for rewilding and conservation efforts.	climate smart rewilding, ecological restoration, institutional analysis, community well-being, policy integration

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Systems thinking approach: an integrative and comparative tool in diverse case studies (an example form Planet4B project)	Blanka Loučková, Julia Mildorfova Leventon, Simeon Vaňo, Patricia Ofori-Amanfo, **Elif Tugba Simsek**	The idea of systems thinking, along with related concepts such as leverage points, has gained attention in research on transformative change. Systems thinking serves as a useful framework for examining issues, especially in the study of social-ecological systems, to investigate strategies for promoting sustainability within specific local systems. In our paper, we draw on range of examples of case studies in the Planet4B project, where we apply a systems thinking framework known as the onion model. This approach enables us to compare systemic change across different case studies and provides a consistent way of analysing these cases. However, the use of systems thinking approach has been occasionally criticized for promoting a uniform perspective, potentially overlooking diverse viewpoints and plurality of different actors involved in a given context. Based on case studies in the Planet4B project, we explore the systems thinking approach (onion model) in relation to the diverse contributions and multiplicity of actors. We look closely at this approach and try to determine to what extent it allows to keep coherence and complexity while also bringing together different perspectives of actors involved.	systems thinking approach, biodiversity governance, plurality, transformation

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A historic overview of the development of the oil palm sector in Peru, its impacts on land use, and its links to a changing governance	**Diego Brizuela-Torres**, Yves Zinngrebe, Calum Brown	Oil Palm has become highly profitable, but has caused extensive deforestation in Southeast Asia. This has raised concerns about its sustainability and created a negative image of oil palm. In Peru, its expansion originates with its promotion as an alternative crop to coca in the 1990s and now has become an important economic motor. This paper presents a historic overview of the oil palm sector in Peru focusing on the land use changes it has induced, and the role that changes in governance structures have had in mediating these processes. We found that the palm sector in Peru has developed across three stages: The first stage, triggered by support for palm by international institutions, national and regional governments, and with little consideration of land use impacts. A second stage started when the sector became profitable, strengthening producers' organizations and big companies, while government started withdrawing and passing leadership on to private actors. Environmental concerns emerged during this period. Since the late 2010s, a third stage began, marked by the lead of private actors and signs of industrialization, increasing the risk of palm becoming an important deforestation driver. We also discuss a group of levers which could prevent such deforestation impacts.	oil palm, deforestation, governance, land use change, land use governance

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Potential of the nature-based solutions in the governance of the healthcare sector	**Dina Bite**	"Socially responsible green transition: enhancing governance solutions to empower Homo Climaticus in the healthcare sector (GreenCare)" is main objective of the study to analyse inequalities created or facilitated by the European Green Deal (EGD) in the healthcare sector, identifying the impact of climate policy on healthcare practitioners and socially vulnerable groups, as well as proposing recommendations for governance solutions to promote a socially responsible green transition. The project idea goes in line with the statements of the conference containing opportunities both learn from the other spheres and disciplines as well as enrich experiences of other participants. Discussions among representatives of different disciplines and interest groups would promote development of creative ideas that can lead to innovative solutions locally and regionally. Collaborative ties and mutual interaction would also be developed thus leading to better understanding both of theoretical and practical aspects of nature-based governance and promote opportunity to develop further investigations."	

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Thematic Session 2: Architecture and Agency of NBG (120 minutes)

Session addresses NBG architecture, agency and multilevel (20 min. semi-plenary and 15 minutes other presentations) and plenary discussion (40 min).

Key themes to discuss:

- ***What are institutionalised structures that impede or foster the uptake of nature-based governance across policy levels?***
- ***What barriers and benefits Nature based governance concerns?***
- ***What can we learn about accountability and acceptance in this context?***
- ***Under which conditions can nature-based governance receive the political, financial and administrative support?***

Moderated by Martin Špaček

Title of contribution:	Authors	Abstract:	Key words:
Nature-based solutions -- a semi-systematic review of governance challenges and opportunities SEMI plenary (20')	**Mia Pihlajamäki**, Simo Sarkki, Tatiana Kluvánková, Carsten Herrmann-Pillath, Elena Górriz, Stanislava Brnkal'áková, Ann Ojala, Claire Hardy, Jiří Louda, Martin Špaček	This review paper contributes to this gap by synthesising the current state of knowledge on NBS governance requirements. To this end, the paper draws on a semi-systematic review of 168 peer-reviewed papers on NBS governance 1) to provide a description of the current state of scientific literature; 2) to explore how governance and NBS are conceptualised in the literature; 3) to identify and synthesise NBS governance challenges and successes by exploring how different governance elements, namely i) governance modes, ii) institutions and instruments, iii) governance processes, and iv) governance structures enable or hamper NBS designing, implementation and upscaling; and 4) to explore the role of inclusivity of various stakeholder groups, both human and non-human, across these governance elements.	Nature-based solutions, governance elements, inclusivity, literature review
Explaining siloism as challenge for biodiversity policy integration in the context of the water framework and the habitats directive	**Fabian Proebstl**, Yves Zinngrebe	Looking at the example of sub-national governments in Germany. this article investigates policy incoherencies and thus the low level of Biodiversity Policy integration I particular interdependencies between sub-national administrative structures and practices and incoherent, ineffective implementation of potentially complementary directives for overlapping challenges such as river restoration. We find that a stringent prisonization of either reactivation or conservation	Water Framework directive, Habitat directive, river restoration, Biodiversity Policy Integration, reflexive governance,

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		of ecological structures in water currents result in conflicting interests and stretches scarce human and financial resources in the light of climate change. We identify three explanatory factors for low levels of biodiversity policy integration: inflexible handling of directives by civil servants, weak inter-departmental communication and a missing accountability for coherent or coordinated solutions.	adaptive governance
Exploring Perspectives on Nature-Based Governance: Insights from Seven European Living Labs	**Oriana Mosca, Tomáš Szabo**, Silvana Mula, Julius Janáček, Sara Manca, Tatiana Kluvánková, Ferdinando Fornara	This study delves into the perspectives on NBS implementation practice across seven European countries (Italy, Hungary, Finland, Spain, Estonia, Scotland, Czech Republic- Slovakia), corresponding to seven different Living Labs. We conducted semi-structured in-depth interviews with key figures from diverse backgrounds and survey exploring attitudes, perceptions and experiences about nature and NBS, utilizing measures such as the Inclusion of Nature in the Self (Schultz et al., 2002) and the Environmental Identity Scale (adapted from Clayton et al., 2021), individual and collective well-being and barriers an benefits of NBG. This research contributes to advancing our understanding of NBG strategies, informing future policy and practice, and fostering dialogue among stakeholders invested in sustainable development.	Nature based solutions, and well-being
Multi-Attribute Model for Sustainable Green Urban Spaces Management	**Andrej Udovč**, Luka Žvokelj	The Need Of Alternative Managing Models Of Green Urban Spaces Is Growing Because Of Increasingly Smaller Funds For Their Management. In Order To Design A Model For Sustainable Use Of Urban Green Spaces The Cooperation Of Both Self-Organised Municipal Initiatives And City Municipalities Needs To Be Established. For Facilitating These Processes, We Developed Multi-Attribute Decision Making Model For Managing Urban Green Spaces. It Is Aimed At Interactive Development Of Qualitative Multi-Attribute Decision And The Evaluation Of Options Based On Professional Assumptions. With The Implementation Of The Interviews With Specialists From Social, Ecological And Economic Fields We Determined Main Attributes And Other Criteria, That Have Potential Influence On Sustainable Use Of Urban Green Areas. Those Attributes Were Formed To Decision Tree Using Dexi For Determining The Ones With Most Influence On Sustainability Of Urban Green Spaces. We Tested Designed Model On Urban Green Space	Dexi, Sustainability, Urban Green Spaces, Management

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		Livada Lab, Ljubljana. The Results Showed, That Current Management Practice Is Not Sustainable. After The Analysis Of All Criteria We Found Out, That Attributes As Financial Safety And Profitability Had A Greatest Impact On Final Sustainable Use Of Urban Green Area And If They Changed, Managing Of Urban Green Space Livada Lab Becomes Sustainable.	
Saline Nature-based solutions for adapting agriculture to climate change	**Ina Lehmann,** Katarzyna Negacz, Nadia Bazihizina, Giulia Atzori	Among the many negative consequences of climate change, the salinization of soils has not yet received substantial public attention even though it may lead to mayor losses of agricultural yield. In this paper, we draw attention to this problem and discuss the potential of Nature-based solutions (NbS) to support the adaptation of the agricultural sector to a climate-changed world. Saline nature-based solutions, as we call them, can for instance be the use of salt-tolerant crops or crops that extract salt from the soil. Such practices draw on the natural properties of plants and thereby have many economic and ecological benefits over chemical and technical solutions to the adaptation of agriculture to climate change. However, changing farmers' practices and making saline agriculture products acceptable to consumers requires changes in cultural habits related to food and agriculture. We provide a framework of the various challenges that arise and illustrate them with case studies from around the world. On this basis, we conclude with recommendations for the further upscaling of saline NbS.	NbS, saline agriculture, farmers, food consumers

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Thematic session 3: Transformative Learning and behaviour change (120 minutes)

Session will open experimentarium to demonstrate potential of methods for transformative learning (80 minutes), visual, illustrative presentations are welcome. Discussion (40 minutes) is to boost transformation through experimentation, co-creation and social learning.

Key themes to discuss:

- ***How novel transdisciplinary digital, art-based methods can foster potential of Nature Based governance transformation for action across the globe?***
- ***How to trigger behavioural change, to booster societal transformation and institutional reconfiguration for NB governance and policy change?***

Moderated by György Pataki

Title of contribution:	Authors	Abstract:	Key words:
Novel digital methods for inclusive nature-based governance SEMI plenary (20')	**Leanne Townsend**, Claire Hardy, Tim Pittaway	The Horizon Europe-funded COEVOLVERS project ("Coevolutionary approach to unlock the transformative potential of nature-based solutions for more inclusive and resilient communities") takes a coevolutionary approach to understanding how the governance of, and participation in nature-based solutions can be more accessible and inclusive for (human and non-human) local communities, and how this can benefit them in the face of the ongoing biodiversity and climate crisis. The project is doing participatory research in seven living labs, each of which work with local communities to explore these issues. In Scotland we are working with a rural community to explore more inclusive management of a community-owned woodland. We are implementing a range of creative methodologies, including digital and analogue approaches. Novel participatory digital approaches include the development of a 3D virtual tour of the woodland for increased accessibility and engagement, and an interactive woodland mapping activity to explore community reflections on affordances, contributing to an umwelt analysis of humans and non-humans. These methods are used in tandem with more established approaches such as digital storytelling and walking interviews. In this presentation we discuss the implementation of these methods in the Scottish living lab, and their role in developing inclusive methodologies for transformative nature-based governance.	inclusive; engagement; novel methods; digital

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Role board games: Behavioural approaches to simulate human and non-human interactions in nature-based governance	**Martin Špaček**, Tatiana Kluvánková, Jiří Louda, Stanislava Brnkaľáková, Julius Janáček, Tomáš Szabo, Dominik Horváth, Simo Sarkki, Juha Hiedanpää	There has been limited focus on how nature can inspire governance. Nature-based governance (NBG) integrates co-evolutionary potential through co-creative approaches, bringing a more than human perspective to decision-making for more resilient, inclusive communities. In this paper, we present a newly developed Role Board Game (RBG)- ECOPOLY as a method to simulate multi-species participation in NBG. ECOPOLY uses role-playing as a mechanism to enhance multi-species cooperation and learning by solving social-ecological dilemmas. As an interactive agent-based model, it facilitates the simulation of resource dynamics, mutual learning and collective decision making in the context of NBG. Ecopoly is being tested in 7 communities across Europe. The paper focuses on the questions: How do non-human and human actors behave strategically in different situations, and what relevance can game play have for understanding complex social-ecological dilemmas? In particular, we compare decision situations where ii) NBS implementation is seen as an environmental fix, ii) organic co-design of the full diversity of adaptive actions by human and non-human actors responds to the NBS, and iii) institutional co-design of human decisions is inspired by organic co-design.	Nature-based solutions, Role Board Game, Nature-based governance, multi-species cooperation, more-than-human perspective
Implementation of nature-based solutions on agricultural land: farmers' and residents' perspectives	**Jiří Louda**, Jan Macháč, Jan Brabec, Lenka Dubová	Long-term pressures on agricultural efficiency, based on synthetic fertilisers, pesticides and intensive technologies, are reducing biodiversity and the ability of landscapes to provide ecosystem services (ES). In the same time the risk of natural hazards due to climate change is increasing and threatening farmers. Changes in farming practices (organic fertilisers, crop rotation, promotion of local production, implementation of nature-based solutions (NBS) can reverse this negative trend. Introducing these changes may increase costs for farmers. Their willingness to make these changes depends on many factors, which are the focus of our research. Perceptions of ES by farmers, and barriers hindering their willingness to implement NBS were studied using semi-structured interviews with farmers, , but also the willingness of residents to participate in these changes e.g. by accepting a price increase of agricultural production. . Farmers were asked to rank	nature-based solutions, farmers, ecosystem services, barriers, interviews, choice experiment

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		selected ES based on the perceived usefulness for their business. The results show that regulation of hazards and extreme events is of a low priority for majority of them because they value other ES more (production of food; formation/protection of soils). Administrative burden and complicated ownership structure are most important barriers. People's preferences towards sustainable agriculture (including implementation of NBS) were investigated using the choice experiment. These results will also be presented at the conference.	
Behavioural change in the application of appropriate green infrastructure to microclimatic function in the city.	**Iveta Štecová**, Tatiana Kluvánková, Mária Kozová, Stanislava Brnkaľáková, **Kristína Raševová**	Sustainable provision of regulatory ecosystem services, such as climate regulation, are essential for reducing the impact of climate change and inducing a paradigm shift in the management of natural resources, to link natural systems and human well-being. However, natural elements and green areas in cities are shrinking and ineffective planning and management of urban systems can considerably exacerbates the negative effects of climate change. Bringing nature based solutions into spatial planning of urban and semi-urban areas has the potential to supply multiple ecosystem services, which increase the quality of life and mitigate the negative impacts of climate change. The qualitative research (interviews) focuses firstly on the analysis of climate change risk perception of different actors to understand how collective action can stimulate the adaptive behaviour in a long term. Secondly, study identifies the effective motivations to develop the payments for ecosystem services in public-private partnerships. Finally, the quantitative research is supplemented with data from microclimate measurements for better identification of risk areas, which will help set up management so that its greenery effectively provides regulatory ecosystem services.	climate regulation, ecosystem services, behavioural change, green infrastructure, urban environment, heat islands, adaptation, mitigation, rainwater

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Thematic Session 4: Co-creation of NBG (120 minutes)

Session addresses co-creative perspective of Nature based governance by responding to people and non-human views (20 min semi-plenary and 15 minutes other presentations), plenary discussion (40 min).

Key themes to discuss:

- ***What role does co-creation have in the process of transformation?***
- ***Coevolutotionary dynamics and opportunities, barriers of co-creation of different models of nature-based governance?***

Moderated by Ferdinando Fornara

Title of contribution:	Authors	Abstract:	Key words:
Mind the Gap! Co-Creating truly inclusive Nature-Based Solutions and the role of different governance arrangements SEMIplenary (20')	**Gerd Lupp**, Isabel Ferreira, Beatriz Caitana, Andreia Barbas, Francisco Reis	Nature based Solutions (NBS) bring together solutions and approaches to simultaneously provide environmental, social and economic benefits towards more sustainable communities. However, there is a lack further scientific evidence especially on the expected socio-cultural benefits and how indirect drivers such as not well conducted participation processes impact a proper and successful implementation. This might hinder that NBS can unveil their full potentials and hindering processes to gain momentum or the uptake of NBS in a broader scale. TRANS-lighthouses aim to unlearn, rethink and reframe the main components of NBS and their co-creation processes to achieve better, more social and more ecologically just NBS. At an early stage of the project, we will present first preliminary outcomes on identified gaps and lacks in co-creation processes based on systematic reviews of OPPLA cases and literature as well as by studying the different TRANS-lighthouses cases being at different stages of implementing NBS. Data from the sites are collected through surveys and case analyses. We will present on how to reflect and pick up on the emerging dilemmas such as obvious evidence of gaps in documented case studies, e.g. considering ethical aspects or missing, absent or underrepresented groups in NBS co-creation processes.	Nature Based Solutions, Co-Creation, Governance, Environmental Justice, Unlearning

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Adaptive and Transformative Mechanisms for Nature-Based Governance: A Study of New-Wave Cooperatives in Hungary	**Elif Tugba Simsek**	Study presents two new cooperative initiatives' adaptive and transformative potential for nature-based governance from Hungary. An in-depth analysis of these cases aims to elucidate the socio-economic dynamics and internal governance mechanisms through which these cooperatives foster adaptive and transformative actions in environmental management. Central to this study is co-creation's role in driving the transformation process. The paper explores how collaborative governance practices within these cooperatives contribute to the co-design and implementing innovative strategies for sustainable resource management. By delving into co-creation dynamics, the study also uncovers how external networking practices add to this process and address complex socio-economic challenges for nature-based governance. In conclusion, this study offers insights into the adaptive and transformative capacities of new-wave cooperatives within Hungarian contexts. It highlights the link between cooperative action and nature-based governance for achieving sustainable social, economic, and ecological pathways in diverse cultural and economic landscapes.	new cooperatives, collaborative governance, sustainable resource management, nature-based governance

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Climate induced migration in Indian Himalayan region	**Sandhya Farswan, Jyoti Kushawaha**	Fates and impacts of climate change in remote Himalayan valleys affecting the simple livelihood activities due to water scarcity being a major issue, unprecedented rainfall patterns affecting crop cultivation, etc. Increasing natural or man-made disaster occurrences are a major concern for climate induced large-scale migration in the Himalayan Valleys. I worked with the team to accomplish the assigned tasks and action targets under the: project-Community-managed Disaster Risk Reduction (CMDRR), to identify solution measures integrated with the organic agricultural value chain and livelihood activities in the remote Himalayan valleys through capacity-building training (hands-on or technical), in 5 districts of Uttarakhand, India. Watershed analysis and land use land cover identification were done for the Jakhnoli valley of Rudraprayag district as a pilot project using remote sensing and GIS applications to understand the topography and resources. Activities like extensive field surveys, questionnaires, DRR sensitization, participatory rural appraisal (PRA), training, capacity building, and monitoring of various sites in terrain mountainous regions to meet the needs of the villagers, local community, and various stakeholders. Target stakeholders were farmers; school students and especially women; the backbone of mountain agriculture.	Climate change, Disaster risk, Himalayas

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Nature-based governance in municipal forests Banská Štiavnica	**Zuzana Sarvašová, Zuzana Dobšinská**	Nature-based solutions (NBS) have increasingly been promoted to address sustainability challenges in cities and urban forests. Forest management in urban forests is subject to significant public attention due to the demand for recreation. NBS are an appropriate tool to balance forest management and citizens demands for recreation, taking sustainability into account. Involving different stakeholders in co-creation of NBS is key to ensure their success. On the example on the special purpose forests declaration in Banská Štiavnica municipality, we analysed the co-creation process involving municipal council deputies, scientists, and stakeholders form various institutions and interest groups. The complexity of NBS calls for more innovative and transdisciplinary practices, including collaborative governance and a genuine engagement with diverse local communities. Their involvement proved instrumental in the acceptance and approval of the investigated process.	nature based solutions, actors, collaborative governance, interest group, forests
Digital innovation (Virtual commons) to support Nature Based Governance.	Dominik Horváth, Tatiana Kluvánková, Martin Špaček, **Tomáš Szabo**	Common pool resource regime designed and validated in research and policy by E. Ostrom has proven to serve as vital management option for vulnerable areas. Scope of our research is cross border region Beskydy where existed Nature-based solutions implemented as 'technological fixes' to environmental problems excluded participation of vulnerable actors. Water shortage driven by climate changes constitutes a major challenge, effecting forest biodiversity and accelerating social dilemma over water use between different human and non human users. The aim here is to co-create climate-smart common pool resource management of water and forest for cross border Beskydy community and interconnect in online space (Virtual commons). Virtual commons as governance innovation aims to promote behavioral change towards climate sustainability and digital platform beskydyonline.eu is to manage shared goods, communication and NBS practice exchange for knowledge co-production in support of community resilience and sustainability transformation. The research uses transdisciplinary co-creation method: experimenting with multi-species participation and the digital platform to stimulate cocreation of smart water climate regime-hence virtual commons.	digital tools, virtual commons, climate change, community resilience, multi-species stakeholder approach, nature based solution

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Taking stock on "CO" definitions in Nature-based solutions literature: How collaborative approaches can enhance transformative potential, and from whose perspective?	**Simo Sarkki,** Carsten Herrmann-Pillath	To act as catalysts of transformation, nature-based solutions (NBS) need to be based on collaboration. Existing NBS literature uses many co-concepts denoting collaboration but often leaves them and their relations undefined. We reviewed the literature on NBS and "co-creation" (N=40), "co-production (N=20), "Co-design" (N=40), and "collaborative governance" (N=20). In addition, we also consider the concept of coevolution, which is not widely used in NBS literature. Our results show that co-creation is mostly understood as a cyclic process from problem definition via implementation to evaluation of NBS. Around that cycle, co-production targets knowledge and commonly includes scientists, collaborative governance is about policy and includes administrators and decision-makers, and co-design links to practice with the participation of those designing the NBS. Together, these form a relatively short-term cycle to plan and implement NBS. Coevolution is a longer-term process between society and nature that, however, can be tweaked by the shorter-term process towards sustainable directions. Based on the results, we propose a framework integrating all five CO concepts to provide conceptual clarity and better understand the potentials and roles of collaboration in transformative change involving NBS.	Nature-based solutions; Collaborative governance; Co-creation; Co-design; Co-production; Coevolution;

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Thematic Session 5: Multispecies Justice (120 minutes)

Session addresses Justice in nature-based governance - more-than-human needs (20 min semi-plenary and 15 minutes other presentations), plenary discussion (45 min):

Key themes to discuss:

- ***Does the Anthropocene condition exacerbate existing power inequalities or create new opportunities for the legitimacy of power in nature-based governance?***
- ***How do power asymmetries among humans and between humans and non-humans affect the management of natural resources? How can non-humans be meaningfully included in nature-based governance?***

Moderated by Fabian Proebstl

Title of contribution:	Authors	Abstract:	Key words:
Indigenous spirituality: Paradigm of Nature-based governance SEMI plenary (30')	**Carsten Herrmann-Pillath**, Simo Sarkki	The literature on NBS often refers to Indigenous thought as a transdisciplinary reference. However, this remains in the abstract, primarily interpreted as relational thinking. This paper suggests taking Indigenous spirituality and its ontology seriously despite apparent clashes with scientific thinking. It starts from a philosophical reflection on the concept of 'nature,' following the approach developed by the environmental philosopher Steven Vogel. The general framework is set by the analysis of Indigenous worldviews offered by the late Marshall Sahlins who argued that these universally relate to the notion of nature governed by a pantheon of spirits, hence a primordial 'natural state' (in the sense of governance). We develop a scientific interpretation that follows ecosemiotics, thus preparing the ground for acknowledging the validity of the Indigenous ontology without invoking the specific form of spirituality. A key concept is that of a 'common semiotic pool' that approaches signs as shared affordances for humans and non-humans that invite actions of co-habitation. Although this contribution is mainly theoretical, we show practical implications, focusing on ritual as 'natural' governance distinct from institutions.	Indigenous spirituality, governance by nature, ecosemiotics, affordances, ritual

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Inclusion of multispecies perspective in the co-creation of nature-based solutions – review of exiting methods from ethical viewpoint	**Himansu Sekhar Mishra**, Katriina Soini, Mia Pihlajamäki, Michael Kull, Ann Ojala, Juha Hiedanpää	Participatory approaches are key to designing and governing nature-based solutions (NBS), aiming to integrate diverse knowledge, practice, and experiences into planning and decision-making. Despite the diversity of co-creation approaches available and used, the challenge of participatory and epistemic fairness persists in NBS design and implementation. The premise of this paper is that these challenges stem from the failure to incorporate the needs and concerns of vulnerable humans, as well as non-humans and their living environments that are most affected by the pressing socio-ecological challenges. While multispecies perspectives are gaining attention in environmental policy and governance, examples of their practical application in co-creation phases are limited. The inclusion of non-humans and vulnerable people always raises specific ethical and epistemic questions. To address these issues, the paper reviews and analyses various NBS co-creation methods that facilitate the inclusion of multispecies perspectives from an ethical viewpoint. It identifies methods through systematic screening of previous EU-NBS projects that focused on the inclusion of non-humans in the process and expands the literature search to arts, humanities, architecture, and human and cultural geography. The study improves understanding of participatory approaches in NBS co-creation, categorises methods by co-creation phases, and discusses ethical considerations arising from these methods.	Nature-Based Solutions (NBS); Co-Creation Methods; Multispecies Perspectives; Vulnerable; Ethical considerations
Multispecies management: Pilot case island CRES	**Juha Hiedanpää, Ugo Tojc**	This discussion contribution aims to share existed good practice in multispecies governance innovations implementation in Europe and first insight into the Coevolvers small scale pilot study on nature based governance: multispecies management at Cres Island. The objective is to systematize the problematic situation and to initiate a co-creative design process towards a novel governance model to preserve traditional sheep breeding, biological diversity, and socio-ecological resilience of Cres island.	Co-Creation Multispecies management;

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Discussion PANEL 2: What is Nature-based governance? Session participants will reflect workshop discussion and address key workshop topics: • ***What governance mechanisms can trigger NBS sustainability transformation across policy levels in diverse cultural and economic contexts?*** • ***How can non-humans be meaningfully included in nature-based governance co-creation?*** • ***What methods foster potential of NBS governance transformation for action across the globe?*** Moderated by Tatiana Kluvánková			
	Panelists: **Julia Leventon,** **Eva Franková,** **Yamini Yogya**	Nature-based governance is seen to tackle ongoing environmental and societal crises acknowledging the situational complexity and relational holism in support of community resilience and sustainability transformation addressing following aspects: • Manifesting interconnection of physical and social/ cultural domains. • Integrating vulnerable agency e.g. multispecies justice. • Identifying institutions e.g. collective actions, decision rights and reconfiguring governance modes to sensoric, collaborative - nature based governance mode.	

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Special Session: NBS Exchange Practice (120 minutes +)

Session description: NBS practice exchange is an open exhibition to demonstrate NBS practices. Session panellists are invited to introduce their exhibition in informal an aesthetic, interactive and graphical way, e.g., posters, videos, installations, or other media. Workshop participants are welcome to walk with the coffee and cake to share experiences and stimulate discussion for knowledge exchange session. It will be part of Wallachian evening.

Moderated by Jiří Louda

Title of contribution:	Authors	Abstract:
Multispecies management at CRES island	**Ugo Toić** a Franjo Toić,(Island Development Agency, Cres, Croatia), Tatiana Kluvánková (IFE SAS), Jiří Louda, Martin Špaček (CETIP Network), Jani Pellikka, Juha Hiedanpää (LUKE)	The island of Cres is located entirely within the ecological network Natura 2000 and represents a significant reservoir of biodiversity. Such exceptional biodiversity has developed thanks to a thousand-year interaction between humans and nature. Since medieval times, the indigenous Cres sheep (creska ovca) have been bred on the island, grazing all year round on pastures surrounded by historical handmade stone walls – their building method is acknowledged as UNESCO heritage, contributing to the island's biodiversity. Original sheep farming, developed as a community-based Nature-Based Solution (NBS), created semi-natural habitats of karst pastures extremely rich in plant species, which today occupy almost 30% of the island's surface. It is a typical example of High Value Nature Farming (HNVF) The island is also well known for hosting numerous pairs of griffon vultures (Gyps fulvus), an endangered species protected by the Birds Directive, nesting on the island's cliffs. The abandonment of traditional sheep farming due to structural social-economic changes have been further intensified in the last twenty years by introduction of non-native game species – wild boars (Sus scrofa) and fallow deer (Dama dama). These non-native animals expanded across the island, damaging stone fences and the sheep population, posing a threat to the original biological diversity. The presence of wild boars has established new predator-prey interactions in the entire island ecosystem and between wild boars and domestic animals (sheep), endangering the survival of griffon vultures. Besides the imbalance in the fragile ecosystem, this has also generated social tensions between hunters and sheep farmers due to significant economic damage caused by wild boars. The long-lasting conflict between two groups of humans (sheep breeders vs hunters) and between nonhumans (sheep vs wild boars and fallow deer) affects the nature-human balance established within this NBS and thus, the stability of the island ecosystem and socio-economic relations.

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		In summer 2024 Coevolvers project initiated small scale Multispecies study to find out how can co-creation of a novel governance model restore community NBS, preserve traditional sheep breeding, and enhance the socio-ecological resilience of Cres island?
Non-human perspectives in nature-based solutions in Tartu	Kalevi Kull, **Nelly Mäekivi, Riin Magnus,** Timo Maran**, Lona Päll, Tiit Remm** (University of Tartu, Department of Semiotics)	We plan to present a poster detailing strategies for involving local communities in understanding non-human perspectives or umwelten. Our focus will be on the methodologies we've implemented in Tartu Living Lab in the Coevolvers project, specifically sensory walks, collecting local stories and developing a card pack of local species umwelten. During sensory walks, participants are encouraged to engage with the rich tapestry of environmental stimuli, reflecting on which cues may hold significance for non-human inhabitants and exploring their presence through various traces. Collecting and telling local stories serves as a means of weaving the experiences with non-humans into a narrative framework, fostering reflection on everyday encounters with non-humans. A card pack featuring umwelten introduces the perspectives of key species within a specific environment.
Grazing for Fire Protection Strips in Catalonia	**Marc Rovellada Ballesteros** (CTFC - Forest Science and Technology Center of Catalonia)	Grazing for fire protection strips is an effective technique employed to reduce the risk of wildfires around residences near forested areas. In this approach, a herd of livestock is led by a shepherd to graze and consume excess vegetation biomass accumulated in the safety perimeter around urban areas. This process diminishes the fuel available for wildfires, thus mitigating associated risks. This practice presents a sustainable alternative to mechanical clearing, involving heavy machinery and fossil fuels. Grazing not only diminishes the wildfire risk but also promotes extensive livestock farming. This approach benefits biodiversity by fostering diverse habitats and contributes to animal welfare. Additionally, grazing for fire protection strips connects citizens with traditional pastoral culture, reinforcing their bond with the biosphere.
Virtual Commons NBS in Beskydy	**Tatiana Kluvánková,** Martin Špaček, Jiří Louda, Dominik Horváth Stanislava Brnkaľáková, Tomáš Szabo **and Beskydy LL stakeholders**	Virtual Commons is a concept to enhance virtual collective action of the commons introduced by Elinor Ostrom in the physical world. Sharing common resources has been a challenge for human societies for millennia, so the ability to create effective institutional arrangements virtually can help prevent the tragedy of the commons in global era. In Beskydy region we are currently developing novel governance to address the social dilemma of water and forests in the Beskydy cross-border region, where existing nature-based solutions (NBS) are implemented as 'technological fixes' to environmental problems, excluding the participation of vulnerable actors. The virtual commons in Beskydy aims to co-create climate-smart common pool resource management regime of water and forest by WORKING together with cross-border Beskydy community including more than humans vulnerable agencies. Several stakeholders will be

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	(CETIP Network and SlovakGlobe, Slovak Academy of Sciences)	present at the workshop. It is to promote behavioural change towards climate sustainability future . A digital platform beskydyonline.eu manages physical and virtual communication, exchange of NBS practices via story-telling, nature letters, VNT for knowledge co-production of community resilient and sustainable Beskydy .
Co-creating Biodiversity and Mental Health	Gabriella Farkas, Orsolya Lazányi**, György Pataki, Beáta Pántya,** Katalin Réthy, Krisztina Szilágyi, Hunor Török (ESSRG Nonprofit Ltd, Magház Egyesület)	The Hungarian COEVOLVERS project partners initiated the implementation of a nature-based solution that transforms the green area of a mental health hospital into a healing garden. Currently, the green area of the hospital resembles an urban park, though it is surrounded by a nature protected area with high biodiversity. While the garden is a frequently used space for human-human and human-nonhuman interactions and activities, including individual (walking, jogging, etc.) and collective (ecotherapy, horticulture therapy, etc.) activities, there is room and demand for improving the garden aiming at enhancing biodiversity and a better integration of the therapeutic activities with nature. The hospital provides medical services for all kinds of mental conditions (incl. addictions, dementia, depression, schizophrenia, etc.), and organisationally it is highly departmentalised and hierarchically structured and managed. The more general context in the Hungarian health sector is historically characterised by a great degree of uncertainty, lack of governance stability, and ongoing financial struggles. Moreover, in medical practice the healing potential of nature is not widely used or acknowledged with regard to both the medical infrastructure and practice. More specifically, after the start of our project the hospital was transformed from a public hospital to a private one and the management of the hospital was changed. This created a lot of anxiety and tensions within the organisation. While the COEVOLVERS Healing Garden Living Lab aims to engage diverse actors in a participatory, co-creative, and collaborative way, this broader and immediate context produces a lot of challenges. Our journey follows empathy, listening, and sensory understanding of the bio- and socio-diversity in and around the hospital garden. Careful small steps through joint action aiming to change the garden design and the habituated activities related to the use of the garden might be the way towards enhancing both human and non-human well-being.
Nature-based governance from the ecological economics' perspective	**Eva Fraňková** (Masaryk University)	We are witnessing significant multiple environmental challenges such as biodiversity loss, climate change and land-use/land-system change. Nature-based governance (NBG) approach is very strong in acknowledging the role of institutions and processes in tackling these challenges, and – as demonstrated by many appealing local and regional case studies during this seminar – is able to foster participation of diverse groups of stakeholders, bringing very interesting practical results in

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		terms of species' protection, more sustainable landscape management and cultivating multispecies perspectives. However, much less profound is its reflection of socio-economic drivers behind the above-mentioned environmental challenges. Since the 1970', the biophysical size of the global economy has doubled, creating an ever-growing pressure on material extraction, energy consumption, and biophysical living space. Without questioning the undeniable role of positive, practice-based examples of nature-based solutions, I argue that we will not be able to prevent further exacerbation of the manifold environmental pressures and conflicts unless we question, and eventually prune away the growth-dependency of our economies. In this sense, to apply the nature-based governance principles on the broader scale means to actively create post-growth, i.e. growth-independent socioeconomic structures.

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