

Session: D2a-23

Title of session: Challenges in exploring the relationship between biodiversity and ecosystem services at different spatial scales

Session host / primary contact person

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Short description of the session:

Although recent syntheses have demonstrated increasing evidence about how biodiversity affects ecosystem functioning and the delivery of ecosystem services; there are still many uncertainties and this remains one of the most important unresolved questions in Ecology and ecosystem Service research. Recent syntheses have demonstrated that, among all biodiversity components, functional traits of dominant species and species seem to be the key components determining the ecosystem services delivery. However, scientific evidence varies depending on (i) the ecosystem services category (i.e., provisioning, regulating, and cultural), (ii) the ecosystem, or (iii) the spatial scale where the analysis is conducted. Moreover, the investigation of the interlinkages between biodiversity and the ecosystem services delivery through the consideration of the relationships between ecosystem services (i.e., trade-offs and synergies) is still in its infancy.

In this context, the current session aims to elucidate current research gaps regarding the existing relations between biodiversity and ecosystem services in terms of (i) biodiversity components (i.e., gen, species, functional traits, or ecosystems), (ii) ecosystem services, (iii) habitats, (iv) metrics and indicators, or (v) spatial scales; in order to learn from the different approaches for analyzing biodiversity and ecosystem services. On the basis of current research gaps, we would aim to identify the future challenges and the scientific agenda to tackle them in terms of (i) experiments and meta-analyses; (ii) synthesis of observations at different scales; and considering a (iii) social-ecological systems approach.

In this way, it would expect that the results of this session can help to accomplish the current challenge of quantifying the delivery of multiple ecosystem services under different land-use configurations and considering a multi-scale approach.

The conclusions of this session could also contribute to current global challenges of the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES).

Format

A morning session with 4 hours (2 morning slots of 2 hours)

10 oral presentations (2.5 hours) covering different biodiversity components, ecosystem services, and spatial scales and a general discussion (1 hour and 20 minutes).

10 minutes could be used for preparing the general discussion and for presenting key questions–challenges.

Planned Output

A working paper that synthesizes the main scientific challenges regarding the topic of the session is planned.

Speakers

ID	Name	Organisation	Title of presentation
76A	Sandra Lavorel	CNRS, France	Relationships between biodiversity and ecosystem services: from continental–scale patterns to mechanistic analyses at landscape–scale
65	Violeta Hevia	UAM, Spain	Existing evidence on the links between drivers of change, functional diversity and ecosystem services
287	Paula Harrison	University of Oxford	Linkages between biodiversity attributes and ecosystem services: A systematic review
358	Darlin Patricia Botto Barrios	Universidad del Magdalena	Insects participation in the supply of services and dis–services of the ecosystems in the Biosphere Reserve Ciénaga Gande de Santa Marta
360	Camille Dross	INRA	Investigating interlinkages between biodiversity and provisioning services in agroecosystems: indicators do matter
240	Sander Jacobs	INBO	Bundled ecosystem service supply – more isn’t always better

Presentation abstracts:

ID: 240

Type: Voluntary contribution

23. Challenges in exploring the relationship between biodiversity and ecosystem services at different spatial scales (OPEN)

Bundled ecosystem service supply – more isn't always better

Presenting author: Sander Jacobs

Other authors: Anik Schneiders, Lieven De Smet, Ilse Simoens , Wouter Van Reeth, Heidi Demolder, Helen Michels, Johan Peymen , Toon Spanhove, Maarten Stevens, Peter Van Gossum

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Disentangling trade-offs and synergies is key to optimize ES supply. The goals of this optimization are twofold: increase the net benefit flow and safeguard the long-term sustainable supply. Knowledge on interactions between potential ES supplies in the current spatial context produces information to tackle the first goal: opportunities for increased bundled supply in the landscape. Tackling the second goal however requires knowledge on interactions between ecosystem services, wellbeing and natural capital. The notion of ES USE forms the key to this analysis: combining ES-supply and ES-demand, it is the USE which determines the amount and distribution of benefits as well as the pressures on the natural system. Every service, in order to provide benefits, requires a human investment. For the Flanders ecosystem service assessment, the current usage was analyzed on a use-gradient from “quasi natural” (e.g. a walk in the forest) to “mostly technical” (e.g. a bacterial water purification plant). Different uses of ES produce diverse effects on the natural capital base sustaining the long-term supply. Our analysis shows that shifting ES-usage towards the natural side of the gradient results in less trade-offs and more potential co-benefits, as well as less negative impact on the natural capital base. This analysis provides a framework to explicitly address and demonstrate the opportunities of green infrastructure strategies for multifunctional and sustainable use of natural capital.