World Biodiversity Forum 2022 – List of Sessions

A1a Transformative change in economic and financial systems

(open session)

Convener
Cengiz Akandil, University of Zürich, University Priority Programme Global Change and Biodiversity, Switzerland, cengiz.akandil@ieu.uzh.ch

Co-Convener
Cornelia Krug, University of Zurich, University Priority Programme Global Change and Biodiversity, Switzerland
Mia Rigo, Archivorum, Switzerland,

Our economic system plays a major part in the current ecological crisis and as Dasgupta 2021 report states economic growth in the last decades came at the expense of the natural assets. WEF 2020 Global Risk Report acknowledged the fact that biodiversity loss is one of the top threats we face both by likelihood and by impact. To tackle this systematic risk due to ecological crisis, milestone report from IPBES 2019 emphasized the necessity of transformative changes in the economic and financial system. Reducing overconsumption, internalizing negative externalities, steering away from growth paradigm, avoiding perverse subsidies, and developing new metrics are only some of these suggested challenging transformations. Financial markets also play a significant role in this transformation as they most of the time shape the economic system but possible changes in the financial markets are mostly limited and focused on climate change at the moment and neglect the biodiversity loss. Therefore, in this session, we analyze possible solutions from identifying different leverage points to nature-based solutions that need to be employed in a larger scale to achieve this urgent transformation.

A1b Ecosystem services in sustainable finance

(open session)

Convener
Alessandra La Notte, Joint Research Centre of the European Commission, Italy, alessandra.la-notte@ec.europa.eu

Co-Convener
Alexandra Marques, PBL Netherlands Environmental Assessment Agency, Netherlands

Ecosystem services are the main direct linkage between the ecological and the socio-economic spheres, because they can: provide ecological input to economic production; clean pollution generated by economic activities; protect human settlements and economic assets from adverse events; guarantee ecological maintenance for economic and societal subsistence.

Sustainable finance is a broad term with multiple definitions. It generally refers to investment decisions that are based not only financial returns but also on environmental, social and governance factors. Within environmental factors, ecosystem services are not yet properly considered but there is a growing understanding and interest that they need to be.

In Sustainable Finance, there are different stakeholders (e.g. banking system, funding institutions, rating agencies, insurance companies) with different information needs in terms of their exposure to ecosystem degradation. For example, banking systems need to understand the macroeconomic implications of the loss of ecosystem services, funding institutes need to understand which projects to found, where and how; insurances companies need to understand the level of risks liked to certain action and activities.

In Sustainable Finance, there can be different tools and instruments ranging from classification system, or 'taxonomy', of sustainable activities, to disclosure frameworks for non-financial and financial companies, to investment tools, including benchmarks, standards and labels. Different tools can support different stakeholders. To mainstream ecosystem services into Sustainable Finance, it would be important to frame these three aspects (stakeholders, needs, tools) in respect to ecosystem services and eventually tackle their entry point into the system.

This session will consist of two parts. A first part of 120 minutes open to contributions that address the issue of mainstreaming ecosystem services in Sustainable finance either from a stakeholder perspective or from a tools or instruments perspective. The second part will be a 90 min roundtable discussion where we welcome not only researchers, but practitioners and policy makers. In this roundtable we hope to discuss the next steps in the mainstreaming of ecosystem services in sustainable finance.

A1c The influence of environmental, social and governance (ESG) reporting on investors' decisions - is this an alternative, effective way to achieve biodiversity conservation goals?

(open session)

Convener
Lynne Shannon, University of Cape Town, South Africa, lynne.shannon@uct.ac.za

Co-Convener
Lauren Waller, Southern African Foundation for the Conservation of Coastal Birds (SANCCOB) and University of the Western Cape, South Africa

This session aims to capture thoughts, examples, and discussion around the requirements for companies to adhere to and report on sound environmental practices, and how this is/could be driving ecosystem-based management, from a different angle to traditional governance systems. Investors are now more than ever aware and appreciative of the need for their companies and industries to be operating in an ecosystem-/environmentally sensitive manner. This adds another layer to management of our natural resources. The traditional management approach has been via governance bodies making decisions and seeing to the compliance thereof. Consumer/market-based avenues, whereby environmental incentives are encouraged via ecolabelling, is another means of effecting environmentally/ecologically sustainable management. What we propose to tackle in our session is the modern-day influence that investors can have ecologically via the decisions they make as to how to invest/not to invest, in the light of environmental reporting undertaken by companies in which they invest. We explore to what extent this chain of decision-making is encouraging more ecologically sustainable use of our natural resources (e.g., farming, fishing, mining…). Similarly, we examine how investors can influence company decisions to encourage more environmentally sensitive (lower impact) practices. In summary, to what extent does the real power to achieve environmental sustainability rest with investors?

We would welcome submissions directed at the following:

- Practical examples of how Environmental, Social and Governance (ESG) reporting is encouraging sustainable utilization of natural resources via investor-level decision-making/pressure.
- Case studies demonstrating how Ecosystem Accounting is effecting/facilitating ecosystem-based management via investor-level decision-making/pressure.
- Identification of specific investment criteria (meaningful indicators) that can be used by investors to practically measure/gauge a company's contribution to environmental sustainability.

A2a Towards blue green cities: nature-based solutions for enhancing urban ecology

(open session)

Convener
Peter Bach, Swiss Federal Institute of Aquatic Science & Technology (Eawag), Switzerland, peter.bach@eawag.ch

Co-Convener
Janine Bolliger, Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Switzerland

Blue-green infrastructure (BGI) or nature-based solutions in peri-urban contexts increase and maintains the resilience of densely populated ecosystems to mitigate major environmental challenges of the 21st century. Key components of BGI include 'blue' and 'green' areas, which encompass a broad range of habitat types and are ascribed, through their strategic planning, to provide means for enhancing biodiversity. BGI also encompasses short-term vacant lots, vegetated rooftops but also strategically planned and highly managed urban and peri-urban green spaces including forests and agricultural land. Combining these spaces can produce a spatially distributed ecological habitat network with different types of interactions among them (species movement, pollination, etc.). Such networks potentially provide multi-functional outcomes, supporting both ecological habitats and human needs for safe and sustainable cities. There is increasing research on the potential to harness such spatial planning and decentralized green infrastructure to harness urban ecology and protect the biodiversity of existing ecosystems.

Networks of BGI are phenomena influenced by many different demands and stressors across different sectors (biodiversity, leisure, climate mitigation, etc.). This complexity makes their planning and governance a major challenge, especially in the context of rapid environmental change and rapid urbanization. We currently lack systematic analyses on the interplay between the different social and ecological functions of BGI and how their structure, spatial and temporal dynamics interact with social and ecological networks. This session offers a timely opportunity for scientific discourse across this space on the latest state-of-the-art and findings. We aim to highlight the status quo and identify major research gaps of research related to BGI in urban areas, in particular:

1. What structures, patterns, and functions of BGI are prevalent in urban contexts?
2. What their role is in maintaining ecosystem services for the environment and society?
3. What are transformation pathways towards more sustainable BGI in urban areas?

A2b BiodiverCities: Cities that live in harmony with nature

(open session)

Convener
Maria Cecilia Londoño, Alexander von Humboldt Institute, Colombia, mlondono@humboldt.org.co

Co-Convener
Cristina Gómez, Alexander von Humboldt Institute – World Economic Forum, Colombia

Cities are places where economic and cultural processes are boosted, being crucial to the economic and social recovery from COVID-19. Although cities are generally considered disconnected from nature, cities and their inhabitants depend on the contributions of nature and rather than being understood as centers that demand products and services, cities and the half world population that live in them are fundamental pillars of the solution to the biodiversity crisis.

BiodiverCities in an initiative from the World Economic Forum, where a global commission has been established aiming for advising on the development of a shared concept, framework, and forward-looking perspective to integrate cities with nature. BiodiverCities are meant to be cities with an urban development model that is in harmony with nature by 2030.

In this proposed session for the WBF we will bring together interdisciplinarity and cutting-edge knowledge on biodiversity and urban development, to explore key actions that can prompt desirable nature scenarios in cities. Discussions held by the WEF global commission on BiodiverCities and its results will be presented as an opening to this session, following by oral and posters contributions that will bring additional visions and knowledge to the results presented by the commission, and closing with group discussion to identify knowledge, data and actions to enable cities to become BiodiverCities.

List of speakers (not yet confirmed):

- Vicente Guallart, Guallart Architects
- Mauricio Rodas Espinel, Mayor of Quito (2014-2019) and University of Pennsylvania
- Lena Chan, International Biodiversity Conservation Division at National Parks Board, Singapore

A2c Growing African cities, culture and biodiversity

(open session)

Convener
Adams Osman, University of Education, Winneba, Ghana, aosman@uew.edu.gh

Co-Conveners
Benedict Arko, University of Education-Winneba, Ghana
Madinatu Bello, University of Cape Coast, Ghana

Growth of African Cities has been very rapid with rising population and economic growth. The effect has been the destruction of urban and peri-urban natural landscapes and groves preserved by indigenous culture. The resultant effect to loss of small mammal habitats, increasing flooding, less vegetation cover, increasing urban heat and indigenous culture disintegration. The issue is worsened by governments inability politically and financially to curtail the growing urban landscape at the expense of nature.

List of speakers (confirmed)

- Simon Mariwah
- Victor Owusu
- Sanda Mohammed
- Stephen Kankam

A2d Urban biodiversity – European best practice examples for a better future

(open session)

Convener
Nike Sommerwerk, Museum für Naturkunde - Leibniz Institute for Evolution and Biodiversity Science (MfN), Germany, nike.sommerwerk@mfn.berlin

Co-Conveners
Jörg Freyhof, Museum für Naturkunde Berlin - Leibniz Institute for Evolution and Biodiversity Science (MfN), Berlin, Germany
Lennart Siebert, Round Table for Real Estate Politics, Berlin, Germany
Martin Schwegemann, Initiative Stadt Neudenken, Berlin, Germany
Pia Laube, Tegel Projekt GmbH, Urban Tech Republic, Berlin Germany

People worldwide live-in cities and the share of the global urban population is expected to rise to 68% by 2050. Here, urban consolidation, property prices, gentrification, and summer heat-shocks make life expensive and demanding. At the same time, in large rural landscapes, the younger generation is being driven away due to the lack of jobs, public transport, culture, and infrastructures - leaving many frustrated behind, threatening democracy and our overall future.

It has become increasingly clear that quality of life, well-being of citizens and sustainable living depend on nature and biodiversity. But it also depends on jobs, culture, health care and social relationships.

How to bring both elements together? Which urban development and solutions have succeeded to tackle the reasons why people move to cities? How can we strengthen and better connect rural areas? How to “re-wild cities” and increase urban biodiversity? Which solutions are available beyond rooftop greens, urban farming, and city parks? Is it possible to build cheap, but high-quality homes outside of the city borders without creating ghettos? How to provide more urban living space without leaving a negative footprint? What can be learned from examples around the world?

This interdisciplinary session calls for contributions on:

- What goals do European cities pursue?
- How is the “value” of a city defined?
- How to develop and manage urban biodiversity best?
- Who are the decision makers/ who are the stakeholders and how to include them in the process?
- How to implement the necessary changes in terms of policy?
- How to monitor the process independently from legislative terms?

In our session, we will touch upon these topics in a workshop format and aim to develop a joint position paper.

List of speakers (not yet confirmed)

- Alain Maron, Minister of the Government of the Brussels-Capital Region, responsible for Climate Change, Environment, Energy and Participatory Democracy
- Marieke van Doorninck, Deputy Mayor City of Amsterdam
- Bruno David, Director Museum national d'histoire naturelle; MNHN

A2e Technique and approach of biodiversity restoration in metropolitan areas, China

(open session)

Convener
Taoran Guo, Forest City Studio / Urban China Research Center, China, taoranguo@163.com

Co-Convener
Bingqin Shan, Urban China Research Center & UN Sustainable Development Solutions Network

The rapid urbanization in China brought severe human disturbance to the urban ecosystem, exacerbating the breaking up of natural habitats, biodiversity loss, native species extinction, and low resilience to disasters. The goals and technical roadmaps for urban biodiversity restoration should be different from the ones in large-scale protected areas and aim to solve the following issues: (1) severe human interference; (2) lack of reference ecosystem; (3) low possibility for natural regeneration. Thus, we have continued studying on urban ecosystem restoration techniques and native species activity patterns in order to serve ecological planning in metro Shanghai area and hope to discuss with relative researchers and practitioners from various study perspectives.

List of speakers (confirmed)

- Taoran Guo, Shanghai Tianyuan Ecological Technology Co., Ltd.
- Linlin Yu, Shanghai community wildlife habitat garden project at TNC, The Nature Conservancy
- Fang Wang, Fudan University
- Yifeng Guo, Technical University of Munich
- Bo Yang, Shanghai Academy of Landscape Architecture Science and Planning, Shanghai Academy of Forestry

A2f Challenges for sustainable cities for climate change mitigation: Implementing SDGs for urban sustainability

(open session)

Convener
Kalpana Chaudhari, Shah and Anchor Kutchhi Engineering College, Mumbai, India, isdrklc@hotmail.com

Co-Conveners
Pasquale De Toro, University of Naples, Federico-II, Naples, Italy
Maria Cerreta, University of Naples, Federico-II, Naples, Italy

Coastal cities and towns are more vulnerable due to climate change. The Sustainable Development Agenda envisage the safety and security of the communities, Youth, Women, and other stake holders. The proposed session introducing perspectives and lessons from the Global South, finding partners from the Global North, and exploring the differences to achieve the sustainable development goals (SDGs) for encouraging diversity and inclusion to advance sustainability throughout generations. This session focuses on role of youth, women, community workers, researchers, marine science education and outreach professionals, teachers, and young professionals to share innovative ideas and technologies used for sustainability by engaging students' communities and stake holders in Marine and Coastal region. Enlightening stories on challenges and failed efforts are equally important as we look to building lasting educational programming around cutting-edge and transdisciplinary issues such as urbanization, marine science and ocean conservation, water food- Energy nexus, Risk mitigation to implement the sustainable development agenda 2030 focusing on Sustainable Development Goals related to Urbanization, Ocean and Coastal development, Water-Food-Energy Nexus and Global climate change.

A3a An interdisciplinary discourse on biodiversity values

(open session)

Convener
Norman Backhaus, University of Zurich, University Priority Programme Global Change and Biodiversity, Switzerland, norman.backhaus@geo.uzh.ch

Co-Conveners
Anna Deplazes, Ethics Research Institute, UZH, Switzerland
Roger Keller, Department of Geography, UZH, Switzerland
Annina Michel, Department of Geography, UZH, Switzerland
Mollie Chapman, Department of Geography, UZH, Switzerland
Anna Wienhues, Department of Philosophy, UZH, Switzerland

It is a truism that biodiversity is valuable for people and societies, which is exemplified by the slogan "Biodiversity means Life" of a travelling exhibition that toured Switzerland in recent years. While it is clear that the slogan highlights that Biodiversity is valuable, it is not clear what values people attribute to biodiversity and how they would justify and explain these attributions. Values are rarely shared by all people, rather they are often contested and supported by different rationales and justifications.

In our session, we want to discuss different aspects of the valuation of biodiversity such as different types of values, different methods to assess biodiversity values, and different ways to highlight them in the environmental discourse. By bringing together different perspectives on these issues, we want to trigger an inter- and trans-disciplinary discourse on biodiversity values.

We invite contributions that address the following questions:

- Which values are prominent in biodiversity research, which are less heard of?
- Which actor groups are responsive to what kind of values?
- What is the role of values in the governance, communication, scientific studies and conservation of biodiversity?
- How are values justified?

A3b Philosophy and biodiversity

(by invitation only)

Convener
Anna Wienhues, University of Zurich, Switzerland, anna.wienhues@uzh.ch

Co-Convener
Markku Oksanen (University of Eastern Finland)

In this session we discuss different questions concerning biodiversity conservation from the perspective of moral philosophy. Amongst other things, this includes theoretical analysis of a range of topics, such as:

- Analysis of the concept of biodiversity
- The philosophy of valuing biodiversity
- Moral reasons for protecting biodiversity
- Ethical analysis of different contexts, dimensions and concerns regarding biodiversity conservation (such as de-extinction, genetic resources, natural vs. artificial biodiversity conservation, concerns about justice etc.)
- Limits of the biodiversity concept in environmental ethics and promising alternative concepts

Therefore, presentations can cover a range of philosophical questions about how the concept of biodiversity should be defined, why (or why not) it should be considered to be morally relevant, or which methods ought to be regarded as appropriate (or inappropriate) for its conservation, restoration or augmentation.

This thematic session will span over two session slots during the conference and presentations will be grouped by their content with one session dedicated to more abstract deliberations in terms of conceptual analysis, value-theory etc. and a second session being primarily dedicated to application/policy-orientated normative questions.

List of speakers (confirmed)

- Anna Deplazes Zemp, University of Zurich
- Teea Kortetmäki, University of Jyväskylä
- Markku Oksanen, University of Eastern Finland
- Anna Wienhues, University of Zurich

A3c Mediterranean woven tales to enliven natural and cultural biodiversity

(open session)

Convener
Sara Roversi, Future Food Institute, Italy, sara.roversi@futurefoodinstitute.org

Co-Convener
Stefano Pisani, President of Center for Mediterranean Diet Studies “Angelo Vassallo” and Mayor of the Municipality of Pollica, Italy

"Paideia" is the term that in ancient Greek indicates "integral human education". Aware that we cannot embrace long-lasting, sustainable actions without a deep understanding that "everything is connected", this session focuses on the model of the Mediterranean Basin, the cradle where integral ecology was first conceived. Thanks to outstanding speakers from different backgrounds, the session will weave together all the different voices, at the heart of the Mediterranean Diet, known for being the way of living that perfectly balance men and natural health: ancient wisdom with responsible innovation, the protection of gastronomic identity and integral education, the resilience of archaeological, cultural, food, natural biodiversity, and sense of community. To achieve a better quality of life and prosperity-driven communities, active protection and enlivenment of biodiversity are crucial, with multi-stakeholderism, co-participation, co-creation being the ingredients for inspiration towards action. For this reason, Mediterranean Woven Tales will foster long-lasting education required throughout the lifetime but most importantly able to place man in intimate connection with the surrounding environment. These are all pivotal layers on which we can weave together towards stronger and more resilient ecosystems.

List of speakers (partly confirmed)

- Elisabetta Moro, Cultural Anthropology at the University of Naples
- Sonia Massari, Barilla Center for Food and Nutrition Foundation and Member of the Association for the Study of Food and Society
- Roberto Reali, National Council of Research, Department of bio-food sciences (DISBA CNR), technologist and Università Tor-Vergata and La Sapienza in Rome
- Angelo Riccaboni, PRIMA Foundation and Santa Chiara Lab
- Andrea Bariselli, Strobilo and Thalea
- Cristina Petracchi, FAO e-learning Academy
- Stefano Pisani, Mayor of the City of Pollica, Cilento
- Andrea Carapellese, United Nations Industrial Development Organization (UNIDO)
- Edmondo Soffritti, Rareche, Network of Regenerative Farmers in Cilento
- Benedetto Zacchiroli, President of the International Coalition of Inclusive and Sustainable Cities (ICCAR) UNESCO

A3d Indigenous knowledge networks for biocultural conservation

(by invitation only)

Convener
Rodrigo Cámara-Leret, University of Zurich, Switzerland, rodrigo.camaraleret@ieu.uzh.ch

Co-Convener
Jordi Bascompte, University of Zurich, Switzerland

Indigenous people have accumulated a sophisticated knowledge about plants and their services, including management techniques that have ensured the conservation of some of our planet's most biodiverse territories and keystone species. And yet, indigenous knowledge is increasingly threatened by language erosion, species extinctions, and land use change. This session will unite indigenous community members, leading experts on indigenous knowledge, complex systems science, anthropology, and conservation biology to discuss the resilience of indigenous knowledge and its role in biodiversity conservation. Specifically, we aim to 1) assess the state of indigenous knowledge systems in the face of global change, 2) anticipate scenarios of socio-ecological tipping points, and 3) discuss the challenge of integrating indigenous knowledge into global post-2020 frameworks.

List of speakers (partly confirmed)

- Marten Scheffer (confirmed)
- Pablo Marquet (confirmed)
- Victoria Reyes-García (pending)
- Reinette Biggs (pending)
- Carlos Peres (pending)

A4a Gene to ecosystem ecology for a changing world

(by invitation only)

Convener
Matthew Barbour, University of Zurich, URPP Global Change and Biodiversity, Switzerland, matthew.barbour@ieu.uzh.ch

Co-Convener
Jordi Bascompte, University of Zurich, Switzerland

Global change is reshaping biodiversity across scales—from the genetic makeup of populations to the composition of species in ecological communities. These cross-scale changes often unleash an array of indirect effects that make it difficult to predict ensuing ecological and evolutionary responses in complex ecosystems. If we want to predict gene to ecosystem responses to global change, we need approaches that explicitly address the interconnected nature of biodiversity across scales. In this symposium, we bring together experts that are doing pioneering empirical and theoretical work from genes to ecosystems, with the goal of better understanding how biodiversity originates, is maintained, and will respond to global change.

List of speakers (not yet confirmed)

- Matthew Barbour, University of Zurich, Switzerland
- Jordi Bascompte, University of Zurich, Switzerland
- Anthony Ives, University of Wisconsin-Madison, USA
- Patrik Nosil, University of Sheffield, UK
- Rachel Germain, University of British Columbia, Canada
- Jelena Pantel, American University of Paris, France

A4b Harnessing rapid evolution to conserve global biodiversity

(open session)

Convener
Lynn Govaert, IGB Berlin, Germany, lynn.govaert@igb-berlin.de

Co-Conveners
Blake Matthews, Eawag, Switzerland
Mark Urban, University of Connecticut, Storss, CT, USA

Biodiversity is hierarchically organized, including contributions from genetic, species, and ecosystem diversity. All three biodiversity levels are necessary for the survival of life and for maintaining nature's contributions to people. Biodiversity research typically emphasizes species identity and diversity as measures of ecological integrity of ecosystems. However, intraspecific genetic variation and its ecological consequences might be equally as important. The increasing recognition that evolution can be fast enough to alter ecological processes calls for the need to take contemporary evolution and its ecological consequences into account in global change studies. Moreover, genetic diversity and species diversity must be considered together because they often interact: evolutionary potential can buffer against extinction, and extinctions can favor adaptive evolution by creating ecological opportunity. Conversely, rapid evolution might under some conditions lead to reduced species diversity. To address global biodiversity decline, we must understand how to harness the power of rapid evolution and its interactions with ecology to prevent extinctions, ecosystem change, and reductions in nature's contributions to humans. We concentrate on when, where, and how to bring eco-evolution to bear on today's biggest conservation challenges. In this symposium, we will bring together researchers from different disciplines to highlight recent findings about the relationships among genetic diversity, rapid evolution, and species diversity, and discuss case studies that apply these findings to improve biodiversity conservation. This session is proposed as an EvolvES activity.
List of speakers

- Ben Phillips, University of Melbourne
- Anita Narwani, Swiss Federal Institute of Aquatic Science and Technology
- Mike Bruford, Cardiff University
- Magdalene Ngeve, University of Maryland

A5a Soil biodiversity for global welfare

(by invitation only)

Convener
S. Franz Bender, Agroscope and University of Zurich, Switzerland, franz.bender@agroscope.admin.ch

Co-Conveners
Florian Walder, Agroscope, Switzerland
Marcel Van der Heijden, Agroscope and University of Zürich, Switzerland

Soils harbor one quarter of global biodiversity. An enormous variety of soil biota provide essential ecosystem services that humankind depends on. Those communities have the potential to tackle many of the most striking challenges humankind is facing on planet earth, including climate change, food security, water storage and mitigation of extreme weather events. However, the complexity of soil ecosystems and the ecological, physical, and chemical interactions taking place therein makes managing soil biological communities to maximize desired outcomes a daunting task.

This session brings together scientists and practitioners working on innovative strategies to manage soil biological communities for enhanced ecosystem service delivery.

Topics will range from basic scientific findings on how soil biological communities contribute to ecosystem functioning, to identifying innovative strategies for soil community management, e.g. through plant-soil interactions, inoculations of effective soil biota, soil management strategies, application of organic amendments, crop rotations, breeding, etc.

By gathering a diverse array of presenters focusing on similar goals using different strategies, this session aims at fostering innovative cross-disciplinary discussions on how the potential of soil biodiversity can be used to contribute to global welfare and turning scientific and applied knowledge into large-scale action.

List of speakers (not yet confirmed)

- Franziska De Vries, University of Amsterdam, NL
- Brahjesh K. Singh, Western Sydney University, AU
- Tom Crowther, ETHZ, CH
- Jan Dirk van Elsas, University of Groningen, NL
- Gabriele Berg, Technical University of Graz, AT
- Diana Wall, Colorado State University, US
- Laurent Philippot, IINRA Dijon, F
- Alfred Grand, Farmer and entrepreneur, AT

A5b Soil biodiversity and function scenarios

(open session)

Convener
Nico Eisenhauer, German Centre for Integrative Biodiversity Research (iDiv), Leipzig University, Germany, nico.eisenhauer@idiv.de

Co-Conveners
Anton Potapov, GAU Göttingen, Germany
Carlos Guerra, iDiv, MLU Halle, Germany

Global change is affecting the biodiversity and functioning of ecosystems. However, there is uncertainty about how the dynamics of soil biodiversity will change in the future due to climate and land-use change. It is vital to understand the direct and indirect effects of global change drivers on soil communities and ecosystems across different biomes, soil conditions, and land-management approaches, not only today but also soon. This is particularly relevant in the context of international efforts to tackle climate change like the Paris Agreement and considering the failure to achieve the 2020 biodiversity targets, particularly halting soil degradation.

This symposium will be well-prepared by inviting and communicating with 10 participants shortly after acceptance of the proposal. An additional number of 20 participants can participate (5 additional presenters, 15 additional symposium participants). The goals are very much in line with the title of the meeting, Inspiration for Action: to (i) discuss cutting-edge soil macro-ecology work, (ii) form a long-term working group, (iii) discuss data integration, (iv) scenario modelling methods, (v) and concrete plans for implementation and communication to policy makers. During the symposium, participation will be facilitated by a mixture of presentations and plenary discussions.

The symposium will produce three important groups of products. First, it will consolidate current activities of soil biodiversity and function mapping across working groups and link them with Soil BON, establishing a long-term working group on “Soil Scenarios” SoilScene. Second, at least two short-term products will be produced: (i) a report in the open-access journal Soil Organisms introducing SoilScene and (ii) a research paper in a leading multidisciplinary journal. Third, plans will be discussed to convey the results to policy makers, such as contributions to IPBES reports. All participants will be invited to contribute to the papers and subsequent activities.

List of speakers (not yet confirmed)

- Almuth Arneth
- Victoria Burton
- Erin Cameron
- Tom Crowther
- Mohammed Bahram
- Manuel Delgado-Baquerizo
- Stefan Geisen
- Helen Phillips
- Kelly Ramirez
- Leho Tedersoo
- Johan van den Hoogen
- Diana Wall

A5c Get out of siloed research! Only cooperation can protect the diversity of pollinators and soil organisms

(open session)

Convener
Stefanie Christmann, International Center for Agricultural Research in Dry Areas (ICARDA), Morocco, s.christmann@cgiar.org

Co-Convener
Solveig Haukeland, ICIPE, Kenya and NIBIO, Norway

Above- and below-ground biota are in constant interaction, but respective research is conducted in two silos. Soil bacteria and protists can move actively around 0.000001m only, nematods 0.01m and arbuscular mycorrhizal fungi 0.005m per day, so they highly depend on the survival of plants and animals creating their below-ground habitat. 87% of all flowering plants require pollinators. This makes soil organisms highly vulnerable to pollinator loss. Worldwide pollinators are in decline. Even if not feeding on organic soil compounds directly, ground-nesting pollinators contribute indirectly in many aspects to soil biodiversity, soil quality and functions. However, pollinators are not part of research on soil biodiversity though all solitary wasps and 70% of wild bees nest below ground and require protection during this long and crucial period of their lifecycle and below-ground activities. Recent publications of pollinator experts working also below ground demonstrated the extent of threats to which ground-nesting pollinators are exposed, chemicals, tillage and soil compaction. The habitat-oriented definition of the Convention on Biological Diversity (CBD) on soil biodiversity includes ground-nesting pollinators like bees and wasps, but the Food and Agriculture Organization (FAO), in charge of soil biodiversity since 2005, narrowed the focus. There is a tendency in soil research to work only on species that themselves directly provide four ecosystem services enhancing soil quality and functions. However, protection of soil biodiversity relies on success in pollinator protection to a high extent. Therefore, researchers are needed who work on the synergies of above- and below-ground protection, on impacts of loss or conservation of pollinator dependent plants like pollinator dependent mangroves, trees and shrubs on mycorrhizal fungi, nematodes, beetles etc. and vice versa.

We look for abstracts focusing on (1) ground-nesting pollinators, (2) plants depending on ground-nesting pollinators and (3) soil organisms depending on pollinator-dependent plants. If you worked on all three or at least 2 aspects, please submit an abstract. The session shall inspire more researchers to work in such integrated way.

A6a Freshwater biodiversity crisis: horizon scanning of challenges and solutions

(open session)

Convener
Rosetta Blackman, University of Zurich, Switzerland, Rosetta.Blackman@eawag.ch

Co-Conveners
Luca Carraro, University of Zurich, Switzerland
Heng Zhang, University of Zurich, Switzerland
Sonja Jähnig, Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) & Humboldt-Universität zu Berlin, Germany
Andreas Bruder, University of Applied Sciences and Arts of Southern, Switzerland
Ole Seehausen, University of Bern + Eawag, Switzerland
Florian Altermatt, University of Zurich + Eawag, Switzerland

Freshwater systems are an essential resource to humans, ranging from drinking water supplies, protein source, tourism, and transportation. However, these uses can, and often do, negatively affect freshwater ecosystems, their biodiversity and ecosystem functions. At the same time freshwater ecosystems also experience collateral damage from pollution, habitat loss and global climate change. Therefore, unsurprisingly freshwater ecosystems and their biodiversity are more threatened than those in most other systems. In this session we will identify solutions to reverse the steep downward trajectory of freshwater biodiversity and develop a road map of how these ideas can support solving the freshwater biodiversity crisis. We invite talks which specifically address how we can resolve these challenges, including cross-disciplinary thinking, global initiatives, new technologies, using big data or citizen science approaches. We will follow the “ABCD conference framework” (All Continents, Gender Balance, Low Carbon footprint and Diverse backgrounds) for this session which aims at bringing speakers from across the world together in a hybrid session of in person and streamed talks. We also aim to hold a 1-hour discussion session at a suitable time for all speakers to attend. This will provide time for attendees to ask questions and to develop a road map of our ideas for tackling the freshwater biodiversity crisis.

A6b Research and implementation to restore and protect blue-green biodiversity

(open session)

Convener
Morgane Brosse, Scientific coordinator, Eawag, Switzerland, morgane.brosse@eawag.ch

Co-Conveners
Florian Altermatt, Eawag, Switzerland
Martin Gossner, WSL, Switzerland
Catherine Graham, WSL, Switzerland
Martina Hobi, WSL, Switzerland
Rolf Holderegger, WSL, Switzerland
Ivana Logar, Eawag, Switzerland
Blake Matthews, Eawag, Switzerland
Anita Narwani, Eawag, Switzerland

Hotspots of biodiversity can be found both in freshwater and terrestrial (blue-green) environments, and especially at their interface. Freshwater and terrestrial ecosystems are often interdependent and rely on resources and substance flows across land-water boundaries. Many organisms depend on both environments, move across the boundaries, or spend different life stages in different habitats. Yet blue-green ecosystems are seldom studied in an integrated manner, even though they are dramatically impacted by the current decrease of biodiversity associated with habitat fragmentation and loss, invasive species, climate change and other drivers. A rapid uptake of effective conservation and restoration measures across blue-green ecosystems is necessary, which requires knowledge exchange between science, practice, and policy.

Empirical cutting-edge research must be conducted in an integrated manner across terrestrial and freshwater realms. The results and implications of this research must be made available on an international level and communicated and translated to national and regional stakeholders and conservation bodies. This session, led by the Eawag-WSL BGB initiative, will stimulate stakeholder integration, and promote collaborations and exchanges of perspectives of research and implementation across blue-green ecosystems. Main goals are (1) to identify and close knowledge gaps across blue-green ecosystems and strengthen links between scientists and stakeholders and (2) to update and extend management practices and policies for the fulfillment of the biodiversity targets under Agenda 2030.

A6c The role of coordination and harmonization for detection of trends in freshwater biodiversity at a global scale

(open session)

Convener

Andreas Bruder, University of Applied Sciences and Arts of Southern Switzerland, Switzerland, andreas.bruder@supsi.ch

Co-Conveners

Eren Turak, NSW Department of Planning, Industry and the Environment, Sydney, Australia
Jen Lento, Canadian Rivers Institute, UNB Fredericton, New Brunswick, Canada
Fabio de Oliveira Roque, Universidade Federal de Mato Grosso do Sul, MS, Brazil
Astrid Schmidt-Kloiber, University of Natural Resources and Life Sciences, Vienna, Austria
Heidi van Deventer, Council for Scientific and Industrial Research, Pretoria, South Africa

Biodiversity change proceeds particularly fast in freshwater ecosystems compared to other realms. To understand biodiversity change we need a better monitoring of trends in freshwater biodiversity over space and time and across all branches of the tree of life. This can only be achieved with interoperable datasets based on harmonized monitoring approaches and indicators. Diverse groups of scientists and practitioners are operating and producing freshwater biodiversity data at all levels of scale and in various cultural contexts. However, we believe that this work requires better coordination to utilize its full potential and maximize its efficacy. In this special session, we discuss ways to make freshwater biodiversity data produced by such diverse groups more effective towards the goal of understanding trends in freshwater biodiversity across the globe. We aim at identifying conceptual or institutional gaps in monitoring approaches and data production, data structure, data repositories, data availability etc. that still challenge the interoperability of biodiversity datasets and their effective use for freshwater biodiversity management and conservation. We specifically invite contributions that present concepts of biodiversity monitoring or of indicators and/or case studies of their application in any freshwater ecosystem type. We also invite contributions that describe experiences made with scientist/practitioner and transdisciplinary networks for freshwater biodiversity monitoring at any spatial or temporal scale and any cultural context. Thereby, we hope to see a discussion evolving on the role of harmonization of approaches and indicators, and on the optimal spatial, temporal, and taxonomic resolution for different monitoring goals and for the various end users of freshwater biodiversity data. We aim at summarizing and publishing the conclusions from this session in a scientific paper (we invite contributors to the session to participate in this publication).

A6d Integrating perspectives on biodiversity and ecosystem functioning of aquatic and terrestrial ecosystems across river catchments

(open session)

Convener
Luca Carraro, University of Zurich, Switzerland, luca.carraro@eawag.ch

Co-Conveners
Rosetta Blackman, University of Zurich, Switzerland
Heng Zhang, University of Zurich, Switzerland
Isabelle Gounand, Sorbonne University, France
Enrico Bertuzzo, University of Venice, Italy
Florian Altermatt, University of Zurich, Switzerland

Traditionally, terrestrial, and freshwater ecosystems have been studied in isolation from each other. This neglects the fact that resources flow across land-water boundaries, and many organisms cross these boundaries, often spending different life stages in different habitats. Such a linkage is especially pronounced in river catchments, where aquatic and terrestrial components are tightly linked. The understanding and maintenance of biodiversity and ecosystem processes in such catchments across aquatic and terrestrial systems thus require an integrated approach and thinking beyond classic ecosystem boundaries. In this session, we will summarize evidence on the relevance of cross-ecosystem dynamics at the land-water interface in river catchments, ranging from resource to species flows, and identify how this perspective will contribute to solutions for the global biodiversity crisis. We will specifically focus on linkages between terrestrial and aquatic ecosystems in river networks, ecological processes that take place at the land-water boundaries, and the sensitivity of these integrated ecosystems to drivers of biodiversity change. We will follow the "ABCD conference framework" (All Continents, Gender Balance, Low Carbon footprint and Diverse backgrounds) for this session, which aims at bringing speakers from across the world together in a hybrid session of in person and streamed talks. We also aim to hold a 1-hour discussion session at a suitable time for all speakers to attend.

A6e The importance of being small: biodiversity conservation in ponds and other small freshwater systems

(open session)

Convener
Maria Cuenca-Cambronero, University of Vic, Spain, maria.cuenca@uvic.cat

Co-Conveners
Sandra Brucet, University of Vic & ICREA, Spain
Luc De Meester, Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB), Germany

Recent studies have highlighted the importance of small habitats for biodiversity conservation (Wintle et al. 2019), particularly in freshwater ecosystems (Biggs et al. 2017). However, small water bodies are often neglected in existing water-related policy frameworks. In this session we will hear from a variety of experts in freshwater ecosystems on why small sized freshwater habitats are crucial for biodiversity conservation and what are the main threats to their existence. The following presentation are proposed:

- Jon Chase (iDiv) showing how biodiversity analyses using synthesized large datasets can provide important metacommunity insights at multiple spatial scales.
- Pieter Lemmens (IGB) will then focus on European ponds and what we know about them.
- Zsofia Horvath (Institute of Aquatic Ecology) will discuss existing threats to ponds, and the effect of the disappearance of ponds on biodiversity.
- Klement Tockner (ETH Zurich) will show that these threats also impact flowing waters.
- Margaret Palmer (Uni Maryland) will then focus on the restoration of small freshwater systems, with a focus on rivers' restoration.

To encourage a multi-sector discussion, we will hear from Jeremy Biggs / Pascale Nicolet (Freshwater Habitat Trust), who will describe the implications for policy makers of growing recognition of the critical role of small waters, and the problems caused by their limited recognition in water and environment policy and Tobias Salathé (Ramsar Convention) who will talk about "Policy goals for the protection and management of small waters and wetlands: the RAMSAR international wetlands convention perspective".

A7a Biodiversity informatics driven by computer vision

(open session)

Convener
Thomas Y. Chen, Academy for Mathematics, Science, and Engineering, United States, thomaschen7@acm.org

Co-Convener
John Calhoun, Rutgers University, United States

Data driven biodiversity studies and conservation biology have emerged as burgeoning fields of research and development in recent years. In particular, artificial intelligence and machine learning-based advances at this intersection have enabled unprecedented capabilities to monitor wildlife and develop coherent conservation pipelines. Computer vision, which is largely based on deep learning and neural networks, is the study of how computers can gain high-level insights from visual imagery and video. Computer vision applications aid in the identification and classification of wildlife in Earth observation data, crowdsourced imagery, and other data such as web scraped imagery. In turn, current research focuses on working on deploying computer vision systems in the wild for more effective and accurate automated modeling of trends within populations and interspecies relationships. In this session, we invite contributions (poster and oral) relating to topics at the nexus of computer vision and biodiversity. Proposals can either be technical or more expository in nature. Additionally, there will be one invited speaker, Milind Tambe (Harvard University). His work at the Center for Research on Computation and Society includes AI-based applications to conservation biology, especially in the computer vision space. This speaker is not confirmed yet, but there are backup invited speakers if this does not work out. After the invited speaker, all the contributed talks will be delivered. Following all talks, a poster session will commence, leading into a final “open town hall” event at the end, where attendees can discuss future research directions and potentially develop interdisciplinary collaborations moving forward. The goal of this session is to have a fruitful discussion regarding an exciting nexus of research and deployment that has a high level of potential for real impact in the conservation of endangered species and threatened ecosystems.

A7b Scaling up terrestrial biodiversity monitoring - needs, challenges and opportunities

(open session)

Convener
Kristy Deiner, ETH Zurich, Switzerland, alpinedna@gmail.com

Co-Conveners
Fabian Roger, ETH Zürich, Switzerland
Silvia Schintke, School of Management and Engineering Vaud (HEIG-VD/HES-SO), Switzerland
Stefano Mintchev, ETH Zürich, Switzerland

Biodiversity is being lost at unprecedented rates. The uncertain, but potentially drastic consequences for ecosystem functioning and services are clearly affecting natural food webs and living environments. For biodiversity preservation, advanced monitoring methods are needed. Conventional biodiversity monitoring is restricted to a few species' groups and small spatial and temporal extends - due to the immense demands on time, labor and expertise. The bulk of today's monitoring activity is also biased towards the global north while monitoring of the most biodiverse ecosystems in the global south is scarce. New biodiversity monitoring methods using satellite or laser remote sensing, automated sound and image recognition, as well as species detection from environmental DNA - combined with advances in environmental robotics for autonomous sampling - have been developed over the last decade> These technologies will allow us to scale up biodiversity monitoring across space, time and taxonomic groups. These modern techniques available today have the possibility of a truly global and near-real time access to biodiversity information. Uptake and use of these advanced monitoring techniques also needs translation into useful insights and actions for the preservation of biodiversity and remains a crucial next step

In this session we propose to bring together leading scientists and engineers who develop new biodiversity monitoring technologies with end users of biodiversity information - including agricultural and silvicultural industry, conservation organizations, representatives of indigenous populations, and policy makers. Our aim is to bring together developers and end users at an early stage to foster a goal-driven development of biodiversity sensing and monitoring technologies, inspire for action, and thereby increase their impact by speeding up their adoption.

A7c Detecting and attributing biodiversity change: linking essential variables to indicators and goals

(open session)

Convener
AndrewGonzalez, McGill University, Canada, andrew.gonzalez@mcgill.ca

Co-Convener
Mary O'Connor, University of British Colombia, Canada

Context: Understanding the extent and magnitude of human impacts on rates of biodiversity change worldwide is of great scientific interest, and central to policy efforts aimed at meeting national and international biodiversity targets in the context of the post-2020 Global Biodiversity Framework.

Objective: In this session, we address the current development of a robust detection and attribution framework for biodiversity change and how it can embed essential biodiversity and ecosystem variables.

Reports of temporal and spatial trends in biodiversity typically focus on a few biodiversity variables (e.g. species richness, habitat extent, or population abundance) linked to a small set of widely reported indicators (e.g. Living Planet Index, Red List threat status). In the last few years, we have seen the development of the Essential Variable framework for biodiversity, and ecosystems. Essential Variables are a compact set of metrics describing the state of genomes, species, populations, or ecosystems that provide a common foundation for trend detection and indicators tracking. There is now an opportunity to link the Essential Variable framework to the detection and attribution framework across the full set of essential biodiversity and ecosystem variables that underpin policy-relevant indicators. In addition, efforts to detect joint trends between Essential Variables (e.g., linking change between biodiversity to ecosystem function) at policy-relevant scales are also needed.

Speakers in this session will address different elements of a detection and attribution workflow that links observations, including remote sensing and in situ monitoring, to policy-relevant indicators using robust statistical methods founded on the EV framework. Each speaker will address how trends in essential variables are detected, and trends are attributed to different human causes with clear statements of confidence. We will also address how the detection and attribution framework connects to models for forecasting and long-range scenarios to guide the adaptive adjustment of monitoring that reduces uncertainties in our understanding of biodiversity change in the near and long term.

A7d Scaling diversity-functioning relationships from plot-scale experiments to real-world landscapes: emergent mechanisms

(open session)

Convener
Pascal Niklaus, University of Zürich, Switzerland, pascal.niklaus@ieu.uzh.ch

Co-Conveners
Florian Altermatt, UZH and EAWAG, URPP GCB
Rosetta Blackman, EAWAG
Luca Carraro, EAWAG
Reinhard Furrer, UZH, Mathematics, URPP GCB
Felix Morsdorf, UZH, Geography, URPP GCB
Heng Zhang, UZH, URPP GCB

There is broad agreement that biodiversity is critical for the functioning of "real-world" ecosystems that deliver important ecosystem services. Yet, most of our contemporary understanding of diversity-functioning relationships rests on plot-scale experiments in which species diversity was manipulated experimentally. In this session, we will synthesize evidence of emergent mechanisms that exist at larger scales of space, time, and organization, and discuss their importance in understanding landscape-level diversity-functioning relationships. This symposium will thus bridge plot-scale and landscape-level diversity research and sketch the way towards a more integrated understanding of the functional importance of diversity across scale.

Speakers: There is a wide range of speakers that qualify. The topics addressed range from meta-population and meta-community-like phenomena to meta-ecosystem research focused on fluxes of energy and matter, to more empirical scaling methods.

A7e Functional diversity in space and time: measurements, models and experiments to advance trait-based ecology

(open session)

Convener
Fabian Schneider, Jet Propulsion Laboratory / California Institute of Technology, United States, fabian.schneider@jpl.nasa.gov

Co-Conveners
Jens Kattge, Max Planck Institute for Biogeochemistry, Germany
Gary Geller, JPL / Caltech, United States

Biodiversity is declining rapidly under stark pressures from anthropogenic and climate change, urging the need for biodiversity observations that can guide biodiversity policy related to biological conservation and restoration, monitoring, and addressing critical science questions related to ecosystem resilience, adaptation, turnover, mortality, and functioning. To that respect, functional diversity is an important dimension of biodiversity that can be measured from individuals to landscapes, including intra- and interspecific diversity, with strong links to ecosystem functioning. We encourage contributions that utilize a variety of measurement, modeling or experimental techniques to understand how and why functional traits and diversity are changing in space (from local to global scale) and/or time (from diurnal to decadal scale). Measurement techniques can range from in-situ measurements to terrestrial, airborne or spaceborne remote sensing, or a combination thereof. This session offers the opportunity for diverse, interdisciplinary, and integrative research to be presented by people from various backgrounds, research fields, and institutions.

A7f Environmental eDNA and spatial ecology

(by invitation only)

Convener
Andrew Skidmore, University of Twente, Netherlands, a.k.skidmore@utwente.nl

Co-Convener
Rachel Meyers, UCLA, US

In this session we explore the latest research in how environmental eDNA is being used in spatial ecology. Five leading international scientists present cutting edge research in community biodiversity, landscape ecology, upscaling, remote sensing and freshwater applications.

A7g Climate change impacts on biodiversity and ecosystem functioning: Lessons learned from climate change manipulation experiments

(open session)

Convener
Nadia Soudzilovskaia, Center for Environmental Sciences, Hasselt University, Belgium, nadia.soudzilovskaia@UHasselt.be

Co-Convener
Ivan Nijs, University of Antwerp, Belgium

To combat ongoing climate change, humankind urgently needs to understand how biodiversity and functioning of terrestrial ecosystems are affected by interactions of land use and climate, and which natural mechanisms enhance or counteract the increase of CO_2 concentration in the atmosphere. Accordingly, sustainable ecosystem management aimed at biodiversity conservation, reducing atmospheric carbon, as well as adaptation of land use practices to climate change are key EU and UN sustainability goals. Yet the lack of quantitative knowledge about climate impacts on mechanisms of ecosystem functioning impedes policy development towards sustainable use of terrestrial ecosystems.

Recent technological advances have allowed scientists across the globe to conduct advanced experiments in which climatic conditions are manipulated at unprecedented realistic level with the aim of achieving holistic understanding of biodiversity patterns and ecosystem functioning in future climates. This wealth of data and knowledge calls for synthesis and meta-level analyses.

In this session we aim to address recent endeavors in experimental research on climate change impacts at distinct levels of geographical scale and ecosystem organization. In addition to presenting findings that highlight latest advances in effects of climate-warming, shifting precipitation patterns and increasing carbon dioxide concentration on ecosystem functioning and biodiversity, the symposium will include a discussion of novel experimental approaches and unified methodologies for assessing such impacts, and how they could lead to societal adaptation.

List of speakers (partly confirmed)

- Nico Eisenhauer, Leipzig University and iDiv, Germany
- Klaus Steenberg Larsen, European AnaEE ESFRI infrastructure network for climate, agriculture and biodiversity research
- Francois Rineau, Hasselt University, Belgium
- Natalie Beenaerts, Hasselt University, Belgium
- Hans De Boeck, Antwerp University, Belgium
- Hans Cornelissen, VU-University Amsterdam, Netherlands
- Jussie Heinonsalo, Helsinki University, Finland

A7h From the species to the individual: investigating plant diversity on the scale that matters most

(open session)

Convener
Paolo Villa, National Research Council of Italy (CNR), Italy, villa.p@irea.cnr.it
Meredith C. Schuman, University of Zurich, meredithchristine.schuman@uzh.ch

Co-Convener
n.a.

The last two decades of comparative ecology studies have shown that intraspecific diversity plays an important, yet poorly characterized role in plant community assembly and ecosystem processes [1]. Within habitats subject to extreme environmental conditions and heterogeneity, plant species tend to show great intraspecific variability, and such variation is important for populations' resilience to environmental stress, even in the environmental middle of a species range [2,3]. Advances in laboratory, field, and earth observation technologies, and global engagement, have opened possibilities to capture variation in species traits and their genetic encoding across whole plant species and their ecosystems, and to connect these to consequences for the Earth system, e.g. by predicting adaptation potential and range shifts of key plant species in the face of already ongoing climate and habitat change. Here we ask: when do we need to understand biodiversity at the level of variation among individuals, and how can we achieve this microscopic understanding of biodiversity while also enhancing our understanding of larger-scale patterns? The speakers in this session are invited to contribute to a review and opinion article in preparation.

Introduction by Paolo Villa, multimodal remote sensing, National Research Council of Italy, and Meredith C. Schuman, spatial genetics, University of Zurich

A7j Radar-based approaches to monitoring the abundance, morphological diversity and movements of aerial taxa

(open session)

Convener
William Kunin, University of Leeds, United Kingdom, w.e.kunin@leeds.ac.uk

Co-Convener
Andrew Farnsworth, Cornell Laboratory of Ornithology, USA

Biodiversity monitoring is limited by the amount of time and effort required for standardized sampling activities. Radar technology provides promising opportunities for automated sampling of aerial biodiversity over large areas in a nearly continuous manner, allowing the monitoring of airborne populations and communities and their movements. Such monitoring allows us to characterize changes in the distribution and composition of aerial biota across space and time, to calibrate them against more conventional biodiversity observations, and to study relationships between the patterns detected by radar and the spatial and temporal patterns of potential environmental drivers of biodiversity change. There has been substantial progress in tracking bird migrations and bat emergences using radar, and more recently advances have been made in monitoring airborne insect populations and communities. Diverse Radar tools have been developed with differing strengths and applications. This session will explore past applications and future potential for aerial biodiversity monitoring using these methods.

List of speakers (partly confirmed)

- William Kunin, Chris Hassall, Ryan Neely III, Maryna Lukach; University of Leeds, UK
- Andrew Farnsworth, Adriaana Dokter; Cornell Laboratory of Ornithology, USA
- Bruno Bruderer, Silke Bauer, Felix Liechti; Vogelwarte, Switzerland
- Elske Tielens, Jeff Kelly; University of Oklahoma, USA
- Cheng Hu, Rui Wang, Tianran Zhang; Beijing Institute of Technology, China
- Phillip Stepanian, Notre Dame University, USA

A7k Integrating biodiversity and human well-being data

(open session)

Convener
Carolina Soto-Navarro, UN Environment Programme World Conservation Monitoring Centre, Vietnam, carolina.soto-navarro@unep-wcmc.org

Co-Conveners
Andrea Baquero, UN Environment Programme World Conservation Monitoring Centre, UK
Samantha Hill, UN Environment Programme World Conservation Monitoring Centre, UK
Mike Harfoot, UN Environment Programme World Conservation Monitoring Centre, UK

Biodiversity is a cornerstone of human well-being. Noting that better consideration of human well-being-biodiversity linkages could contribute to improving many aspects of human development. The importance of the fundamental linkages between biodiversity and human well-being are increasingly recognized in global and regional policy development as well as in international processes through mechanisms such as the CBD or IPBES.

While evidence of the contributions of biodiversity to human well-being is rapidly building, research into how to effectively integrate ecological and socio-economic data in an -easy-to-communicate manner to bring about this message to decision makers remains limited in important respects. In particular, a better understanding of the range of pathways through which biodiversity can be linked to human well-being and mainstreamed into decision making is needed. Building on evidence from across different areas and initiatives on this respect, this session will present and discuss different conceptual frameworks and methodological approaches linking biodiversity to human well-being and sustainable development. The session will combine invited talks followed by a discussion in which participants will have the opportunity to contribute and discuss about methodological challenges on data mobilization, accessibility and integration presented by four country pilots (Mexico, South-Africa, Vietnam, Switzerland and the Greater Massai Mara) championing a research initiative lead by UNEP-WCMC on developing a Multidimensional Index on Biodiversity Health.

List of speakers (partly confirmed)

- Alison Fairbrass, University College of London
- Carolina Soto-Navarro. UN Environment Programme World Conservation Monitoring Centre UNEP-WCMC
- Deshni Pillay, South African National Biodiversity Institute (SANBI)
- Franz Mora, Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO)
- Eva Spehn, Swiss Academy of Sciences (SCNAT)
- Duong Khuu Thuy, WWF Vietnam

A7l Be FAIR and CARE; synergies, tradeoffs, and perspectives in biodiversity data for science, policy, and action

(open session)

Convener
Rainer Michael Krug, University of Zurich, Switzerland, Rainer.Krug@uzh.ch

Co-Conveners
Tim Hirsch, Deputy Director, GBIF Secretariat, Denmark
Aidin Niamir, Senckenberg Biodiversity and Climate Research Institute, Germany

Reliable and accessible data is essential for understanding biodiversity, its status, trends and pressures, and thus responding with informed policies and action.

The FAIR data management principles to make data Findable, Accessible, Interoperable and Re-usable, are increasingly referenced and required by funding agencies and institutions; however, implementation remains deficient at many levels. Even when data management claims to be 'FAIR', datasets often fall far short of the principles. But FAIR principles alone provide only a partial solution to issues of data ownership and control, most evident in the case of indigenous and local knowledge (ILK) and its relationship with the spirit of open, shared data embodied in the FAIR principles. The recently developed CARE data governance principles aim to address this imbalance between sharing and control.

Researchers and policy makers thus face the dual challenge of properly applying the FAIR principles, and of bringing CARE principles into the equation. The inclusion of CARE also represents an opportunity to institutionalize and acknowledge the role of ILK in biodiversity research and inspiration of action. The implementation of data management practices properly following both FAIR and CARE principles, will build and increase trust in biodiversity research and action by involving indigenous peoples and local communities (IPLCs) as well as the whole of civil society.

During this session, we will describe the state of the art in data management regarding FAIR and CARE and, more broadly, Open Science. We will discuss how these can be incorporated at all levels from data collection and analysis to policy and action, and how data which follows these principles, can inspire action for biodiversity.

Additionally, the session will aim to generate strategies and proposals for using FAIR and CARE principles to support achievement of the target in the post-2020 Global Biodiversity Framework (GBF) dealing with availability and application of biodiversity knowledge (Target 20 in the GBF First Draft).

We invite contributions for an open session, followed by a session with invited speakers, ranging from experts on the UNESCO Recommendation on Open Science through organizations dealing with biodiversity data to experts on CARE and a panel discussion.

A7m Spatiotemporal scales and novel methods in modelling biodiversity at a landscape level

(open session)

Convener
Heng Zhang, University of Zurich, Switzerland, heng.zhang@eawag.ch

Co-Conveners
Rosetta Blackman, University of Zurich, Switzerland
Luca Carraro, University of Zurich, Switzerland
Reinhard Furrer, University of Zurich, Switzerland
Felix Morsdorf, University of Zurich, Switzerland
Pascal Niklaus, University of Zurich, Switzerland
Florian Altermatt, University of Zurich, Switzerland

Adequate tracking and assessment of biodiversity is required for an effective management and protection of biodiversity. Currently, novel technologies (e.g., environmental DNA, remote sensing) enable massive access to biodiversity across ecosystems and are revolutionizing the field of biodiversity sciences. But, how to link various data and model the underlying mechanisms across spatial-temporal scales is still limited. In this session, we will bring together experts from different fields to develop visions for integrating various biodiversity data (e.g., in situ to regional/global data) and modelling the underlying mechanisms at a landscape level. Moreover, we hope to draw a road map for effective conservation priorities.

A7n A model for life: toward a universal biodiversity projection platform

(by invitation only)

Convener
Mark Urban, Center of Biological Risk, University of Connecticut, USA, mark.urban@uconn.edu

Co-Conveners
Greta Bocedi, University of Aberdeen, UK
Justin Travis, University of Aberdeen, UK
Andrew Gonzalez, McGill University, GEO BON, Canada

Time is running out to limit further devastating losses of biodiversity and nature's contributions to humans. Addressing this crisis requires accurate predictions about which species and ecosystems are most at risk to ensure efficient use of limited conservation and management resources.

Objective: In this session, we seek to explore the various integrative models and platforms available, challenges and opportunities for integration and expansion, and methods for parameter inference and validation. We then facilitate a panel discussion on next steps for how best to make progress toward creating a universal biodiversity projection platform.

Motivation: Current models usually cannot easily be reconfigured for other species or systems, omit key biological processes, and cannot accommodate feedbacks with Earth system dynamics. Biologists have not devoted substantial resources to developing shared and comprehensive modelling frameworks to project future biodiversity change. Thus, we are ill-equipped to predict and prevent biodiversity and ecosystem change at this critical period of accelerating threats. To fill these gaps, we envision an adaptable, accessible, and universal biodiversity modelling platform that can project essential biodiversity variables, explore the implications of divergent socio-economic scenarios, and compare conservation and management strategies.

Content: Speakers will cover the current state of affairs, new advances in biodiversity modelling, integration with other models, as well as parameterization, validation, and application. Each speaker adds a particular component that would be necessary to develop a robust, universal biodiversity projection platform. We would then discuss in the final panel how these various techniques could be integrated. Our end goal is to develop a practical working plan for how to move forward in creating a universal biodiversity projection platform with existing and new partners.

List of speakers (partly confirmed)

- Mark Urban
- Calum Brown, Greta Bocedi, Cecile Albert, Justin Travis
- Mike Harfoot, Tim Newbold
- Thiago Rangel
- Lauren Buckley, Michael Kearney
- Juliano Sarmento Cabral
- Dongya Liu
- Istem Fer
- Florian Hartig
- Alice Scarpa
- Andrew Gonzalez

A8a Building back better in the post-COVID era: Locking in insights for sustainable ocean governance

(open session)

Convener
Felix Kwabena Donkor, University of Education, Winneba, Ghana, felixdonkor2002@yahoo.co.uk

Co-Conveners
Henry Tantoh, University of South Africa, South Africa
Eromose Ebuoma, University of South Africa, South Africa

The COVID-19 pandemic is considered a watershed event which has affected all aspects of contemporary society including human-environment interactions. Biodiversity and its related ecosystem services are related with all aspects of development (e.g., food security, health promotion, and poverty reduction), in sustaining economic growth in agriculture, industry and energy generation, and in maintaining healthy ecosystems. Effective governance of the world's biodiversity therefore serves a vehicle for inclusive development and comes with multiple benefits for sustainability. Moreover, moments of crisis such as occasioned by the prevailing pandemic, provide opportunities for reflection and innovation. As the building back agenda gains traction, this session addresses some of the core lessons from the pandemic for the governance of biodiversity and charts a pathway forward for sustainability as we commence final decade of action to deliver the SDGs.

List of speakers (not yet confirmed)

- Enokenwa Ojong
- Daisy Tlou Raphela
- Faten Baha
- Renuka Takore

A9a Connecting science to action: inspiring ordinary citizens to become a positive environmental force

(by invitation only)

Convener
Eleanor Gill, Drawdown BC, Canada, eleanor.gill@gmail.com

Co-Conveners
Aileen Stalker, affiliation, country
Michelle Sheardown, Drawdown BC, Canada

In environmental movements, the "feet on the ground" are often scientists and people in various activist groups, devising, advocating and organizing needed change while ordinary citizens look on via news and media. However, environmental leaders are increasingly asking the critical question: How can ordinary citizens play a more powerful role in addressing planetary health, including the interconnected ecological emergency and climate crisis?

This presentation argues that when given a balance of opportunity, education and hope, small groups of ordinary citizens can, and will, self-organize to preserve and restore ecosystems and biodiversity on our planet. This will be demonstrated through stories and transferable best practices from Vancouver Canada's Getting Into Action program by Drawdown BC, which has resulted in collective action, scaled-up solutions, and citizen-to-citizen education across local communities.

The five-session Getting Into Action program guides participants from feeling hopeless and helpless about the climate crisis to creating a plan for self-directed action, typically far beyond the familiar household "green" practices. Participants are introduced to six known sources of emissions, the ocean and land sinks that absorb emissions and the intersection of social and environmental justice. Solutions summarized in the Drawdown Review provide the science and research supporting existing successful efforts to address the climate emergency. The solutions work together to reverse global warming, at the same time achieving many co-benefits which address ecological collapse and loss of biodiversity. Participants select actions of interest, investigate replication of these, explore collaborations with each other, and determine mechanisms for scaling their actions to municipal and federal levels. The facilitators, session videos and resources and group members provide support and inspiration.

The fundamentals leading to this program's ongoing success will be outlined alongside examples focused on participants' environmental actions and outcomes in ecosystem areas. Interactive discussion with the Forum participants will encourage this model for citizen engagement to be duplicated in other programs and locations.

Cultural anthropologist Margaret Mead said it well: "Never underestimate the power of a small group of thoughtful committed citizens to change the world. In fact, it is the only thing that ever has."

List of speakers (confirmed)

- Eleanor Gill
- Aileen Stalker
- Michelle Sheardown

A9b Challenges and opportunities for using the IPBES Nature Futures Framework for scenarios and modelling to identify transformative pathways for biodiversity and people

(open session)

Convener
HyeJin Kim, German Centre for Integrative Biodiversity Research (iDiv), Martin Luther University Halle-Wittenburg, Germany, hyejin.kim@idiv.de

Co-Conveners
Sylvia Karlsson-Vinkhuyzen, Public Administration and Policy Group, Wageningen University, Netherlands
Carolyn Lundquist, National Institute of Water and Atmospheric Research (NIWA), University of Auckland, New Zealand

This session presents the new biodiversity-centric and value-reflected multi-scale scenarios and modelling framework - Nature Futures Framework (NFF) - currently under development by IPBES. The NFF is a heuristic tool to co-develop positive future visions and to co-identify pathways to sustainable futures by engaging diverse stakeholders. The NFF enables making visible diverse values on nature and integrating multiple systems of knowledge in informing individual and societal decisions to enable transformative change.

This session will focus on the use of the NFF in developing narratives and in modelling them to illustrate it can inform IPBES assessments and multiscale policy frameworks. The session will have presentations by members of the IPBES scenarios and modelling task force and authors of application studies it has catalyzed in broader communities, followed by a panel discussion with leading researchers and practitioners in scenarios, modelling and indicators on the potential of Nature Futures in informing conservation decisions and amplifying transformative change. The overall aim of this session is to inform a wide research and practitioner community on the latest development of Nature Futures Framework (NFF) and to exchange feedback.

Part I. Using the Nature Futures Framework to develop narratives

1. Developing illustrative narratives for Nature Futures - Laura Pereira
2. Pathway analyses for Nature Futures scenarios - Ana Paula Aguiar
3. Relevant NFF application studies

Part II. Modelling Nature Futures and indicators for assessment and policy support

1. Modelling Nature Futures - HyeJin Kim, Henrique Pereira
2. Indicators for Nature Futures - Sylvia Karlsson-Vinkhuyzen, Lilibeth Acosta
3. Relevant NFF application studies

Part III. Panel discussion

Karen O'Brien, Ninan Karachepone, Brian O'Neill, Luthando Dziba, Unai Pascual, Lynn Shannon, Yunne-Jai Shin, Marcel Kok, Jillian Campbell (potential invitees - to be confirmed)

A9c Taking action to secure a future for the world's threatened trees

(open session)

Convener
Kirsty Shaw, Botanic Gardens Conservation International, Kenya, kirsty.shaw@bgci.org

Co-Conveners
Paul Smith, Botanic Gardens Conservation International, UK
Malin Rivers, IUCN/SSC Global Tree Specialist Group, UK
Kate Hardwick, Royal Botanic Gardens Kew, UK
Godfrey Ruyonga, Tooro Botanical Gardens, Uganda

The State of the World's Trees report was launched 1 September 2021 and highlighted that at least 30% of the world's trees are threatened with extinction. This equals over 17,500 tree species, more than double the number of threatened mammals, birds, reptiles, and amphibians. But there is hope. There are many success stories of bringing species back from the brink of extinction, and there are excellent examples of incorporating threatened trees into tree planting and restoration programs.

Tree planting targets and restoration pledges represent a huge opportunity for biodiversity conservation, carbon capture and livelihood benefits. However, often very little attention is paid to species selection. Largescale planting of monocultures, including planting of invasive species, does not bring biodiversity benefits and is sometimes degrading or displacing native biodiversity. The botanical community has taken a series of measures to draw attention to the need for better tree planting, particularly paying better attention to species selection and incorporation of threatened species for biodiversity conservation.

This session will bring together experts on a range of topics to secure the future of the world's threatened trees. The leaders of the State of World's Tree report (launched Sept 2021) will give updated information on the assessments of the extinction risk of all the world's trees species. There will also be representation from the Global Trees Campaign partnership outlining success stories of bringing species back from the brink of extinction. In addition, authors of the "Ten Golden Rules for Reforestation to optimize carbon sequestration, biodiversity recovery and livelihood benefits" (Di Sacco, et al. 2021) and the Kew Declaration on Reforestation for Biodiversity, Carbon Capture and Livelihoods, that followed will highlight the imperative need for tools to measure and improve the biodiversity outcomes of restoration projects.

The session will track progress that these tools are making towards improving biodiversity outcomes of largescale tree planting and restoration initiatives and will reach out to the World Biodiversity Forum for suggestions on how to further mainstream best practice into current tree planting and restoration initiatives.

List of speakers (confirmed)

- Paul Smith, Secretary General, Botanic Gardens Conservation International (BGCI), UK
- Kirsty Shaw, Head of Ecological Restoration and Tree Conservation, BGCI, Kenya
- Malin Rivers, Head of Conservation Prioritisation, BGCI and IUCN/SSC Global Tree Specialist Group Red List Coordinator, UK
- Kate Hardwick, Conservation Partnerships Coordinator, Royal Botanic Gardens, Kew, UK
- Godfrey Ruyonga, Director, Tooro Botanical Gardens, Uganda

Additional speakers will be identified as needed, including additional members of the BGCI network that are leading biodiverse restoration projects and members of the IUCN/SSC Global Tree Specialist Group.

A9d Site-specific actions with universal application

(open session)

Convener
Satya Prakash Mehra, Advisor, Rajputana Society of Natural History, Rajasthan, India, drspmehra@yahoo.com

Co-Conveners
Swati Samvatsar, Director, JalaSRI, Maharashtra, India
Jayanta Choudhary, NIRDPR-NERC, MoRD, GoI, Assam, India
M. K. Slariya, Govt. College, Chamba, Himachal Pradesh, India

The Pandemic COVID-19 is a result of anthropogenic actions affecting the natural setup. The wildlife is a natural reservoir of several infection-causing micro-organisms. Zoonotic diseases are results of the infections through wildlife or animals. In Nature, the transmission of infectious diseases from wildlife to humans is a complex process that needs several intermediate hosts along with several stages of transformation of the causative pathogens, therefore, wildlife it is the fact that the human interferences caused the skip of the transformative phases of causative organism for directly available for infections in humans during the COVID 19. The present crises had given numerous evidences of high impact in the localities with the artificial environment or urban habitations whereas impact was low in the areas which retained the natural environment. This session will review such evidence and highlights the importance of the eco-traditions followed by the indigenous and customary laws.

The indigenous knowledge like Indian perspectives for nature conservation date back to the Vedic Age. The concept of 'Aranya Sanskriti' (forest culture) deeply embedded in the rituals and customs of the Indians describes the symbiotic relationship of nature and humans on the principle 'Prakriti Purush' (nature and man). Using these socio-ecological bonding systems, site-specific conservation actions were executed. It was felt that most of the policies overlook indigenous customs and traditional values and adopt foreign approaches, resulting in the challenges.

Using the cultural ethos, the session proposal attempts to recommend the globally applicable site-specific Socio-Ecological models based on the presenters. The models should represent the cultural and traditional linkages of community with components of nature which could be used for the income generation and the livelihood of the local people to develop Enviropreneurship on the principle, "Conservation Practices for Sustainable Livelihood".

It is the need of the time to explore the relevance of the age-old eco-ethical practices in the modern perspectives to achieve the global targets under UN SDGs especially livelihood, conservation, DRR. Finally, to check the pandemic, retain the reservoir of the pathogens that is biodiversity or wildlife in their natural characteristics.

A9e African bat conservation research - developing an evidence base for the conservation of bats in Africa

(open session)

Convener
Emma Stone, University of the West of England, United Kingdom, emma4.stone@uwe.ac.uk

Co-Conveners
Matthew Town, Cardiff University, United Kingdom
Paul Lintott, University of the West of England, United Kingdom

The aim of the session is to promote an exchange of ideas between bat researchers, ecologists and conservationists, in Africa but also economists and social scientists, to highlight the importance of bats in ecosystems, to reduce human-wildlife conflicts and to develop, evaluate and strengthen measures for the conservation of bats in Africa.

List of speakers (partly confirmed)

- Emma Stone
- Matthew Town
- Dina Deckman
- Kate MacEwan
- Jon Flanders
- Paul Webala
- Iroro Tanshi
- Kofi Amponsah-Mensah
- Kate Richardson
- Temidayo Adeyanju

A9f Bridging technical and knowledge gaps in the public sector: a strategy for the south

(open session)

Convener
Guy Weress, Polylateral Association, Switzerland, gw@polylat.org

Co-Convener
Renata Avila, Polylateral Association, Switzerland

Public sector actors, especially in the Global South, are currently profoundly affected by austerity, shortages, disinformation, and multiple other post- and mid-pandemic difficulties, and are struggling to understand the new, cutting-edge ecological and biodiversity problems, and plan and implement appropriate interventions to contribute meaningfully to solutions.

We will run a process that provides global and local leaders with unmediated access to leading global experts for immediate, accessible, on-demand, ask-me-anything Q&A consultations, in real-time. We will directly connect key decision-makers in desperate situations, possibly for the first time, with the specific knowledge and actions they need to apply to urgent public decision-making processes.

We believe this kind of Living Encyclopedia of experts can help to accelerate the changes required to save ecosystems by connecting the best, specialized minds on the most critical topics with those who need better guidance.

List of speakers (confirmed)

- Burcu Killic, Public Citizen, USA
- Andrea Ixchiu, Futuros Indígenas, Guatemala
- Ed Maklouf, Network of Environmental and Social Thinkers, France
- Julian Aguon, Blue Ocean Law, Micronesia

A9g Recreating nature in the age of the Anthropocene: designing landscapes and regional corridors to support wild pollinators

(open session)

Convener
Evan Abramson, Landscape Interactions United States, evan@landscapeinteractions.com

Co-Convener
Robert Gegear, UMass-Dartmouth, United States

Wild pollination systems are being degraded at an alarming rate worldwide, owing primarily to the conversion of natural habitat through human development. This has raised major concerns over an impending ecological catastrophe due to the critical role that pollinators play in terrestrial ecosystems. Yet most efforts to restore pollination systems to date have increased the numbers of a few common bee and butterfly species, rather than on the range of wild pollinators needed for ecosystem health and resiliency. This is due primarily to a lack of knowledge regarding the critical role that plant selection plays in wildlife diversity.

The session “Recreating Nature in the Age of the Anthropocene: Designing Landscapes and Regional Corridors to Support Wild Pollinators” will focus on a series of case studies from across New England wherein private landowners, conservation organizations, farmers, schools and land managers have increased the functional diversity of habitat on their properties through site-specific design and planning interventions which increase the presence of threatened pollinator species. This not only benefits local biodiversity and the productivity of local food systems, but also the ecological health and climate change resilience of the region. This work serves as a model for stakeholder participation as well as habitat management and restoration on lands and in communities across the globe.

List of speakers

- Evan Abramson
- Robert Gegear

A9h Gearing up for a sustainable biodiversity in a post pandemic era

(by invitation only)

Convener
Md Afjal Ahmad, Department of Plant Physiology, Institute of Agricultural Sciences, Banaras Hindu University BHU, Varanasi, India, afjalahmad@bhu.ac.in

Co-convener
Pravin Prakash, Department of Plant Physiology, Institute of Agricultural Sciences, Banaras Hindu University BHU, Varanasi, India

The world is going through a tough biological arithmetic where a pandemic has shaken the very foundation of human existence. Like other sectors of development, biodiversity conservation was never a daunting task than it is now. Mounted with a grave challenge to protect our shrinking biodiversity pockets, this session will bring about an in-depth discussion by various renowned speakers as to how to orient our scientific programs, policy issues and community mobilization to ensure a globally protected biodiversity regime for a more sustainable future under the SDGs.

A9j Inspiration for action for world biodiversity

(by invitation only)

Convener
Narcisse Feukam Todem, Youth and children for development association, Cameroon, nar6todem@yahoo.fr

Co-Conveners
Nkam Felix, youth activities coordinator, Cameroon
Kamche Tsohwouo Kevine Prisca, community manager, Cameroon
Mahamat Amir Abdel-Razak, secretary, Tchad

Our main topic is "Peace through trees". We firmly believe that we can use peace by planting trees to resolve conflicts in the world, especially in the poorest region.

In our session we will talk about how armies, ordinary citizens, and even children become authors of crimes and violence and their impacts are highly and negatively significant on the populations survival rate. Biodiversity is essential to our wellbeing and to our economy. We depend on nature for food, water, air, soil fertility, and climate regulation. The concept of trees for peace translates that peace on earth depends on our ability to improve our environment.

General objective: The “peace through trees” project contributes to establish a culture of peace on earth by the preservation of the ecosystem.

Specific objectives:

- Raising awareness of the reforestation of forest trees
- Preserving the ecosystem in general
- Promoting the best exploitation of the ecosystem

The concept of peace through trees allows us to preserve the ecosystem through the following plan. In a first part entitled “conceptual and theoretical framework”, we will present in turn:

- The conceptual framework which includes analysis and theoretical basis
- The theoretical approach that makes it possible to revise the texts and conventions on ecosystem protection

In a second part entitled “operating framework”, we mention:

- The methodology to the practice of ecosystem preservation.
- The critical approach will allow us to present our results obtained and interpret them to identify shortcomings and where limitations have been identified, recommendations made.

List of speakers (confirmed)

- Narcisse Feukam Todem
- Abdel-razak Mahamat Amir
- Kevine Kamche
- Felix Nkam
- Berenice Kamdoum

A9k Habitat loss and management Africa

(open session)

Convener
Marvious Kiwanuka, Elite Researchers Empowering Community, Kyambogo University, Uganda, marviouskiwanuka@gmail.com

Co-Convener
Nalwoga Catherine, Elite Researchers Empowering Community, Uganda

The session will investigate, describe and explain the root cause, problems, challenges and issue s of habitat loss and their relationship with biodiversity loss and management. This will generate possible action plans based on the research. To come up with achievable solutions to maintain great biodiversity in Africa. This involve senior researchers, lecturers and community members who have experience and love for biodiversity management through habitat growth for different ecosystem s. This will an open entry session for individuals from every place of the world.

List of speakers (partly confirmed)

- Ssanyu Grace Asiyo
- Mbeiza Mutekanga Norah
- Nyanzi James
- Rita Nakayinga

A9l Regional knowledge hubs: bridging the needs

(by invitation only)

Convener
Balakrishna Pisupati, ACP MEAs 3 Programme, Law Division, United Nations Environment Programme UNEP, India, balakrishna.pisupati@un.org

Co-Convener
tbd

The ACP MEAs 3 program aims to build capacities of 79 countries in Africa, Caribbean and the Pacific to strengthen environmental governance. Through this program, countries from the ACP regions are being brought together to establish regional knowledge and capacity building hubs to achieve the post 2020 global biodiversity framework and related implementation plans.

With support from OACPS Secretariat, European Union, African Union Commission, SPREP and CARICOM Secretariat, this event will highlight the needs and possible responses from regional knowledge hubs that supports South-South Cooperation, technology transfer and capacity building through specific and targeted interventions.

The proposed session will outline the activities planned and expected results in support of the CBD's priorities as well as the key outcomes from UNEP@50 process.

A9m Communicating biodiversity to engage and inspire people to act

(open session)

Convener
Fanny Petibon, University of Zurich, Switzerland, fanny.petibon@geo.uzh.ch

Co-Conveners
Rémi Willemin, University of Zurich, Switzerland
Jonas Schneiter, Nous Production, Switzerland
Sandrine Pasche, Nous Production, Switzerland
Nadia Kaelin, Nous Production, Switzerland

Objective: The session will bring together researchers, journalists, science communicators and representatives to discuss how to best inform on biodiversity knowledge and engage the largest audience. Science communication projects will be exhibited, providing an overview of how researchers can communicate and inform on their results outside of the scientific circles.

Abstract: Threats to biodiversity cannot be resolved by science alone but require a social, economic, and political engagement. The communication of biodiversity knowledge thus plays an important role since it is a prerequisite for evidence-based decision making. It furthermore supports public acceptance and active contribution that are necessary for the successful implementation of biodiversity protection measures. This session will discuss how to best communicate biodiversity knowledge to engage the broadest and largest public and evoke the necessary responsibilities and stewardship to inspire action.

We will discuss how biodiversity is represented outside of scientific circles, and more specifically in the media. We are interested in understanding the perception of a non-specialist public towards biodiversity and its communication. We will explore what are the communication tools and strategies to best disseminate biodiversity knowledge to a non-specialist public.

We seek for researchers, journalists, science communicators, artists, representatives, practitioners, and social actors to share their research, projects, and experience in communicating biodiversity. The session will enable a discussion on how everyone's contribution and the collaboration from all can (i) enable the public to gain valid knowledge and form an attitude towards biodiversity protection, and (ii) inform and legitimate actions that contribute to biodiversity protection.

List of speakers (partly confirmed)

- Schäfer, UZH
- Brosch, UNIGE
- Strasser, UNIGE
- Jonas Schneiter, Nous
- James Fahn, Earth Journalism
- Julien Perrot, Salamandre
- Rolf Wespe, BAFU

A10a Forest nature conservation within different political systems – comparison of cases in China and Germany

(open session)

Convener
Jinlong Liu, School of Agricultural Economics and Rural Development, Renmin University of China, China, liujinlong@ruc.edu.cn

Co-Conveners
Ba Feng, College of International Development and Global Agriculture, China Agricultural University, China
Wang Weiye, School of Agricultural Economics and Rural Development, Renmin University of China, China
Zhao Jiacheng, University of Göttingen and Renmin University of China, China

Forest nature conservation is an important issue in China as well as in Germany. The multiple use conflicts in the forest between conservation of biodiversity, fighting climate change damages and harvesting of timber and providing recreation are similar, but the political options might be different.

In contrast to a comparison on a macro level of the two political systems in China and Germany. In this session, we will focus our comparison on meso level of specific cases. We chose cases of the recent period from 2015 to 2021. The topics covers forest nature conservation like protected areas in the forest including national parks or integrated biodiversity protection strategies. The focus on political actors differs from local people, social movements, organized interest groups, political parties, ministries, state agencies, to supranational organizations like the European Union.

List of speakers (confirmed)

- Liu Jinlong, Renmin University of China
- Ba Feng, Lecturer, China Agricultural University
- Wang Weiye, Renmin University of China
- Zhao Jiacheng, University of Göttingen and Renmin University of China
- Christiane Hubo, Georg-August University of Göttingen
- Max Krott, Georg-August University of Göttingen

A11a Arctic biodiversity under global change – from documenting changes to identifying pathways toward sustainable development

(open session)

Convener
Gabriela Schaepman-Strub, University of Zurich, Switzerland, gabriela.schaepman@ieu.uzh.ch

Co-Conveners
Bruce Forbes, University of Lapland, Rovaniemi, Finland
Vitalii Zemlianskii University of Zurich, Switzerland

This session aims to explore latest findings on how Arctic biodiversity is and will be impacted by global change drivers. We especially encourage contributions that investigate spatial-temporal variability and trends, across levels of biological organization, impacts on social-ecological systems, and results from diverse knowledge systems. We further encourage contributions that discuss current developments and visions for the biodiversity in the greening Arctic, including perspectives by scientists, stake- and right holders of the Arctic landscapes.

A11b Biodiversity changes in social-ecological systems – use of data and knowledge to support societal transformation towards sustainability

(open session)

Convener
Kirsten Thonicke, Potsdam Institute for Climate Impact Research (PIK), Germany,
Kirsten.Thonicke@pik-potsdam.de

Co-Conveners
Jörg Overmann, DSMZ Braunschweig, Germany
Wolfgang Wende, IOER Dresden, Germany
Bettina Matzdorf, ZALF Müncheberg, Germany
Nike Sommerwerk, MfN Berlin, Germany

A growing body of knowledge and interdisciplinary approaches exists to describe the causal relationships between biodiversity changes and affected ecosystem functions and services, how those relationships might change under accelerating climate and continuous land-use change, but also how nature's contribution to people is under pressure in a growing bio-economy and due to nature-based solutions. To ensure that ecosystem functioning as well as social-ecological resilience are maintained and biodiversity loss is halted or even reversed, society needs to transform on how it uses land, water and other natural resources. In this context, a crucial issue which biodiversity and social-ecological science need to address is identifying inflection points in governance structures as well as deficiencies and inconsistencies in urban and rural planning. Of additional importance are topics such as how (i) is scientific data are used to advance our research agenda, (ii) knowledge transfer to society, stakeholders and decision-makers is implemented and (iii) scientists ensure that the most solid science is available in ready-to-go formats to be used in governance discourses. This session aims at addressing these challenges by calling for contributions on

- Impact of nature-based solutions on biodiversity and ecosystem functioning which are reducing social-ecological resilience
- Definition of inflection points for knowledge transfer in societal transformations
- Analyses of environmental laws and urban, rural and landscape planning instruments to ensure sustainable and equitable use of natural resources and reversing biodiversity loss

The interdisciplinary session will bring together scientific expertise in the field of biodiversity and ecosystem function research, nature-based solutions, social-ecological resilience, governance, and environmental and urban planning.

A11c Global mountain biodiversity

(open session)

Convener
Davnah Urbach, Global Mountain Biodiversity Assessment, Switzerland, davnah.payne@ips.unibe.ch

Co-Conveners
Markus Fischer, University of Bern & Global Mountain Biodiversity Assessment, Switzerland
Mark Snethlage, Global Mountain Biodiversity Assessment, Switzerland

Increasing evidence that mountain biodiversity is important for human wellbeing globally and recent calls to "elevate mountains in the post-2020 agenda of the Convention on Biological Diversity" underline the relevance of mountain biodiversity for securing a sustainable future for all.

However, despite its relevance, no assessment exists yet that comprehensively reports on the status of and trends in mountain biodiversity, neither globally nor at a more regional scale. Reasons are many and include the very high number of mountain ranges worldwide, difficulties in collecting mountain biodiversity data in many contexts, the absence of standardized geospatial tools for data geolocation and reproducible comparative analyses, and the various obstacles associated with data sharing and collation for global analyses.

The recent release of a highly resolved inventory of the world's mountains, the increasing availability through Earth Observation of high resolution (global) data layers and species data, and an increasing community of (citizen) scientists committed to mountain biodiversity science and conservation are game changers. A global assessment of the status of and trends in mountain biodiversity, of its importance for nature's contribution to people and human wellbeing, and of its drivers is becoming increasingly possible.

This session aims at convening the global mountain research community at large to i) share successes and challenges associated with the assessment and analysis of mountain biodiversity and ecosystem data at global scale (including geographic and thematic data and knowledge gaps) and ii) explore opportunities for collaborations and for addressing the knowledge needs of global platforms and conventions. The session will be followed by a workshop aimed at gathering mountain biodiversity scientists interested in following up on specific opportunities featured or identified during the main session, in identifying priorities, and in co-developing targeted products.

List of speakers (partly confirmed)

- Sonya Geange
- James Thornton
- Amina Ly
- Jonas Geschke
- Graham Prescott
- Mark Snethlage
- Davnah Urbach
- Dean Jacobsen
- Michael Steinwandter
- Paul Elsen
- Jessica Bitsch

A11d Placing biodiversity research within a social-ecological context

(open session)

Convener
Maria J. Santos, UZH, Switzerland, maria.j.santos@geo.uzh.ch

Co-Convener
tbd

Current day understanding of biodiversity acknowledges that the coupling of social and ecological processes is fundamental to our understanding of biodiversity and its resilience. While many calls have been put forward to place and contextualize biodiversity research within a coupled social-ecological, human-nature system, we are still in the infancy of our understanding on how to do so. We have a growing understanding of how common pool resources might be manged, and one might argue that biodiversity is such a common pool resource, but it might be a different type of relational entity with social processes. In this session we invite contributions that provide theory, data and operationalization of the study of biodiversity within the context of social-ecological systems. We also welcome contributions that elaborate on whether biodiversity can be perceived as a common pool resource, or how to study the interactions between social and ecological processes.

A11e Convivial Constitutionality: historical-institutional perspectives on human-predator interrelations and conservation policies

(open session)

Convener
Tobias Haller, Social Anthropology, University of Bern, Switzerland, tobias.haller@anthro.unibe.ch

Co-Conveners
Ariane Zangger, Social Anthropology, University of Bern, Switzerland
Samuel Weissman, Social Anthropology, University of Bern, Switzerland
Lisa Alvarado Grefa-Lüscher, Social Anthropology, University of Bern, Switzerland

Understanding biodiversity and ecosystems management from a conservationist perspective, balances on a complex scientific foundation informed by a myriad of disciplines that are under pressure of finding solutions quickly. This urgency to halt or even reverse biodiversity loss has to some degree also led to decisions made in a rush. This increases the expectancy on conservation institutions, including community-based organizations to adapt to new policies and revenue generating mechanisms that might not work in favor of local people or even local flora and fauna in the long term. Such new policies are also ignorant of the fact that local people have developed and maintained cultural landscape ecosystems and have in many ways interacted with the nonhuman world for many centuries.

Our research project, *convivial constitutionality* funded by the Swiss National Science Foundation (SNF), aims at understanding the historical and present-day circumstances that have shaped understanding of landscapes and ecosystems and how people interact with wildlife. Not only are there clear discrepancies when it comes to understanding and acting in this interrelated landscape, but there is a fundamental misunderstanding between the various actors' roles, ontologies and worldviews, and engagement procedures when it comes to the 'best-practice' idea of management.

One popular idea that has recently gained traction in the debate surrounds the presence of apex predators as indicators of functioning ecosystems and has sparked renewed interest in protecting these systems increasingly by cracking down on policies to protect these keystone species. Our three PhD research cases include looking especially at such examples where the 'living with' apex predators is contested in local contexts where agro-pastoralists are confronted with issues directly related to these animals. One of our main inquiries therefore tries to determine, how local people confronted with predation or damages through wildlife deal with this or how they have dealt with this in the past.

List of Speakers (partly confirmed)

- Lisa Alvarado Grefa-Lüscher, University of Bern
- Samuel Weissman, University of Bern
- Ariane Zangger, University of Bern
- Niklaus Heinzer, University of Zurich

A12a Intercropping – exploitation of biodiversity benefits in arable fields

(open session)

Convener
Christian Schöb, ETH Zurich, Switzerland, christian.schoeb@usys.ethz.ch

Co-Convener
Alison J. Karley, The James Hutton Institute, UK

Staple food production is heavily reliant on external inputs to keep the generally species-poor systems operational. Most of the stable crops such as rice, wheat or maize is produced in monocultures covering large areas and hosting a very low biodiversity. Diversification of such arable crop systems provides great opportunities to make food production more sustainable and resilient, but also faces several challenges along the whole value chain. In this session, we would like to present opportunities and challenges of arable food production in intercropping systems. We will summarize current knowledge about the benefits of intercropping such as the exploitation of beneficial interactions among plants, the expansion of the productive field season, or soil protection through constant plant cover. On the other hand, we will also draw attention to the current challenges related to intercropping, from the lack of farmers' knowledge to manage intercropped fields over limited adaptive machinery to the development of end products from intercropped systems that cover the market demands. In this interdisciplinary session we would like to give a voice to scientists and stakeholders from different disciplines and regions to obtain feedback on research findings and practical applications, and guide future developments in intercropping research.

List of speakers (to be confirmed)

- Ivette Perfecto, University of Michigan, USA
- Marta Vasconcelos, University of Porto, Portugal
- Austin Phiri, Ministry of Agriculture, Irrigation and Water Development, Malawi
- Johan Six, ETH Zurich, Switzerland
- Lana Shaw, Southeast Research Farm, Canada
- Jason Mauck, Constant Canopy, USA
- Samuel Wüst, Agroscope, Switzerland
- Annelies Uebersax, Agrofutura, Switzerland
- Sebastian Kussmann, GZPK, Switzerland