



# Biodiversity and Society

iDiv Annual  
Conference 2019  
Abstract book

Topic session 4  
Thursday, 29 August  
16.30–18.15  
Conference room 1CD

**Josef Settele**, *Session keynote*

The Global Assessment of IPBES and its main outcomes

**Guy Pe'er**, *Standard talk*

Toward sustainable agriculture: A vision and roadmap for streamlining biodiversity and ecosystem services in agricultural policy

**Julia Bronnmann**, *Standard talk*

Fishing to Market: Testing the level of integration of a local fish market in northeastern Namibia with the global seafood trade

**Andrea Pacheco**, *Standard talk*

Effect of land tenure form on agriculture-forest dynamics in Brazil

**Julia Siebert**, *Standard talk*

Jointly creating knowledge – Bringing the transformative potential of Citizen Science into Leipzig's classrooms

**Andrea Perino**, *Speed talk*

Rewilding complex ecosystems

**Martin Quaas**, *Speed talk*

Harvesting efficiency and welfare in restricted open-access fisheries

**Andressa Vianna Mansur**, *Speed talk*

Scenarios of urban growth and implications for biodiversity preservation

**Felipe Benra**, *Speed talk*

Ecosystem services tradeoffs arising from non-native tree plantation expansion.

**Jonna Malin Heuschele**, *Poster*

Investigating supply and demand differences of cultural ecosystem services in the Bavarian Forest National Park: An application of the international ECOPOTENTIAL participatory mapping and survey framework to Germany

**Julia Rouet-Leduc, Poster**

Grazelife project: grazing for wildfire prevention, ecosystem service provision, nature conservation and landscape management

**Joel Methorst, Poster**

Positive and Negative Contributions of Wildlife to Human Well-Being

**Rüdiger Voss, Poster**

Are young women the more precautionary managers? An economic field experiment on the gender-gap in risk-taking

**Lars Langer, Poster**

The effects of biodiversity loss on our minds

**Kira Lancker, Poster**

The consumer's role for biodiversity: species substitution

**School Students Leibniz Gymnasium, *Demonstration***

CoolSpots! School students assess biodiversity and ecosystem services in their favorite nature spots in Leipzig



## **iDiv Annual Conference 2019**

### **Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15**

Session keynote

#### **Settele, Josef**

Helmholtz Centre for Environmental Research - UFZ  
Martin-Luther-University Halle-Wittenberg

#### **The Global Assessment of IPBES and its main outcomes**

In May 2019 the SPM (Summary for Policymakers) of the Global Assessment of IPBES was approved in the 7th plenary of the platform. For the first time, the relative importance of direct drivers of biodiversity loss (sea/land use change, direct exploitation, climate change, pollution and invasive alien species) were determined. The report stresses the urgent need to address these but also lists the root causes (indirect drivers) of nature deterioration: Governance, Economic systems, Equity, Cross-sectorial planning, Incentives, and the Social narrative and values. A core result of the report is that business as usual will not be enough to ensure meeting global and societal goals but that urgent and concerted efforts are needed to address especially the root causes. Further details will be elaborated within the keynote.

#### **Co-Authors:**

Settele, Josef

## iDiv Annual Conference 2019

### Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Standard talk

#### **Pe'er, Guy**

Leipzig University

Helmholtz-Centre for Environmental Research - UFZ

#### **Toward sustainable agriculture: A vision and roadmap for streamlining biodiversity and ecosystem services in agricultural policy**

Agriculture is one of the key drivers of biodiversity loss and ecosystem service degradation. Yet agricultural intensification also affects our society and economy in various ways, with depopulation and loss of rural vitality being some of the sustainability challenges. Agriculture touches on thirteen out of 17 SDGs, clearly indicating on an urgent need to find solutions that address agricultural areas as a Socio-Ecological System.

The EU's Common Agricultural Policy offers an excellent case study for sustainability and why we are failing to achieve it. De facto, only two SDGs are supported by the CAP, while at least seven others could be supported. Knowledge and data are missing, but more so, political will is a barrier. I present a vision and a roadmap on how we can address this challenge through four key components: a) a strong conceptual baseline using international targets and S.M.A.R.T indicators as starting points; b) a strong analytical toolkit to support evidence-based decision-making; c) a robust monitoring network to establish clear baselines and support a result-based implementation; and finally, d) action-oriented research where scientists proactively engage in the science-policy and science-society debate. Yes we can, I reckon. Can't we?

#### **Co-Authors:**

Pe'er, Guy



## **iDiv Annual Conference 2019**

### **Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15**

Standard talk

**Bronnmann, Julia**

Leipzig University

#### **Fishing to Market: Testing the level of integration of a local fish market in northeastern Namibia with the global seafood trade**

Within the last decades, globalization has changed the international seafood trade, allowing low-income countries to access markets in high-income countries and vice versa. Nevertheless, the effects of globalization are controversial and in particular the impacts on small-scale fishers and local fish traders are unclear. This paper examines economic and ecological effects of globalization on a local fish market in Katima Mulilo, Namibia along the Zambezi River and near the border with Zambia. Using unique market data from January 2008 to December 2015, we test three hypotheses. First, we tested if the local market is integrated with global markets and local prices are increasing and associated with positive terms of trade. Then, we test if size-based prices increase over time in a form of fishing down the food web. Using cointegration methods and hedonic models, results show that the Katima market is linked to the world market and local fish traders benefit from increasing world trade of seafood products.

#### **Co-Authors:**

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## Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Standard talk

**Pacheco, Andrea**

Leipzig University

### **Effect of land tenure form on agriculture-forest dynamics in Brazil**

Land tenure can have a direct influence on environmental change, thus being an important anthropogenic driver of habitat and biodiversity loss. Yet, current theory regarding this influence is ambiguous, and empirical evidence regarding this influence is geographically highly constrained. Most studies usually address diverse aspects of land tenure systems in a defined region within a particular country, but they rarely investigate or quantify effects of tenure form. As a first effort to untangle the environmental implications of land tenure systems, we use a quasi-experimental setup to test the effects of different tenure forms per se (private, public, protected, indigenous, and communal lands) on agriculture-forest dynamics at multiple scales, throughout 1992-2015. Utilizing spatially explicit, parcel-level land tenure data from South America and propensity-score matching, we are able to quantify the average effect of each tenure form. Our results show statistically significant effects of different tenure forms on agriculture-forest dynamics over large spatial extents, though not at all scales of analysis. These results represent a first step towards more robust empirical evidence regarding the size, direction, and generality of effects of land tenure systems on environmental change.

#### **Co-Authors:**

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## **iDiv Annual Conference 2019**

### **Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15**

Standard talk

#### **Siebert, Julia**

Leipzig University

#### **Jointly creating knowledge – Bringing the transformative potential of Citizen Science into Leipzig's classrooms**

Innovative ways of knowledge exchange are required to tackle global challenges like the biodiversity crisis. Environmental psychology suggests that individual pro-environmental behavior is highly contingent on the existence of a collective social identity that shapes individual changes in attitude and behavior. In this context, Citizen Science provides an untapped potential to integrate prospective citizens (i.e. school students) in research processes and foster the development of such a collective identity. While jointly engaging in biodiversity projects, the scientific topics become an integral element in the reality of people's lives, thereby increasing scientific literacy, empowerment, and the acceptance for conservation actions. Within a highly integrative project covering a wide range of disciplines and stakeholders – including teachers, school students, scientists, and local politicians – we tested how different learning environments with and without participatory elements affect student's pro-environmental attitude and behavior. We hypothesized that Citizen Science (1) increases student's interest in and understanding of biodiversity; (2) facilitates pro-environmental behavior and social norms; and (3) improves student's awareness of opportunities to actively participate in a democratic society. By exploring new avenues in education and participation guided by socio-psychological models, we want to enable the next generation of literate citizens/scientists to jointly combat biodiversity loss.

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### Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Speed talk

**Perino, Andrea**

Leipzig University

#### **Rewilding complex ecosystems**

The practice of rewilding has been both promoted and criticized in recent years. Benefits include flexibility to react to environmental change and the promotion of opportunities for society to reconnect with nature. Criticisms include the lack of a clear conceptualization of rewilding, insufficient knowledge about possible outcomes, and the perception that rewilding excludes people from landscapes. Here, we present a framework for rewilding that addresses these concerns. We suggest that rewilding efforts should target trophic complexity, natural disturbances, and dispersal as interacting processes that can improve ecosystem resilience and maintain biodiversity. We propose a structured approach to rewilding projects that includes assessment of the contributions of nature to people and the social-ecological constraints on restoration.

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## **iDiv Annual Conference 2019**

### **Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15**

Speed talk

**Quaas, Martin**

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#### **Harvesting efficiency and welfare in restricted open-access fisheries**

Small-scale and recreational fisheries often operate under conditions of restricted open access with a limited number of licensed fishers. Harvesting efficiency is limited both by the state of technology and by regulations of fishing gear and fishing practices, but under these constraints individual fishers can choose the amount of catch. We study how an increase in harvesting efficiency changes the different components of welfare – consumer surplus and producer surplus – in a restricted open access fishery in steady state, taking the feedback of harvesting on stock dynamics into account. We find that both components of welfare change in the same direction. If and only if initial efficiency is low enough that there is no maximum sustainable yield (MSY) overfishing in steady state, an improvement of harvesting efficiency increases welfare.

#### **Co-Authors:**

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## **iDiv Annual Conference 2019**

### **Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15**

Speed talk

**Mansur, Andressa Vianna**

Leipzig University

#### **Scenarios of urban growth and implications for biodiversity preservation**

Global projections show that urban population are expected to increase by an additional of 2.5 billion by 2050. This accelerated urban growth will directly result in impacts on natural habitats, with negative consequences for biodiversity, ecosystem services and human well-being. Although numerous studies have shown the several implications of this massive urban expansion on global biodiversity, we have a little understanding of how different future pathways of urban growth will impact natural ecosystems and cause biodiversity losses worldwide. Using different global-scale urban expansion models for 2050 based on different Shared Socioeconomic Pathways and different urban densities, our primary goal in this study is to estimate the impacts of future urban growth on natural habitats and biodiversity and discuss the implications of these different urban futures for biodiversity preservation. Reconciling urban development and biodiversity conservation strategies is fundamental for sustainable development.

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## Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Speed talk

### **Benra, Felipe**

Helmholtz Centre for Environmental Research-UFZ  
Friedrich Schiller University Jena

### **Ecosystem services tradeoffs arising from non-native tree plantation expansion.**

The expansion of non-native tree plantations (NNTP) may lead to tradeoffs with important local ecosystem services (ES) that need to be evaluated for a sound landscape planning. For a municipality in southern Chile, we assessed the effects of NNTP expansion and potential NNTP timber-ES tradeoffs through a spatial tradeoff typology based on ES supply variations. We evaluated changes in prioritized ES and NNTP timber supply based on a probabilistic projection of NNTP expansion at two administrative levels (municipality and farm sizes). Results show that NNTP expansion triggered an increase of 361% in NNTP timber supply at the expense of decreases in provision of selected ES, such as forage supply (16.3%), native timber supply (9.4%), water regulation (0.4%) and recreation opportunities (66.8%). Tradeoffs were restricted to small areas but were considerably high in terms of the magnitude of ES supply losses. Tradeoffs were highest in medium farms as compared to small and large properties. Tradeoffs arise from the interplay of several factors and they are site-specific and scale dependent. If NNTP continue to expand at the current rate, significant ES supply changes are inevitable. Results can inform landowners, landscape planners and governments to better anticipate and mitigate tradeoffs arising from afforestation.

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## Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Poster

### **Heuschele, Jonna Malin**

Helmholtz-Centre for Environmental Research - UFZ

University of Koblenz-Landau

### **Investigating supply and demand differences of cultural ecosystem services in the Bavarian Forest National Park: An application of the international ECOPOTENTIAL participatory mapping and survey framework to Germany**

Conflicts in the management of protected areas arise when its objectives are contradicting such as nature protection versus tourism. The integration of the concept of cultural ecosystem services to the context of nature conservation in protected areas offers a broad spectrum of applied areas. The significance of protected areas as regional attractions can play a crucial role for their acceptance by the local population. Therefore, it is important to investigate whether the supply and realized demand of ecosystem services overlaps to adapt management strategies, and whether there are differences in the demand of cultural services from local versus tourists. It is expected that locals use a more diverse range of ecosystem services whereas tourists use a smaller number of services, generally related to the main attractions suggested by the park. We conducted more than 200 questionnaires (ongoing survey) with both local and tourist visitors in the BFNP. We asked visitors to grade several cultural ecosystem services and to map their location including a 10 km buffer around the BFNP. Our results will provide key information regarding the determinants and constraints for the use of cultural ecosystem services and will contribute to the sustainable management of tourist flows in protected areas.

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## Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Poster

### **Rouet-Leduc, Julia**

Leipzig University

#### **Grazelife project: grazing for wildfire prevention, ecosystem service provision, nature conservation and landscape management**

Grazelife is a European project addressing the issue of land abandonment and exploring the impact of different types of grazing on ecosystem services, including wild and semi-wild grazing. It seeks to improve the implementation possibilities of different grazing systems to promote (cost)effective means to wildfire prevention, climate adaptation, and the provision of ecosystem services. This will be done based on interdisciplinary approach, combining field-based case studies, interviews with local stakeholders (both carried out in 11 European countries) and a systematic literature review.

Here, I will present early results from the literature review and from the first interviews conducted in the field. I will display the different types grazing's impact on ecosystem services and the potential trade-offs between the different services provisioned by grazing, focusing on climate change mitigation by soil carbon storage and the prevention of wildfire. I will also present early results from pilot interviews conducted in Galicia, Spain, where traditional herding of semi-wild ponies cohabitates with pastoral systems and cattle grazing. Finally, I will present future developments for the project and potential outcomes that may provide recommendation for the EU to adapt relevant policy (especially the Common Agricultural Policy) to promote the most beneficial grazing models for land-management.

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## Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Poster

### **Methorst, Joel**

Leipzig University

Leibniz Institute Senckenberg Museum of Natural History

### **Positive and Negative Contributions of Wildlife to Human Well-Being**

Wildlife has important effects on human well-being, ranging from beneficial contributions to life threatening interactions. Here, we reviewed publications of both, the positive and negative non-material contributions of wildlife to people (WCP) for different taxonomic groups and human well-being indicators (e.g. health, social well-being, spirituality) worldwide. Overall, the majority of studies reported negative WCP such as fear, injuries or superstitions. However, the number of publications on positive WCP such as joy, inspiration or good mental health recently increased, mainly in the Global North. Studies showed taxon-specific differences, with predominantly negative effects published for mammals and reptiles and predominantly positive effects for birds. Health was the most dominant aspect of well-being studied and affected by WCP. In comparison, WCP affecting social well-being, sense of place or personal identity were studied less. We investigated different pathways how wildlife affected well-being and found that direct interactions with wildlife were reported most frequently with mainly negative WCP. Visual and auditory perception of wildlife, especially birds, was less often studied but had the highest percentage of reported positive WCP. Future studies should jointly evaluate positive and negative WCP to obtain a comprehensive understanding of WCP's effects on well-being and better inform management for human-wildlife coexistence.

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## Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Poster

### **Voss, Rüdiger**

Leipzig University

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### **Are young women the more cautious managers? An economic field experiment on the gender-gap in risk-taking**

Marine resource management needs to account for risks, associated with e.g. changes in growth rates or recruitment strength. Personal risk-aversion usually is not explicitly accounted for in fisheries advice (e.g. when defining harvest control rules). However, it is implicitly accounted for, as it influences views and decisions of people involved in the management process. Here, we investigate individual risk-aversion of scientists, based on a simple online economic field experiment. The experiment encompassed two hidden treatments: a personal as well as a professional identity treatment. As expected, in the personal identity treatment, we find females to act, on average, more risk averse than males. Furthermore, for both genders, risk aversion increases with age. When the professional identity is salient, however, we find that the gender gap in risk-taking is getting smaller, and that the gap vanishes for older scientists. We identify the switching of identities, especially by females, as an explanation.

Our results also shed light on the claim that the (resource-) world would be a different world if women shaped the rules. This may depend on the prevailing prescribed behavior that may differ across different professional contexts, which calls for further research.

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## Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Poster

**Langer, Lars**

Leipzig University

### **The effects of biodiversity loss on our minds**

Humankind draws benefits from observing phenomena (mechanisms, structures, behaviour etc.) in a biodiverse nature incorporating such experiences into their thinking patterns and communication (allegories, tales, art etc.). A proxy for the extent of these benefits reflecting the awareness of people for the surrounding biodiversity is the utilization of biodiversity related terms. We hypothesise nature's contribution to communication (NCC) to have decreased over the last three centuries due to decreasing opportunities for real-world biodiversity experience in people's immediate environment as a consequence of land-use change and urbanization.

To test the hypothesis we analyse novels serving as preserved communication, taking metadata for authors and their works (literary periods, regions of publication etc.) into account. As a trial run the Project Gutenberg corpus was searched for occurrences of vernacular terms for taxonomic groups using Wikispecies as source. Treating each work as a region with evenly sized plots alpha, beta and gamma diversity as well as term richness were determined as a measure for the NCC in a diachronic analysis. Future plans within the project aim to significantly extend the metadata for authors and their works in order to conduct a more sophisticated and detailed analysis.

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## Topic Session 4: Biodiversity and Society, 29. Aug., 16:30 - 18:15

Poster

**Lancker, Kira**

Leipzig University

### **The consumer's role for biodiversity: species substitution**

In a multi-species environment, the inclusion of biological species interaction in bio-economic fisheries models is frequently undertaken. However, links that are introduced by economic actors, in particular consumers, are not yet well understood empirically. The theoretical literature shows that preferences for diversity can trigger a sequential collapse of fish stocks. It is however uncertain how diversity-loving consumers are, and how congruent demand interactions are with biological interactions. Seafood is not a homogenous commodity. We use monthly, species-specific catch and ex-vessel price time series from Senegal across 40 economically important species. In a first step, we use co-integration analysis to find groups of species that consumers find substitutable. Secondly, we use a quadratic almost ideal demand system (QUAIDS) to estimate substitution elasticities between these groups. We find a significant negative own price effect, which supports our hypothesis that local market conditions shape the price development. We proceed to compare links brought about by consumer substitution relationships with biological ecosystem links, and discuss to what extent the inclusion of consumer substitution can help explain ecosystem development. For example, we compare how in an upwelling environment, high recruitment years of small pelagic species can protect higher trophic level species via consumer substitution.

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## **iDiv Annual Conference 2019**

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Demonstration

**Siebert, Julia**

Leipzig University

#### **CoolSpots! School students assess biodiversity and ecosystem services in their favorite nature spots in Leipzig**

Awareness is rising that not only natural habitats, but also cities and urban areas represent important refuges for biodiversity. At the same time, people in cities may directly experience the benefits of nature's services in their everyday life. However, urban areas have to serve multiple needs simultaneously, like providing enough residential space or transport infrastructure, thus calling for compromises and careful weighing of interests among stakeholders. Therefore, it is important to understand (1) how people are perceiving and using green spaces in cities and which aspects they value most; and (2) which ecosystem services and facets of biodiversity are associated with these places. Within a citizen science project realized in cooperation with schools in Leipzig, school students identified their favorite nature spots (CoolSpots) and mapped ecosystem services using the digital MapNat application, complemented by direct assessments of biodiversity. Representatives of the school students will present the results of their project, hereby providing valuable insights into the use and perception of nature by adolescents – a highly relevant demographic group that constitutes the future citizens. As the project is linked to the recent initiative "Masterplan Grün" by the city of Leipzig, results will be incorporated in discussions about future city planning.

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