

GREEN SURGE

CONCEPTUAL FRAMEWORK FOR BIOCULTURAL DIVERSITY MILESTONE 20

Report MS20:

Internal project report on the conceptual BCD framework

Work package 2:

Partners involved:

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Description:

Assessment of urban biocultural diversity

UH, WU, TUB, UBER, ULOD, MRI

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The report outlines the conceptual framework for assessment of biocultural diversity (BCD) in urban areas as a part of the EU FP7 (ENV.2013.6.2-5-603567) GREEN SURGE project (2013-2017)

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1 INTRODUCTION

This report (MS20) of the GREEN SURGE project presents the conceptual framework of biocultural diversity (BCD) for urban settings including a search for proper biodiversity (BD) indicators, cultural diversity (CD) indicators as well as their interaction in different parts of the cities (differing in terms of quality and quantity of UGI). As stated in the project's Description of Work (DoW, p. 9), the overall aim of the WP2 is "to develop and apply an innovative transdisciplinary approach of linking biological with cultural diversity by developing a conceptual biocultural (BCD) framework, and by using the framework to examine how groups of residents with different cultural and socio-economic backgrounds value and interact with urban green spaces and their associated biological diversity at multiple scales (from species to ecosystems) in European cities". WP2 is divided into three tasks: WP2.1: Developing a conceptual framework for biocultural diversity, WP2.2: Assessment of BCD in European urban areas and urban green spaces components, WP2.3: Developing a typology and database of BCD with urban green infrastructure.

The aim of this report is to give an overview of the development work of the concept that has been carried out by partners in the Work Package 2.1. Development of BCD studies is progressing along two axes: (i) the conceptual approach as elaborated in the report and (ii) an initial survey and empirical and analytical assessment of the notions of BCD at different scale in 21 cities around Europe. The relationship between the BCD concept and other activities in WP2 and other Work Packages in the GREEN SURGE project will be presented. Finally, we will shortly introduce next steps to operationalize the BCD concept into empirical research actions.

This report is directed at the GREEN SURGE research and practitioner partners that will analyse BCD. A conceptual framework for BCD that gives the theoretical frame for analyses of BCD in the GREEN SURGE project, and provides an idea on how these research orientations can be pulled together into a coherent overall perspective on BCD research. Responsible partners of producing the conceptual framework are Wageningen University (WU) and University of Helsinki (UH). Other contributing partners of WP2 and how other tasks in WP2 are interrelated are illustrated in Figure 1. In addition, the conceptual BCD framework provides research links with WPs 3 and 4, the more qualitative planning and governance assessments of WPs 5 and 6, and the Learning Alliances approach of WP7.

2 WP2 ACTIVITIES AND LINKS TO OTHER PARTNERS

Although the concept of BCD has been advocated in international committees and policy circles in the context of developing countries, the concept lacks a clear theoretical and empirical foundation for application in an urban context (Cocks and Wiersum, 2014). The first task for WP2 was to develop a conceptual framework for urban BCD research (Task 2.1). The empirical research design (Tasks 2.2 and 2.3 together with WP3, 5 and 6) to explore BCD in cities has been progressing simultaneously with the conceptual framework.

The Wageningen University and the University of Helsinki (WP leader) were main contributors to Task 2.1. Other partners have commented and have given their opinions into the research framework. Activities in the Task 2.1 included: i) literature review on previous BCD research, ii) comparison of BCD framework with the Ecosystem Service approach that can be seen as a current dominant land-use policy and research concept especially in European Union, and iii) pre-analyses of BCD in green area planning in European cities, and iv) linking the conceptual framework of BCD into research activities under the other Work Packages of the GREEN SURGE project. A scientific paper dealing with the BCD concept in the urban context is in preparation (see below).

2.1 WP2 activities in past months

The first WP2 meeting was organized in Berlin, Germany, and hosted by Technische Universität Berlin (TUB) on 21st March 2014. Sixteen researchers from eight institutions attended the meeting (see Fig. 1). The aim of the meeting was to discuss all parts of WP2 and the linkages between the different tasks (Task 2.1: Green SURGE concept on BCD, Task 2.2.1: Assessing existing BCD data, Task 2.2.2: Field study within WP2 and ULLs).

The conceptual framework for BCD was further developed through frequent e-mail exchange, google drive writings, several Skype meetings and a meeting trip in Netherlands in early August (by Kati Vierikko from UH).

Writing a scientific manuscript has been written by WU and UH under the title “*Exploring Biocultural Diversity in Cities – A framework for research to enhance governance in the urban landscape*”. The manuscript has been submitted to the special Issue in the research journal *Environmental Science & Policy*.

Research was carried out on cultural practices and policy as a part of urban municipal planning and governance related to the research on WP5 and WP6. This study covered 20 case study cities around Europe (see detailed research design in the Milestone 34 and 38). A structured expert questionnaire with closed and open questions was devised high profile urban planners dealing with urban green spaces. Involved partners: FFCUL, FCRA, MRI, SLU, TUM, UH, WU, UL, UNIBA.

Indicators to detect and improve the relationship between urban green space (size, configuration of its components), ecosystem services provisioning (see paper Larondelle et al. 2014) and biodiversity (birds) as well as socio-demographic variables of the urban system have been

taken/derived from:

- Urban Atlas (<http://www.eea.europa.eu/data-and-maps/data/urban-atlas>) for 300+ cities and 15+ cities
- National surveys and local surveys (5 ULLs)
- Regional and local census data and statistics (5 ULLs).

Development of ex-situ research (field study and online survey) on perception, valuation of, and interaction with urban biodiversity by residents of different cultural groups. This has been done within different urban green infrastructure types and in different European cities. Key terms of the study (e.g. “interaction”) were interdisciplinary discussed. Design, pre-test and field study lead by TUB; feedback loop with ULL cities.

GREEN SURGE and BCD presentations:

Elands, B. (2014). Biocultural diversity in Europe: connecting people to nature in an urban context. In: Linking Biological and Cultural Diversity in Europe; Abstract book. 1st European Conference for the Implementation of the UNESCO-SCBD Joint Programme on Biological and Cultural Diversity, 8-11 April, 2014, Florence, Italy, p. 31.

Elands, B., Buizer, M. & F. Wiersum (2014). Biocultural diversity in Europe: connecting people to nature from tropical regions to European urban areas. Presentation given at the 1st European Conference for the Implementation of the UNESCO-SCBD Joint Programme on Biological and Cultural Diversity, 8-11 April, 2014, Florence, Italy.

GREEN SURGE project and Biocultural diversity concept were shortly introduced in the oral presentation “Human demands and nature supplies – do they meet in Helsinki, Finland” in the annual CIENS City Conference, 21 August, Oslo, Norway by Vierikko, and in IUFRO World Congress in Salt Lake City, the Swedish IALE conference, the 2014 Canadian Urban Forest Conference, and the conference of the UK Arboricultural Association by Cecil Konijnendijk van den Bosch.

Vierikko, K., Niemelä, J., Buizer, M. and Elands, B. (2014). Green Infrastructure and Urban Biodiversity for Sustainable Urban Development and the Green Economy (GREEN SURGE) – Is there place for biocultural diversity in the cities?” Poster presentation, the 7th annual International ESP Conference, 5-9 September 2014, San Jose, Costa Rica.



Figure 1. Following persons attended to the first WP2 meeting in Berlin, Germany: Arjen Buijs (WU, Netherlands), Marleen Buizer (WU, Netherlands), Anders Busse-Nielsen (SLU, Sweden), Daniel Brinkmeyer (TUB, Germany), Piotr Czembrowski (ULOD, Poland), Leonie Fischer (TUB, Germany), Dagmar Haase (TUM, Germany), Jasmin Honold (TUB, Germany), Nadja Kabisch (UBER, Germany), Ingo Kowarik (TUB, Germany), Jakub Kronenberg (ULOD, Poland), Jari Niemelä (UH, Finland), Marina Pintar (UL, Slovenia), Emily Rall (TUM, Germany), Mike Smith (FCRA, United Kingdom), Kati Vierikko (UH, Finland). In the picture from left to right: Jakub, Nadja, Mike, Michael Strohbach (UBER, Germany) and Anders.

2.2 Interlinkages between task WP2.1 and other WPs

GREEN SURGE is structured into eight distinct, but interlinked Work Packages. WP2 has the role on developing a conceptual framework for BCD, testing its use, evaluating methods and identifying good practices. The BCD concept will be also assessed in the WP3: Functional linkages – statistical and causal relationships, trade-offs, synergies and spatial conflicts – between urban green spaces, WP4: Contributing to the Green Economy – integration of monetary and non-monetary valuation of urban green spaces in the BCD context, WP5: Green Infrastructure planning and implementation – identify and analyse good practices of UGI planning and implementation, WP6: Innovative governance of urban green spaces and biocultural diversity – focuses on governance that integrates participatory approaches (bottom-up) within planning processes, and finally WP7: Urban Learning Labs. BCD-related findings will also be central to activities under WPs 1 (project management) and 8 (knowledge brokerage and dissemination). WP 2 is divided into three tasks: WP2.1: Developing a conceptual framework for BCD, WP2.2: Assessment of BCD in European urban areas and urban green spaces components, WP2.3: Developing a typology and database of BCD with urban green infrastructure. The development work of conceptual framework of BCD has been a starting point for other activities. The conceptual framework of BCD provides theoretical research frame and research context to other WPs in the GREEN SURGE project. Development work on conceptual BCD was made by Wageningen University and University of Helsinki consulting with other partners in WP2 and in other WPs. Many partners will be involved to the BCD research in the near future of GREEN SURGE project (Fig. 2).

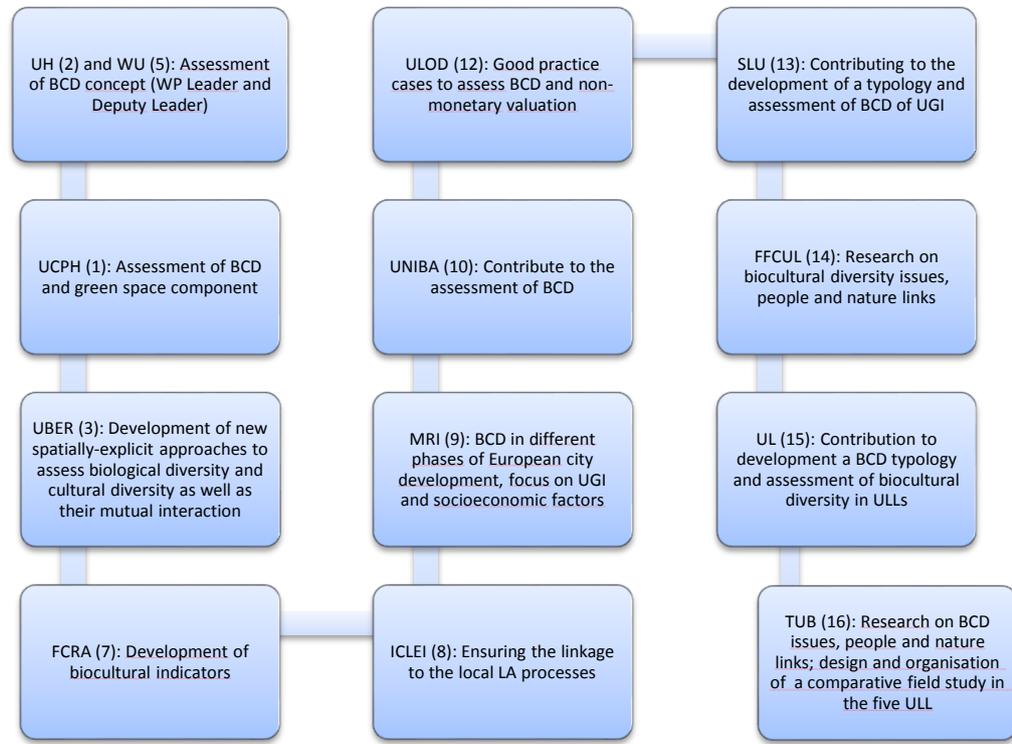


Figure 2. Contributions of the GREEN SURGE participants to WP2 based on DoW. Conceptual framework of Biocultural Diversity provides theoretical research frame and research context to other research activities in the GREEN SURGE project. Numbers in brackets are abbreviations for the WP2 contributors explained in the Table 1.

TABLE 1. LIST OF CONTRIBUTING PARTICIPANTS TO WP2

| No. | Legal name (short name) and | working months | Country | Organisation type |
|-----|--|----------------|----------------|-------------------------------------|
| 1 | Københavns Universitet (UCPH) | 5 | Denmark | Research Organisation |
| 2 | Helsingin yliopisto (UH) | 31 | Finland | Research Organisation |
| 3 | Humboldt Universität zu Berlin (UBER) | 6 | Germany | Research Organisation |
| 5 | Wageningen University (WU) | 10 | Netherlands | Research Organisation |
| 6 | Stockholms Universitet (SRC) | 4 | Sweden | Research Organisation |
| 7 | Forestry Commission Research Agency (FCRA) | 2 | United Kingdom | Public Body |
| 8 | ICLEI European Secretariat GmbH (ICLEI) | 1 | Germany | SME |
| 9 | Metropolitan Research Institute (MRI) | 6 | Hungary | SME |
| 10 | Università delgi studi di Bari 'Aldo Moro' (UNIBA) | 6 | Italy | Research Organisation |
| 12 | Uniwersytet Łódzki (ULOD) | 12 | Poland | Research Organisation |
| 13 | Sveriges Landsbruksuniversitet (SLU) | 5 | Sweden | Research Organisation |
| 14 | Fundação da Faculdade de Ciências Da Universidade de Lisboa (FFCUL) | 18 | Portugal | Non-profit Research Organisation |
| 15 | Univerza v Ljubljana (UL) | 10 | Slovenia | Research Organisation |
| 16 | Technische Universität Berlin (TUB) | 25 | Germany | Research Organisation |

3 CONCEPTUAL FRAMEWORK FOR URBAN BIOCULTURAL DIVERSITY (BCD)

3.1 The origin of BCD concept

Predominantly, the BCD approach has been so far used for studying traditional ecological knowledge (TEK) of indigenous groups and their roles in nature conservation in developing countries, particularly through case studies in Latin America, Asia and South Africa (Maffi and Woodley, 2010; Pretty et al., 2009). Only recently the focus has been on relationships between humans and environment in contemporary ‘non-traditional’ societies (Cocks and Wiersum, 2014; Elands and Van Koppen, 2012). The original concept of BCD emerged from small-scale studies on TEK of indigenous people and their sustainable ways of using and managing natural resources (Maffi, 2004, p. 11). The idea of biocultural systems – where biological and cultural dynamics are developed jointly over the long run – was that diversity in human and biological systems are considered to support adaption capacity of biocultural system to local environmental conditions and changes (Maffi, 2004, p. 12). These adaptations, constantly evolving in response to environmental changes, are “institutionalized in social organization, cultural knowledge, beliefs and values, technology and language” (Maffi, 2004, p. 12).

The idea of biocultural system is somewhat similar to the concept of resilience in social-ecological system (SES) where the capacity to adapt and shape changes is an important characteristic (Folke, 2006; Folke et al., 2005; Berkes et al., 2003). In both approaches diversity is a key determinant for maintenance, and for adaptation capacity (Folke et al. 2005; Maffi, 2010, p. 12; Turner et al., 2003). The difference is that biocultural system reflects long-term development processes while resilience of SES considers also short-term and sudden changes. Both approaches are very relevant for urban context, and concept of resilience has been commonly used in urban studies (e.g. According to the intermediate disturbance hypotheses ecological and cultural diversity will be greatest in situations, where different kind of biotopes with a variety assemblages of species and places meet different cultural groups and exchange knowledge and experiences (Turner et al., 2003). Cities can be seen as cultural and biological rendezvous providing many situations for diverse associations among and between culture and biodiversity.

Interlinkages between biological and cultural diversity have also been explained by biocultural landscapes (e.g. Pungetti, 2013). Biocultural diversity, captured especially in traditional cultural landscapes, comprises “the diversity of life manifested in biology and ecology, as well as cultures, languages and spiritual beliefs” (Pungetti, 2013). The protection of traditional cultural landscapes has been considered important to maintain BCD with its tangible and intangible values especially in Europe (Florence Declaration, 2014; Pungetti, 2013). The importance of BCD in urban areas is stated in the Declaration as follows: “*Recognizing the vital importance of cultural and biological diversity for present and future generations and the well-being of contemporary societies in urban and rural settings*”. Thus, the innovation and novelty in the GREEN SURGE project is to (i) develop the BCD concept in urban context and (ii) to apply urban BCD concept to study integration between culture and biodiversity, and (iii) develop successful participatory governance for strengthen social cohesion and biodiversity conservation in cities (DoW, 2013, p. 3).

3.2 Research framework for urban BCD

Green spaces in urban settings can be biologically rich and provide suitable habitats for many species (Aronson et al. 2014; Elmqvist et al. 2013). However, shrinking green spaces in expanding and compacting cities does not leave much space for biodiversity and policy makers look up for multifunctionality of green spaces. Measures and analytical tools have been developed for identifying biodiversity in cities (e.g. City Biodiversity Index), but results of these measurements have almost no significance for biodiversity conservation, because biodiversity indices cannot be simply translated to cultural values that ultimately direct decisions on conservation. The concept of BCD offers a new way of thinking about biodiversity conservation by looking at culturally significant and valued biodiversity (Cocks and Wiersum, 2014). However, modern urban life style and fast growing and expanding urban areas are opposite to TEK and cultural landscapes developed over generations. In addition, urbanity can be seen as a threat for many manifestations of BCD (Florence Declaration, 2014; Pilgrim and Pretty, 2010). Notwithstanding, many traditional biocultural manifestations are still present in urban areas, but in modified forms (Cocks and Wiersum, 2014). Therefore, to identify those transformed BCD manifestations and variety associations of culture and biodiversity the urban context, we need a transdisciplinary BCD approach (Horlick-Jones and Sime, 2004).

In the urban context, BCD is not just a sum of biological diversity with its all levels plus cultural diversity with its manifestations. BCD is more like a process – both value and practices – how culture and biodiversity interact. Urban BCD framework identifies cultural diversity as a variety in beliefs, values, practices, language, norms, institutions, knowledge (Buijs, 2009; Pretty et al. 2009; Berkes et al. 2000). However, interactions between urbanized culture and biological diversity may be more diverse and nuanced than in the case of biocultural landscapes or traditional biocultural systems (Pungetti, 2013; Maffi, 2004). First of all, we need to understand the relationships between cultural diversity and biodiversity associated to urban green spaces. Secondly, we need to analyse how cultural practices and mechanisms (language, norms, institutions) influence relationships between cultural and biological diversity. Thirdly, we need to understand how this may empower some cultural groups and exclude others. Finally we must understand how we can stimulate good governance of BCD creatives ‘by learning and making together’ (Elands and van Koppen, 2013). BCD creatives are innovative ways to maintain or rediscover social-ecological memory of good biocultural practices (Barthel et al. 2010). Urban BCD research framework can be divided into three pillars: (i) culturally significant biodiversity, (ii) biocultural practices and mechanisms for enhancing biodiversity (Cocks and Wiersum, 2014; Berkes et al. 2003), (iii) transdisciplinary approach of biocultural creatives (Elands and van Koppen, 2013).

Table 2. Key terms and their definitions

| Key term | Definition |
|---|--|
| Biodiversity, biological diversity (BD) | Variability among living organisms and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Convention of Biological Diversity). |
| Biocultural diversity | The diversity of life in all its manifestations and systemic interactions among these. Urban biocultural diversity is a research concept emphasizing variability among cultural groups with respect to their value system, cultural practices, mechanisms and knowledge related to different level of biodiversity (Cocks and Wiersum, 2014). |
| Biocultural system | System where biological and cultural interactions are developed jointly over the long run. The diversity of human life and biodiversity are considered to support adaption capacity of biocultural system to local environmental conditions and changes (Maffi, 2004). |
| Cultural diversity | The variation in sets of distinctive spiritual, material, intellectual, and emotional features of a community or a cultural group. |
| Green space | Vegetated areas in an urban areas, including water bodies, constructed green roofs and green walls. |
| Social-ecological memory | Variety of forms through which behaviors of people are shaped by the past. It functions as collectively shared mental maps for engaging with ecosystem management. |
| Social-ecological system (SES) | Concept according to which social and ecological systems are truly interdependent. SES is a complex adaptive system (Berkes and Folke, 2003). Cities can be considered as social-ecological system. |

3.2.1 The first Pillar: Culturally significant biodiversity

The first research pillar takes as a starting point studies on i) how different people use, perceive or value biodiversity that is associated with different types of urban green spaces, and ii) how biodiversity is influenced and shaped by components of cultural diversity in cities. The ecosystem services approach highlights that green spaces with their associated biodiversity can provide important services to people in urban regions (Niemelä et al., 2010). However, green spaces in cities do not just provide ‘services’ to people, but people value these spaces differently.

Whether ecosystem function is regarded as a service, i.e. a benefit to people, or disservice, depends on societal values and demands that clearly vary among cultural groups (e.g. Gómez-Baggeth and Barton, 2013; Haines-Yong and Potschin 2010). The different methods used to elicit these values and demands may also affect how we understand these values (Hubacek and Kronenberg, 2013).

To support biodiversity conservation in cities we need to understand (i) how different levels of biodiversity affect valuations and uses of urban green spaces, (ii) how such valuations and uses depend on cultural differences and experiences of urban residents, and (iii) how processes of place attachment, place identity or place making modulate value systems, uses and biodiversity of urban green spaces (e.g. Farnum et al. 2005; Altman and Law, 1992).

Research questions for Pillar 1: Culturally significant biodiversity

1. Does varying level of biodiversity affect human perception, valuation of, and interaction with greens spaces among different cultural groups, between types of green infrastructure or between cities?
2. How does place making – a space becomes a meaningful place – influence biodiversity, valuation and use of green spaces by different cultural groups?
3. How does valuation of biodiversity affect the way green spaces are planned and managed?

3.2.2 The second Pillar: Making biodiversity – Cultural mechanisms and practices

In the second pillar we looked at different cultural practices and mechanism and how they i) impact on interaction between culture and biodiversity, ii) how they shape biodiversity at local, landscape and city level (Cocks and Wiersum, 2014). In the first pillar of BCD research we have emphasized how different cultural groups value and use urban biodiversity. Cultural mechanisms are e.g. shared language, norms and symbols that can be identified by studying conceptual approaches that guide urban planning or management behaviour. These can vary greatly between cultural groups, institutions, cities and nations. They can be formal norms like Nature Conservation Act or policy objectives like Biodiversity Strategy or Green Structure Plan, or informal or symbols like shared silent rules among community gardeners (Barthel et al. 2010). All of those have a great effect on interaction between culture and biodiversity in different spatial scale.

With cultural practices we are referring to practices made by individual, cultural group or organization. For example, place making through different cultural practices such as volunteer work on restoration of an urban creek or gardening reflect different biocultural expressions that modulate biological and cultural values. Cultural practices can be identified either by studying management behaviours and traditions or starting to analyse physical BCD manifestations in green spaces. Some globally adopted cultural practices have suppressed both biological and cultural diversity. For example, buying “easy-to-manage cultivated plants” from Bauhaus will probably decrease social-ecological memory. Hedges separating landowners in the UK or closed fences separating gardens in the Netherlands are traditional example of consequences of long-term practices that can be identified in a cultural landscape (e.g. Pungetti 2013; Stephenson, 2008).

Research questions for Pillar 2: Making biodiversity – Cultural mechanisms and practices

1. What kind of planning and governance systems concerning green areas there are in European cities adopted and how have these influenced biological and cultural diversity?
2. How cultural practices for managing urban green spaces differ between European cities?
3. Are there policies or approaches that addresses culturally significant biodiversity?
4. How do cultural mechanisms (norms, rules etc.) of urban green planning influence the use of green spaces and associated biodiversity?
5. How do cultural practices of urban green planning influence the planning itself, biodiversity and the use of green spaces of different cultural groups?
6. Can we identify biocultural expressions (such as certain concepts, categorisations or the physical expressions of those) that imply certain selectivity in the kind of ‘diversity’ that they promote?

3.2.3 The third Pillar: Transdisciplinary research on biocultural creatives

In the third research pillar interaction and co-creation of knowledge among scientists, policy-makers, and citizen-groups is a cornerstone to the approach not only for information gathering, but also for interactive analysis and critical debate about the kind of observations made in the research pillars one and two. The first two pillars of research can often be characterized as multi- or interdisciplinary in terms of the position of the (team of) researchers – who are observers and analysts cooperating between disciplines but who remain largely external to the ‘target object’ of research. There is interaction with other stakeholders to the extent that the researcher requires information (data) and conducts interviews with them, organises focus group discussions, engages in participant observation or consults other disciplines to broaden the focus and develop integrated approaches.

The third pillar gives way for experiential knowledge. We refer to the pillar ‘biocultural creatives’ (Elands and Van Koppen, 2013), because here the different knowledge systems relating to different cultures come together to continuously invent or ‘co-create’. The third pillar is a ‘library’ to collect and share social-ecological memory (Barthel et al., 2010) and a learning lab to find to new paths to nature and to finding solutions to protect culturally significant biodiversity in cities. We articulate this kind of transformative research as a distinctive pillar because it is not to be seen as ‘just’ a supplement to the other types of research. Here, research questions should be formulated together with other stakeholders, but we can start to make questions for practitioners and decision-makers.

Research questions for Pillar 3: Biocultural creatives

1. What kind of participative governance support biocultural creative?
2. Which values are potentially less amenable to conversion into the quantitative metrics that facilitate the transport of local insights to other, ‘higher’ levels of decision-making? Does this prioritize some public goods over others?
3. How do ‘we’, as researchers/practitioners/policymakers/other stakeholders interpret

biocultural diversity? What do we find important? Which differences do we see in ‘our’ cities in terms of how different people value or use biodiversity? Can we identify common practices that potentially promote some views while neglecting others?

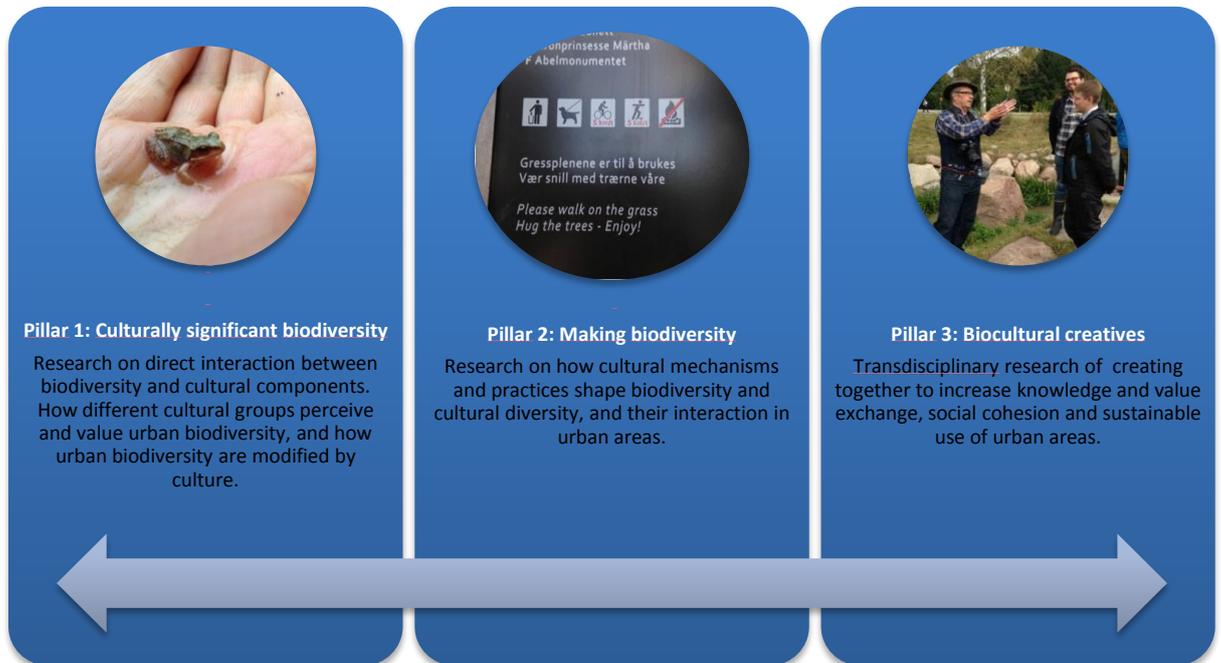


Figure 3. Three pillars of transdisciplinary research of urban BCD.

4 STUDYING BIOCULTURAL DIVERSITY IN URBAN SETTINGS

The concept of BCD draws attention to the multiplicity of interactions between humans and nature by i) looking at culturally meaningful biodiversity, ii) examining how different management practices and cultural mechanism shape biodiversity, and how physical manifestations in urban settings or conceptual manifestations in documents reflect cultural diversity, and finally iii) how we can support innovative participative governance of BC creatives in transdisciplinary ways. To meet the need for biodiversity conservation in cities and for strengthening social cohesion and human wellbeing, we need to understand how different cultural groups and biodiversity interact.

Next, we will introduce ongoing research and potential research in GREENSURGE that will contribute urban BCD research. The final decisions about additional research on BCD will be made in the second PGA meeting in Edinburg 17-19 November 2014. Potential research types and methods to study BCD in cities are gathered in the Table 3.

4.1 The first Pillar – Research on culturally significant biodiversity

In task 2.2 as part of WP2, the BCD concept will be used to assess BCD at different spatial scales.

- (1) Existing quantitative data on biodiversity and cultural diversity of a range of European cities (for urban green space 300 European cities from Urban Atlas as well as 15+ case study cities and for birds the 5 ULLs) will be collected and used to explore relationships between biological and cultural parameters at larger spatial scales (i.e., urban region, total or parts of the city/neighbourhood). This assessment will illustrate firstly differences among cities respective their green spaces components and secondly uncover and better fix the relationship between green space size and configuration and bird diversity. Contributing partner: UBER (3); UL (15)
- (2) To better understand interactions between different levels of biodiversity and cultural diversity, two approaches will be performed.
 - First, existing studies from environmental psychology will be reviewed to disclose the stand of knowledge on the valuation of biodiversity at the gene, species, or ecosystem levels in different types of urban green spaces. Contributing partners: TUB (16), UBER (3)
 - Second, a field study will be conducted in 5 Urban Learning Lab (ULL) cities (Bari, Berlin, Edinburg, Ljubljana and Malmö) to fill important knowledge gaps concerning the role of biodiversity in the perception, valuation of, and interaction with different types of urban green infrastructure (UGI). Following a pre-test, which had been conducted in Berlin in summer 2014, field surveys will be conducted in each ULL city to investigate whether different levels of biodiversity affect human perception, valuation of, and use of different green areas (forests, park, roadside vegetation and wasteland). Different cultural groups in each city will be involved to allow for intercultural and socio-economic comparisons. Vege-

tation will be assessed in four UGI types at three biodiversity levels (low, medium, high) in order to account for variations in biodiversity with much detail. The field survey will comprise a questionnaire and photographic stimuli. Contributing partners: FCRA (7), UNIBA (10), SLU (13), UL (15), TUB (16), UBER (3).

As a part of pillar 1 a case study of one urban green space component in all the cities?, such as allotment gardens, will be used as a test area for integrating monetary and non-monetary approaches to valuation (using participatory and deliberative valuation, and the most relevant economic valuation method in the case of the selected urban green space component). The work will be conducted by partners in the WP4 jointly with WP2 partners. Contributing partner: ULOD (12)

Potential research types

To explore different meanings people attach to green spaces, and to explore how people use and experience green areas as part of their daily practices, the BCD research particularly lends itself for phenomenological, ethnographic or other qualitative research methods e.g. interviews, surveys and field observations in the field (in-situ research), semi-structured or in-depth interviews at office or home (ex-situ research), or deliberative methods in workshops (Table 3).

To analyse interlinkages between biological diversity and cultural diversity in terms of different user groups within and between different urban green areas data of species richness (taxonomic and/or functional groups) and biophysical characteristics needs to be collected. To make comparisons between cities the partners have discussed a possibility to collect biological and cultural data following the same field research design and research protocol.

Contributing partners (potential): UH (2), ULOD (12), FFCUL (14)

4.2 The second Pillar – Research on cultural practices and mechanisms of making BD

To analyze what kind of planning and governance systems concerning green areas there are in European cities, the WP5 and WP6 jointly with e.g. WP2 and is making and assessment of current state of green infrastructure planning and BCD practices in 20 case cities in Europe (Tier 1 research, see more about research in milestones 34 and 38). The aim is to identify how different planning and management practices or adopted cultural mechanism (conceptual BCD expressions) shape the biological and cultural diversity in cities. In-depth case study research with examples of good BCD practices, with development of innovative governance, strategies and tools for urban green infrastructure planning at a metropolitan level through will be conducted by making interviews, document and desk analysis and deliberative workshops (Tiers 2 and 3 in WP5 and WP6). Contributing partners: UCPH (1), UH (2), WU (5), TUM (4), SRC (6)

A pilot study has recently begun in Copenhagen, testing ways of using mobile phone for self-reporting on BCD creativity. The first test groups consist of master students at the landscape- and nature planning educations at the Faculty of Science. Students report examples of innovative

BCD expression by sending photos and comments to a server at the university. Pictures and comments are geotagged and thus also telling where these examples are situated in the city. The idea is to crowd source knowledge on creative BCD. The method is in development and for the next round of tests some moderations will occur. It is the aim that the technical set-up will be useful for the in-situ investigation by WP2 the forthcoming summer. Contributing partner: UCPH (1).

Potential research types

To critically explore how different conceptual expressions (e.g. ecosystem services, invasive alien species, multifunctionality) that have been adopted by city managers, planners or supported by decision-makers influence on biological and cultural diversity we need qualitative and deliberative research methods such as content analyses or Actor Network Theory (ANT). Cross-case comparison about cultural practices and mechanisms between European cities could be conducted as a part of Tiers 2 and 3 studies. In addition to explore, how daily practices, use and perceptions and perceived values of local residents influence on biodiversity in cities, qualitative and deliberative research methods (e.g. focus group interviews, value mapping) are needed. In addition, in-depth case studies as a part of ‘good practices’ in the Pillar 2 research or non-monetary valuation research in the Pillar 1. Analyzing physical expressions of BCD will be conducted in the Pillar 1 research on species assemblages and diversity in different UGI types. Contributing partners (potential): UH (2), WU (5), SRC (6), FCRA (7), MRI (9), ULOD (12)

4.3 The third Pillar – Transdisciplinary research on biocultural creatives

The most significant part of transdisciplinary research of the GREEN SURGE project will be processed in five Learning Labs in the GREEN SURGE project in the WP7. The overall objective for WP7 is to facilitate collaborative learning and knowledge production between practitioners, policy makers, researchers and other stakeholders. Transdisciplinary research in the third pillar of BCD research endeavours for application of LA methodology by combining a science-driven approach and bottom-up knowledge or experience-based approach. For example, when exploring biocultural diversity in cities – a transdisciplinary inquiry into ‘good practices’ of biocultural diversity may start with the identification of developments that different participants frame as good practice, to be followed by explorations of the criteria of success and failure used by the different participants. Through a range of different learning processes, top-down, research-led knowledge comes together with, and is tested against bottom up stakeholder knowledge through a series of workshops in each 5 ULL cities which are Bari (Italy, Berlin (Germany), Edinburgh (Great Britain), Ljubljana (Slovenia) and Malmö (Sweden). Contributing partners: All partners except TE (11) will have some contributions to the third pillar of BCD research.

Table 3. Potential research approaches to study BCD in the GREEN SURGE project

| BCD pillar | Research type | Methods |
|-------------|---|---|
| Pillar 1, 2 | Research on 'best practices' or other examples. Covering different kind of research methods. | Mixed-method, data triangulation |
| Pillar 1, 2 | Research done in-situ in green spaces: studying people (behavior or values)/ species/ elements/ characteristics/ features | Face-to-face interviews, surveys, observations etc., biological field methods (taxa inventories, measuring structure of UGI), self-recorded: smart phone apps |
| Pillar 1, 2 | Research done at office, home or in workshops (value mapping, mapping of specific places etc.) | Interviews, focus group interviews, self-reported surveys, MCDA, PPGIS, soft-GIS, non-monetary valuation |
| Pillar 2 | Analyzing documents, official archives, websites (textual, images). | Content and discourse analyzes |

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