BOOK OF ABSTRACT

I. SESSION DESCRIPTION

ID: T9

Ecosystem Services and Human Health

Hosts:

	Title	Name	Organisation
Host:	Prof.	Aletta Bonn	UFZ – Helmholtz Centre for Environmental Research & German Centre for Integrative Biodiversity Research (iDiv)
Co-host(s):		Melissa Marselle, Katherine Irvine	

Abstract:

Natural environments impact on human health and wellbeing. The importance of biodiversity and ecosystem service for human health and wellbeing is increasingly recognized by international organizations and institutions, including the Convention of Biological Diversity and the World Health Organisation. However, the role of biodiversity and ecosystem services and the causal mechanisms linking them to human health and wellbeing are little understood. Various ecosystem service models and assessments, including the IPBES model all link biodiversity to wellbeing via ecosystem services, whilst the health impacts of biodiversity are not clearly defined and consequently most national ecosystem assessments rarely consider health. Health impacts of biodiversity are missing from IPBES discussions about nature's contributions to people, while other frameworks detail the specific bio-psycho-social pathways through which nature influences health, but do not consider biodiversity or ecosystem services specifically. Our main aim in this session is to gather the existing evidence on biodiversity and health, with a particular focus on the causal pathways, and to inform the national and international ecosystem assessments, including IPBES and post 2020 CBD processes.

Goals and objectives of the session:

To scope and identify existing work streams in the ESP community and with view to the global IPBES assessment, post 2020 CBD discussions and links with WHO

Planned output / Deliverables:

ESP statement on Ecosystem Services and Health to IPBES

Related to ESP Working Group/National Network:

Thematic Working Groups: T9 – ES & Public health

II. SESSION PROGRAM (T9)

Date of session: Thursday, 18 October 2018
Time of session: 14:30 – 16:00

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
14:30–14:45	Sjerp	De Vries	Wageningen University and Research	Biodiversity in the context of 'biodiversity – mental health' research
14:45–15:00	Ilaria	Doimo	University of Padova	Forests' contribution to human health: a review of Forest Care Initiatives and their impact on people's wellbeing
15:00–15:15	Boris	Schröder	Technical University Braunschweig	Reducing infection risks related to landscape-associated pathogens by zooprophylaxis
15:15–15:30	Katherine	Irvine	James Hutton Institute	Biodiversity and spiritual well-being
15:30–15:45	Melissa	Marselle	Helmholtz Centre for Environmental Research – UFZ	The mental health and wellbeing benefits of biodiversity

Time	First name	Surname	Organization	Title of presentation
15:45-16:00				Questions and Discussion

III. ABSTRACTS

The abstracts appear in alphabetic order based on the last name of the first author. The first author is the presenting author unless indicated otherwise.

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

T. Thematic Working Group sessions: T9 Ecosystem Services and Human Health

Biodiversity in the context of 'biodiversity – mental health' research

First author: Sjerp de Vries, Robbert Snep

Affiliation, Country: Wageningen University & Research, Netherlands

In this paper the concept of biodiversity and its measurement and use in 'biodiversity – mental health' research is discussed, as well as access to and contact with biodiverse nature. It is pointed out that biodiversity is an ecological concept that finds its origin in the context of nature conservation. It has evolved without considering its potential role in mental health promotion. For studying the latter, the concept of biodiversity is frequently adapted. Such adaptations are likely to occur at the expense of its relevance for nature conservation. Using the concept of biodiversity as originally intended may be fruitful for a different type of research question, focusing more on multi-functionality issues: can the same nature constitute a healthy, biodiverse ecosystem and enhance mental health simultaneously? By pointing out this and related issues, this chapter aims to support researchers and students in future research, and help both scientists and policymakers to position and assess studies in this field.

Keywords: biodiversity, mental health, ecological health, measurement, multi-functional landuse

2. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T9 Ecosystem Services and Human Health

Forests' contribution to human health: a review of Forest Care Initiatives and their impact on people's wellbeing

First author: Ilaria Doimo

Other author(s): Paola Gatto, Mauro Masiero

Affiliation, Country: Department of Land, Environment, Agriculture and Forestry, University of Padova, Italy

Urban population is growing worldwide, changing lifestyles and needs. Global society is facing new challenges such as increased stress-related diseases, the loss of connection with community, and neurological disorders about to reach pandemic proportions. Within this framework the contribution of ecosystems to people's health and wellbeing is gaining momentum. As a consequence, a growing attention is paid to natural therapies, alternative solutions and preventive medicine, witnessed by an increasing research trend on how contact with forests and trees can affect human health and wellbeing. The evidences of positive benefits to people, added to the need to revive the forest sector, brought to a substantial growth of forest care initiatives (FCIs), i.e. organized initiatives supporting active and passive interaction with forest ecosystems aimed at increasing levels of human wellbeing and quality of life. Examples are thriving and include (among others) Shinrin-Yoku in Japan, Welfare Forests in Korea, adventure parks and forest kindergartens.Research recognizes that the specific qualities of environment and our interaction with it can influence the public outcome (good and individual wellbeing). On the contrary research gaps exist with regard to the demand for these new forest-based services and the main factors shaping FCIs and contributing to their success. We conducted a review of literature on FCIs in order to (i) investigate forest ecosystem features/dimensions contributing to human well being and (ii) analyse on a systematic basis studies assessing and quantifying the effects of exposure to forests on human wellbeing. This preliminary study aims to support future in-depth research on factors enabling FCIs and contributing to their success.

Keywords: forest and health, cultural ecosystem services, wellbeing, ecosystem services, Forest Care Initiatives

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

T. Thematic Working Group sessions: T9 Ecosystem Services and Human Health

Biodiversity and spiritual well-being

First author: Katherine Irvine, Sara Warber

Other author(s): Dusty Hoesley, Rebecca Bell-Williams

Affiliation, Country: James Hutton Institute, Department of Family Medicine, University of Michigan, USA; European Centre for Environment and Human Health, University of Exeter Medical School, United Kingdom

Among government agencies, practitioners and researchers there is growing interest in the potential of natural environments for human health and well-being. In parallel, conserving biodiversity is seen as critical in this effort. Likewise, spiritual well-being is increasingly considered as an important dimension of human health. This talk reports findings from an examination of literature on the beneficial aspects of the interrelationship between biodiversity and spiritual well-being. Our purpose was four fold: (i) to examine definitions of spiritual wellbeing; (ii) gain an overview of the relationship between biodiversity and spiritual wellbeing; (iii) develop a conceptual model specifically focused on effects of biodiversity on spiritual well-being. Literature was identified through structured searches and authors' knowledge of their respective fields (e.g. environmental psychology, sociology of religion); themes within the literature were identified through thematic analysis.Spiritual well-being emerges as a dimension of health that incorporates relational interactions with one's self, one's community, the environment, and transcendent Other(s). Few empirical studies specifically investigated the effect of biodiversity on spiritual well-being. The literature did contain a rich account of the multiple relationships among various spiritual traditions, ecology, and biodiversity conservation, including spiritual aspects of well-being. Four themes were identified that illustrate the complexity of the biodiversity-spiritual well-being nexus: (i) influence of spiritual traditions on biodiversity; (ii) sacred places as repositories of biodiversity; (iii) the spiritual domain within ecosystems services; and (iv) the effects of biodiversity on spiritual well-being. We bring these strands together into a conceptual model and discussion of measurement issues that can inform future research and consider implications for policy and practice.

Keywords: spiritual traditions, sacred places, spiritual outcomes, cultural ecosystem services, ecological quality

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

T. Thematic Working Group sessions: T9 Ecosystem Services and Human Health

The mental health and wellbeing benefits of biodiversity

First author: Melissa Marselle

Other author(s): Dörte Martens, Martin Dallimer, Katherine N. Irvine

Affiliation, Country: Helmholtz Centre for Environmental Research - UFZ, Germany

The importance of biodiverse environments for mental health and wellbeing is increasingly of interest to international governments and organisations. To date only one systematic review has explicitly investigated the health and wellbeing benefits of biodiversity through cultural ecosystem services (Lovell, Wheeler, Higgins, Irvine, & Depledge, 2014). Further, the number of research studies on biodiversity and health and wellbeing has increased since Lovell et al.'s (2014) review. Here, we provide an update, focusing on the impact of contact with biodiversity on mental health and mental wellbeing. Our objectives are to: (1) identify and describe the body of evidence published since Lovell et al. (2014); and (2) synthesize all results from Lovell et al. (2014) and the more recently published literature to assess whether biodiversity influences mental health and wellbeing. Sixteen recently published studies met the inclusion criteria. The increased number of studies published since Lovell et al.'s (2014) review highlights the growth in this interdisciplinary field. The recent literature is varied with authors using different study designs, measurements of biodiversity, mental health, and mental wellbeing. The synthesis of results was drawn from 24 studies: 9 from Lovell et al. (2014) and 15 identified by this Chapter. There is some evidence to suggest that biodiversity promotes better mental health and wellbeing. However, more studies reported nonsignificant results. Overall, the body of evidence identified in the 24 studies is not yet of the extent necessary to characterize the role of biodiversity in relation to mental health or wellbeing. High-quality interdisciplinary research is needed to improve measurement of both biodiversity, and mental health and wellbeing, apply theory, and explore pathways through which biodiversity might contribute to mental health and wellbeing.

Keywords: biodiversity, species richness, mental health, mental wellbeing, cultural ecosystem services

5. *Type of submission:* ***Abstract***

T. Thematic Working Group sessions: T9 Ecosystem Services and Human Health

Reducing infection risks related to landscape-associated pathogens by zooprophylaxis

First author: Boris Schröder

Other author(s): Dania Richter, Franz-Rainer Matuschka

Affiliation, Country: Technische Universität Braunschweig, Germany

The wood tick, Ixodes ricinus, serves as vector for diverse pathogens. This ubiquitous tick most frequently transmits the agents of Lyme disease and, thus, poses a risk to people across Central Europe. It requires particular vertebrate hosts as blood meal for its development and reproduction as well as high relative humidity for its survival. Such biotic and abiotic requirements are generally fulfilled in the ecotonal sylvatic environment. Faunal diversity affects the transmission cycle of Lyme disease spirochetes, as particular tick hosts support the pathogen as reservoir and others eliminate it. Reservoir-competent rodents and birds contribute to the rate of ticks infected with pathogenic Lyme disease spirochetes. In contrast, wild and domestic ruminants eliminate any Lyme disease spirochetes in ticks feeding on them. The presence of such zooprophylactic hosts, thereby, reduces risk of infection and thus provides an important ecosystem service. In an interdisciplinary, landscape epidemiological team, we aim to understand the relationship of landscape-associated pathogens with their biotic and abiotic environment. We evaluate hosts that establish and sustain tick populations for their pathogen competence as well as those providing ecosystem service by zooprophylaxis. Additionally, we aim to identify characteristic habitat structures providing suitable microclimate in order to optimize measures of prevention and devise intervention strategies. Applying advanced methods of statistical and process-based ecological modelling, we analyse different factors determining infection risks by linking parasitological and geoecological methods. We will present exemplary results of recent projects in landscape epidemiology and demonstrate how host species distribution affects the species composition of Lyme disease spirochetes and how landscape management may affect the distribution of ticks and infection risks.

Keywords: landscape epidemiology, infection risk, Lyme disease, hosts, landscape management