

### Title of the symposium:

Towards a 'traits' framework that is both ecologically and socio-culturally relevant: Functional traits beyond life history characteristics. Join a discussion on theory and application.

### Detail of organizer(s):

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#### Co-organizer

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### Symposium abstract

Biodiversity provides the principal basis for ecosystem services important for human health and well-being. Despite substantial scholarly progress, we do not adequately understand the relationship between different types and levels of biodiversity – ecosystem, functional, taxonomic or genetic – and the many aspects of public health and human well-being. We need a framework complete with a detailed and explicit language, shared meta-theories and

a transdisciplinary portfolio of methods to address and comprehensively account for the two-way relations between people and the rest of nature. Among the primary knowledge needs are (1) a more nuanced understanding of the multi-dimensional and rich contributions of biodiversity to human well-being, (2) better ways of assessing the ecological consequences of human preferences and respective behaviour, and, more broadly, (3) operational knowledge on the multiple system dimensions that can make these linkages resilient.

Multiple studies suggest that instead of traditional taxonomy based descriptions of biodiversity an approach focussing on the idea (assumption) that functional traits – those abilities and features of organisms with demonstrable links to their ecosystem role and performance and, in turn, fitness – may provide a useful and more mechanistically informative alternative. This approach has been adopted historically for descriptive reasons, to enable broader global comparisons that transcend the constraints placed on such studies by regional taxonomic diversity, and allow for the types of generalizations (e.g., responses to environmental change, ecological implications of trends and patterns) sought after in ecology. More recently, the functional traits approach has been extended to address also ecosystem services, system dynamics and effects of different legacies over time, and we believe a continuation of this development may help bridging several research fields and knowledge traditions (e.g. sustainability science, systems ecology, environmental psychology, anthropology, architecture and arts).

Instead of focusing on life history characters, we suggest that a traits approach that builds on attributes and features (at different ecological levels) that both have ecological relevance and are socio-culturally meaningful can provide a unifying common ground for discussion of system dynamics. Such an approach could address and connect a broad suite of issues, from biocultural relations and relational values to time dynamics and the resilience of ecosystems and their service provisioning. Drawing on a rich set of case studies, primarily from within the Biodiversa funded project ENABLE, we want to discuss the different ways we can use traits as an analytical tool as well as a boundary object. We will unpack our suggested framework and talk through the constituent parts, their need of further development how they can be combined in different ways to address basic research as well as knowledge implementation and operationalization in governance and planning. The case based reflections will conclude with a set of suggestions and hypotheses, which will serve as the foundation and framing for an open discussion in two stages. First we will divide in thematic groups to then join in a final group discussion and synthesis of insights and ideas.

Most of the cases we will present are situated in urban or peri-urban landscapes. However, we argue that our approach is particularly relevant for cultural and human dominated landscapes where processes and qualities are in constant negotiation between biophysical conditions and the human activities and understanding of the systems we live in.

## How your symposia will improve landscape ecology science?

That we need new knowledge is an old and remaining truth. However, what we need perhaps even more are tools and frameworks that allow us to better integrate and synthesize the knowledge we already have. Landscape ecology, especially when combined with geography, has a long history of studying structure or character of human-nature systems and its implications for processes and dynamics. As one of the more applied fields of ecology, landscape ecology will benefit from improved synthetic frameworks that allow for transdisciplinary questions and facilitate the joining of sound ecological knowledge with knowledge from other fields.

At the core, the field observations and experiments that formed and continue to develop landscape ecology need to better take into account (as objects of study in themselves or controlled for as system drivers) the relational linkages that shape human values and actions and the consequences these have for landscape dynamics. The framework we suggest follows the same hierarchical scaling as do landscape ecology and can thus tie in with existing research and practice at multiple scales and resolutions. Moreover, it can help move the landscape research on ecosystem services beyond biophysical and socioeconomic assessments and support the process of operationalising a way of working with ecosystem services that better takes into account human perception and decision making.

In other words, we believe our approach can serve as a boundary object for bridging theories and disciplines, and that the more analytical components of the framework can be used to design new ways of investigate landscape dynamics and, hopefully, find more sustainable ways for us to engage with them. Whether it is landscape ecology that needs to expand its scope, or that we need more and better bridges between different disciplines we leave for future discussions. We are, however, of the opinion though that many of the principles and theories of landscape ecology already now align with other knowledge traditions and that moving towards a transdisciplinary landscape science will help us better understand the dynamics of the Anthropocene and ongoing landscape change.

The slightly different format we suggest, with more time for discussion, will help reach new insights and consolidate ideas. Alternatives to regular presentation sessions can fill alternative functions and help a more active knowledge sharing.

## Broad thematic areas

Broad thematic areas 1st choice: Socio-economic-ecological systems

Broad thematic areas 2st choice: Landscape ecosystem functions and services

### **Free Keywords**

Functional traits, response diversity, ecosystem services, landscape character, social-ecological systems, affordances, resilience, reciprocal interactions, sense making, biocultural relations, relational values, legibility,

### **Outcomes of symposium**

Special issue in a scientific journal (to be negotiated)