BOOK OF ABSTRACTS

I. SESSION DESCRIPTION

ID: T1c

Conceptual mismatch: how to reconcile ecosystem services, One Health, and other buzzwords to achieve real transformative impact?

Hosts:

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Host:	Simon Lhoest	ULiège	simon.lhoest@uliege.be
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Abstract:

In recent years, a plethora of conceptual frameworks have emerged in environmental and public health discourse, including ecosystem services, Nature's contributions to people, One Health, Planetary Health, Resilience, and Sustainable Development. While these concepts aim to address complex issues at the intersection of ecology, human health, and sustainability, their proliferation has led to questions about their efficacy and practical application. Are these frameworks truly advancing nature preservation and enhancing human well-being, or are they merely buzzwords that dilute focus and impede progress?

The session seeks to critically examine these concepts and explore opportunities for integration into a unified vision that can drive transformative impact. Through a combination of presentations and interactive discussions, participants will delve into the purposes and implications of these frameworks, identifying synergies, conflicts, and potential pathways for effective implementation.

The transformation of our research approaches themselves, emphasizing more actionable science and avoiding overly rigid conceptual frameworks will be discussed.

Goals and objectives of the session:

We are looking for conceptual contributions, and case studies that clearly employ a conceptual framework (thus rendered operational). The desired aim of this session is to integrate these multiple concepts into a unified vision of how to navigate through all the existing frameworks and mobilize them to achieve real transformative impact.

Planned output / Deliverables:

We will provide a discussion forum on the transformative potential of conceptual frameworks in general, and of conceptual frameworks presented in this session in particular. Following the session, we will propose to write a paper that synthesizes the collective insights and recommendations generated during the discussions. All participants will have the opportunity to contribute as co-authors, ensuring diverse perspectives and expertise are represented. The draft manuscript will be submitted to a peer-reviewed journal for publication, thereby extending the impact of the session beyond the conference.

II. SESSION PROGRAM

Room: Expert Street 6

Date of session: 18th of November 2024

Time of session: 11:00-12:30

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
11:00	Olgalu	Hernandez-Manrique	Basque Centre for Climate Change	Beyond "One Health" in Socio-ecological Systems: eliciting interdependencies with researchers
11:15	Kati Susanna	Kiiski	South-Eastern Finland University of Applied Sciences / University of Eastern Finland	Nature-based methods and structures in the Finnish social and health service system: One solution in the life of a person living in the midst of global challenges
11:30	Enrico	Lucca	University of Florence	Integrating “Nature” in the Water-Energy-Food Nexus: Current Perspectives and Future Directions

Time	First name	Surname	Organization	Title of presentation
11:45	Fadzai	Matsvimbo	BirdLife International	Vulture conservation, a practical demonstration of the One Health concept.
12:00	Joséphine	Piette	University of Namur	Linking Nature Perception to Dengue Epidemics: A systemic implementation of One Health framework in Argentina
12:15	Bep	Schrammeijer	Vrije Universiteit Amsterdam	Socio-technical-ecological metabolisms

III.ABSTRACTS

The first author is the presenting author unless indicated otherwise.

1. Beyond "One Health" in Socio-ecological Systems: eliciting interdependencies with researchers

First authors(s): Olgalu Hernandez-Manrique
Other author(s): Andrea Albert Fonseca, Aline Chiabai, Marc Neumann
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The One Health approach is traditionally centred around human and animal health. This research investigates the full integration of human, animal, and ecosystem health within socio-ecological systems. The study addresses the complexity of employing a systems approach to the recent holistic One Health High-Level Expert Panel definition of One Health.

A set of initial categories and components was obtained from the “determinants of human health” and “nature’s contributions to people” frameworks. To identify the components of animal health, we included elements from various perspectives, including social determinants of animal health and health inequalities, fish and wildlife health, and companion animals’ health. We also separated the socioeconomic components proposed for human and animal health into a new category.

This experiment involved 12 researchers who conducted a cognitive mapping exercise with 51 components. These maps were analysed for network characteristics, and the cognitive maps (CM) were aggregated into a collective CM. This collective map provides a preliminary holistic view of One Health within SES.

Our research explored the complex interdependencies within the network. The findings indicate that habitat maintenance, food and feed, pollution, body function, and the microbiome are the most influential components. The collective CM revealed significant interconnections, emphasising the importance of political governance, habitat maintenance, and pollution in influencing the network. The analysis identified critical pathways and feedback loops, highlighting the need for analysis beyond the traditional One Health framework.

This study demonstrates the utility of CM in visualising and analysing the intricate relationships between various health domains in SES. The findings offer a preliminary yet valuable perspective on enhancing the One Health approach despite assets such as methodological constraints. To refine this integrative health model in socio-ecological systems, future research should continue to expand our general model, incorporating broader environment-related components, including soil and pollinators.

Keywords: One Health, socio-ecological systems, cognitive mapping, knowledge co-production

2. Nature-based methods and structures in the Finnish social and health service system. One solution in the life of a person living in the midst of global challenges

First authors(s): Kati Susanna Kiiski
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Many of the human physical and mental health challenges probably stem from our alienation from our natural environment. Alienation from nature and health challenges are part of the wicked problems we live in the midst of. At the same time, our social and healthcare system is in crisis. There is some national and international research on the health and well-being effects of nature. The effects have been shown to be mostly positive. Harnessing the health and well-being effects of Finnish forest nature as part of the Finnish field of social and health services and increasing the well-being of the population has not yet been implemented on a large scale.

However, the concept of planetary well-being and planetary health has emerged in Finland recently. Intervention studies investigating the health and well-being effects of nature have been ongoing for ten years. With the help of these, the applicability of the services from the point of view of individuals (and certain customer groups) has been investigated, and the experiences of the target persons (customers) with nature-based services have also been studied. More research is still needed on this whole to assess how Finnish (forest) nature can be suitable as an effective part of the Finnish social and health service system. At the same time as nature-based methods are being studied in practice for different disease groups, both preventively and therapeutically, it is worth considering how they will be introduced into the service system. In my own research, I intend to use the delphoi method of future research to find out how those working in the field or those deciding on best practice recommendations see the issue.

Keywords: planetary well-being, planetary health, nature connectivednes, social and health care system

3. Integrating "Nature" in the Water-Energy-Food Nexus: Current Perspectives and Future Directions

First authors(s): Enrico Lucca
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Integrated approaches for managing natural resources are said to meet the increasing demand for water, energy, and food while maintaining the integrity of ecosystems and ensuring equitable access to resources. The Water-Energy-Food (WEF) Nexus has been proposed as an approach to manage trade-offs and exploit synergies that arise among these sectors. Despite the WEF Nexus being focused on satisfying the anthropogenic needs for water, energy and food security, the role of nature in sustaining these securities and in regulating their interrelationships is increasingly recognised by the Nexus community. To converge existing approaches that integrate nature into the WEF Nexus and suggest a common framework, we – an interdisciplinary group of natural resources management researchers and systems thinkers from the research network NEXUSNET COST Action – followed a collaborative process of knowledge creation. We explain the disparity found in the roles attributed to nature through

two main paradigms: (1) ecosystems as a foundational layer to the Nexus and (2) ecosystems as the fourth component of an expanded Nexus. We complement such paradigms with a novel WEF-Ecosystems Nexus conceptualization that integrates the WEF Nexus with the interface of social-ecological systems (SES). The new paradigm expands the mutual interlinkages among water, energy, and food to the human-ecosystems overlap of SES, thus acknowledging the social-ecological processes that determine and are determined by the WEF Nexus. Simultaneously, the WEF Nexus emphasises the complex interplay of SES through the web of interlinkages between key sectors of human activities. The paradigm promotes a shift in Nexus practice towards governing nature and the Nexus in line with everyone's needs - including those of nature itself – and addressing both the supply side of resources and the demand side of societies. We will contribute to the discussion forum by presenting the conceptual framework and its preliminary deployment in Italy, Greece, and Turkey.

Keywords: ecosystem services, interdisciplinarity, WEFE Nexus, natural resources management, social-ecological systems

4. Vulture conservation, a practical demonstration of the One Health concept.

First authors(s): Fadzai Matsvimbo
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One health brings together the powerful interrelationship and interdependence of the health of humans, livestock, wildlife and the environment. The loss of biodiversity is an indicator of ecosystem stress often visualised by effects on wildlife populations. Vulture conservation exemplifies many contemporary tenets of the One Health approach. Vultures are critical to a sustainable and resilient ecosystem, which in turn is essential for the socio-ecological health of human communities and can be used as a reflection of the health of the ecosystem. The ecosystem services provided by vultures include rapid removal of carcasses from the environment, sentinel value, nutrient cycling and tourism value. While the removal of carcasses promotes the aesthetic value of the environment by getting rid of the carcasses and the smells that would result from in the reduction of the spread of diseases. Eliminating carcasses reduces the amount of time spent by carnivores and other scavengers at carcasses, reducing opportunities for the spread of diseases in these areas. The sentinel value of vultures also allows them to be used as early warning systems which helps to identify sites where mortalities

have taken place and appropriate responses can be put in place to save both wildlife and livestock from further losses. This is usually appropriate in wildlife poisoning cases. In the African landscape, this also protects communities from feeding from identified poisoned carcasses. Buffer zones and in some cases protected areas as well are a zone of interaction between wildlife and livestock, with carcasses on either side being potential disease transfer sites. Understanding the role played by vultures in reducing zoonotic disease transmission is key to fully understand their role in reducing disease transfer and burden This can only be done through understanding the contribution of vultures to the economics of human health and veterinary care.

Keywords: vultures, ecosystem services, diseases

5. Linking Nature Perception to Dengue Epidemics: A systemic implementation of One Health framework in Argentina

First authors(s): Joséphine Piette
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In recent decades, with Climate Change, dengue has become a major public health concern, especially in tropical and subtropical regions but also in non-endemic areas. In Argentina, since 2009, epidemics of this mosquito-borne disease are more frequent and significant. Here we evaluate how the local population perceives the concept of Nature influences dengue outbreaks and their management using the One Health conceptual framework. According to this framework, the health of the environment, the animals and the humans are interdependent.

Based on the case study of the city of Tartagal (North of Argentina), our aim is to understand how Nature perception shapes the social structure and its dynamics, the surrounding environment, and the concrete actions that are implemented to cope with dengue, but also the synergies between these dimensions. We assume that Nature perception can lead to different behaviours (disconnection or connection, destruction or protection, etc.) which have various impacts on Nature (i.e. environment, animals and humans) and consequently on its health, our health. Hence, we hypothesize that how people feel connected to Nature influences the significance of dengue epidemics and their management through different parameters.

We embrace the problematic with a systemic approach, using mixed methods. First, we will analyse national cases data for several epidemic years, to assess the situation and the main driving factors within the whole dengue endemic region, in Northern Argentina. Then we will focus on a city scale, conducting interviews with local stakeholders, doing fieldwork, including participant observation in the implementation of protection measures and characterizing the local situation.

Our results will allow a better and systemic understanding of the studied problematic and will be an important step to implementing One Health conceptual framework for transformative change.

Keywords: Dengue Epidemic, Nature Perception, One Health, Systemic Approach, Transformative Change

6. Socio-technical-ecological metabolisms

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Understanding and addressing wicked problems, such as the crises in biodiversity, climate and water as well as environmental justice and human health, requires knowledge of (at least) both the social and ecological subsystems and their interaction. While many attempts have been made to integrate social and ecological subsystems in scientific research their conceptualisation, operationalisation and application tends to still focus on either the social or the ecological system, or superficially embed one in the other.

Integration of subjective and cultural interactions with biophysical processes and the consideration of relational vs instrumental evaluation are often overlooked in conceptual approaches that attempt to integrate social (-technical) and ecological aspects. I propose the concept of socio-technical-ecological metabolisms (STEMs) to account for some of these shortcomings. The STEMs framework aims to account for the way that relational and instrumental values in socio-technical systems interact with the ecological system to influence land use management decisions and resource flows.

Alongside a scoping literature review, several case studies are being used to inform the further development of this conceptual framework. Firstly, an interdisciplinary investigation of socio-

technical and ecological diversities in (agri-food) cropping systems and their interactions across scales provides an overview of functional variables and categories that enable operationalisation of socio-technical-ecological metabolisms. Secondly, research into cultural values and ecological and socio-economic outcomes of land use change in peat meadows shows how cultural values interact with ecological and economic potential. Finally, transdisciplinary exploration of co-design processes that incorporate the needs and perceptions of vulnerable residents in climate sensitive planning of urban areas enable the development of methods that integrate quantitative and qualitative approaches and enable inclusion of environmental justice and well-being measures in socio-technical-ecological metabolisms.

Keywords: socio-technical and ecological systems, relational and instrumental valuation, inter- and transdisciplinary research