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ЦЕНТРАЛЬНОЙ АЗИИ И СИБИРИ**

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This monograph shall inform you about up to date methodologies and recent results in landscape research. It is intended as a guide for researchers, teachers, students, decision makers, stakeholders interested in the topic of landscape science and related disciplines. It provides information basis for decision makers at various levels, from local up to international decision bodies, representing the top level of landscape science in a very short form.

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**Chapter V/13: HOW PEOPLE VALUE BIODIVERSITY IN URBAN LANDSCAPES:  
ASSESSING THE PEOPLE-NATURE INTERSECTION IN CITIES**  
**Глава V/13: Как люди оценивают биоразнообразие в городских ландшафтах: оценка  
взаимодействия людей и природы в городах**

**Leonie Katharina Fischer\*<sup>1,2</sup>; Ingo Kowarik<sup>1,2</sup>**

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\* Email: [leonie.fischer@tu-berlin.de](mailto:leonie.fischer@tu-berlin.de)

1. Department of Ecology, Ecosystem Science/Plant Ecology, Technische Universität Berlin, Rothenburgstr. 12, D-12165 Berlin, Germany

2. Berlin-Brandenburg Institute of Advanced Biodiversity Research (BBIB), D-14195 Berlin, Germany

**ABSTRACT.** Greenspaces are under pressure, especially in cities that become more and more dense. Moreover, urban people increasingly lose contact to nature, and benefit less from the ecosystem services that urban landscapes deliver to residents. Yet, an open question is if *biodiverse* greenspaces provide an added value to urban people—compared to simply *green* spaces. We present a methodological approach to assess the valuation of urban biodiversity (plant species richness) in urban landscape components. To consider both biological and cultural diversity, we analyzed responses from different sociocultural groups. Results demonstrate that people from many sociocultural groups largely like high biodiversity settings, especially in parks, wastelands and streetscapes. This is a strong social argument that supports a biodiversity-friendly urban development and management of greenspaces. It also indicates unexploited opportunities in including informal greenspaces such as wastelands into urban development.

**Резюме.** Зелёные зоны находятся под давлением, особенно в городах, которые становятся все более и более густонаселёнными. Более того, горожане все больше теряют связь с природой и получают меньше пользы от функций экосистемы, которые городские ландшафты предоставляют жителям. Тем не менее, открытым вопросом является то, что зеленые зоны, обеспечивающие биоразнообразие создают дополнительную ценность для горожан - по сравнению с просто зелеными зонами. Мы представляем методологический подход для определения оценки биоразнообразия городов (богатство видов растений) в компонентах городского ландшафта. Чтобы рассмотреть как биологическое, так и культурное разнообразие, мы проанализировали ответы разных социокультурных групп. Результаты показывают, что люди из многих социокультурных групп в значительной степени отдают предпочтение поддержанию высокого уровня биоразнообразия, особенно в парках, на пустошах и улицах. Это сильный социальный аргумент, который поддерживает биоразнообразие благоприятное для развития городов и управления зелеными зонами. Это также указывает на неиспользованные возможности включения неофициальных зеленых зон, таких, как пустоши, в городское развитие.

**KEYWORDS:** biodiversity conservation, greenspace management, plant species richness, multicultural societies, urban ecology, urban landscape planning

**Ключевые слова:** сохранение биоразнообразия, управление зелеными зонами, богатство видов растений, многокультурные сообщества, экология городов, планирование городского ландшафта

## **INTRODUCTION**

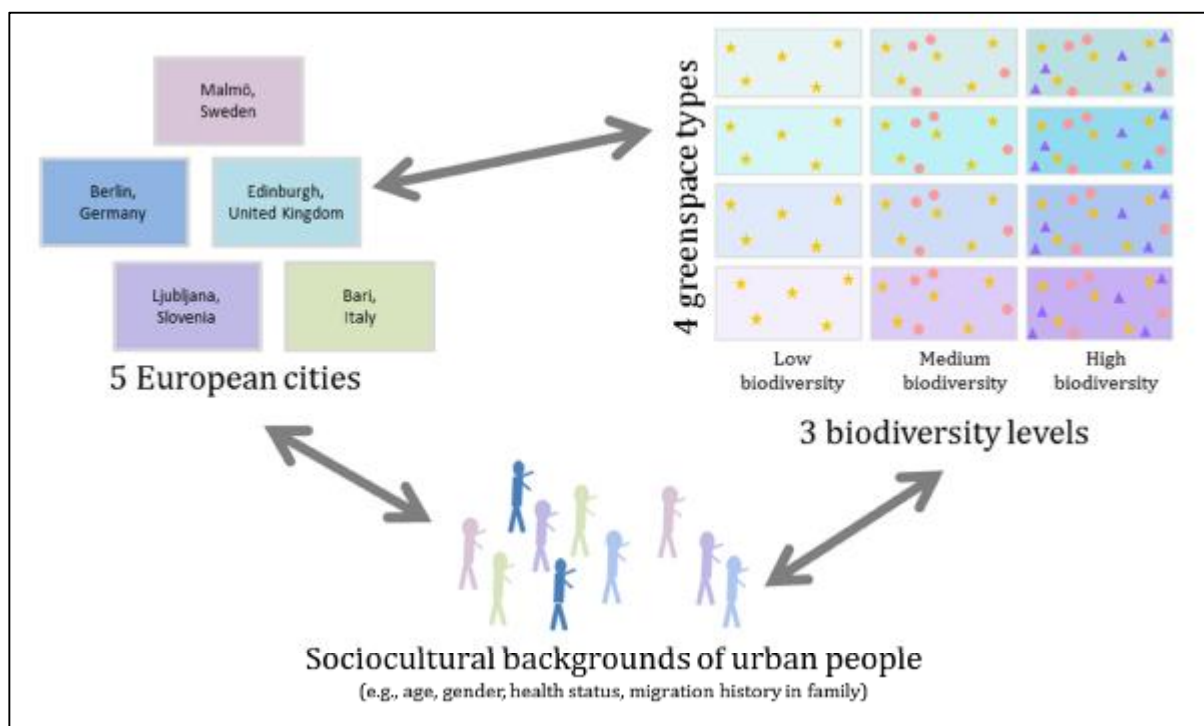
With ongoing growth and densification of many cities, urban greenspaces are increasingly under pressure [1]. Planning green cities in general, and planning biodiverse urban greenspaces in particular, is important for two reasons. First, urban greenspaces enhance the liveability of cities by delivering a range of ecosystem services (e.g., climate regulation, water retention) [2]. Second, urban landscapes can harbour a high biological richness and can thus contribute to biodiversity conservation [3]. Urban greenspaces thus allow residents to access natural elements. This is beneficial to human health and wellbeing [4] and counteracts the loss of nature experience, which has been mainly observed for children [5]. While urban greenspaces are highly appreciated on the whole, the question remains whether urban residents also appreciate biodiverse greenspaces [6]. That is, is there an added value to people if green in cities is diverse?

Another question arises on the sociocultural diversity of urban people. The background of people has been rarely considered systematically in studies on the valuation of urban greenspaces [6]. In this regard, the concept of biocultural diversity helps connect research on biological and cultural diversity [7]. Advances in the understanding of the people-nature intersection in cities are important to support policies that aim at linking social with ecological aims in developing urban landscapes and managing urban greenspaces.

### A METHODOLOGICAL APPROACH ON THE VALUATION OF URBAN BIODIVERSITY

We here present an approach to assess the valuation of urban biodiversity at the species scale by urban residents. Our approach has been applied to five European cities [8] by asking people how they liked different pictures that depicted three biodiversity levels in four greenspace types [Figure 1]. This approach included the following steps:

- (1) Developing a set of questions on how people like urban biodiversity, and on the respondents' sociocultural background such as age, gender, health status or migration history in their family. Answers on the valuation of biodiversity were to be indicated on a seven-point Likert scale with 1, *do not like at all* to 7, *like completely*.
- (2) Testing the wording of the questionnaire in cognitive interviews and in an extensive pre-test phase, to ensure that e.g., elderly people or people with lower educational levels understand the wording.
- (3) Translating the questionnaire into different languages that are spoken locally. Translation was conducted with translation teams, and included backward translations that were each compared to the first, original versions. Differences in the language versions were discussed and adjusted in the translation team, e.g., due to cultural variation.



**Figure 1** – Concept of the field survey on urban biodiversity valuation that was conducted in five European cities, with ca. 3,800 respondents of different sociocultural backgrounds

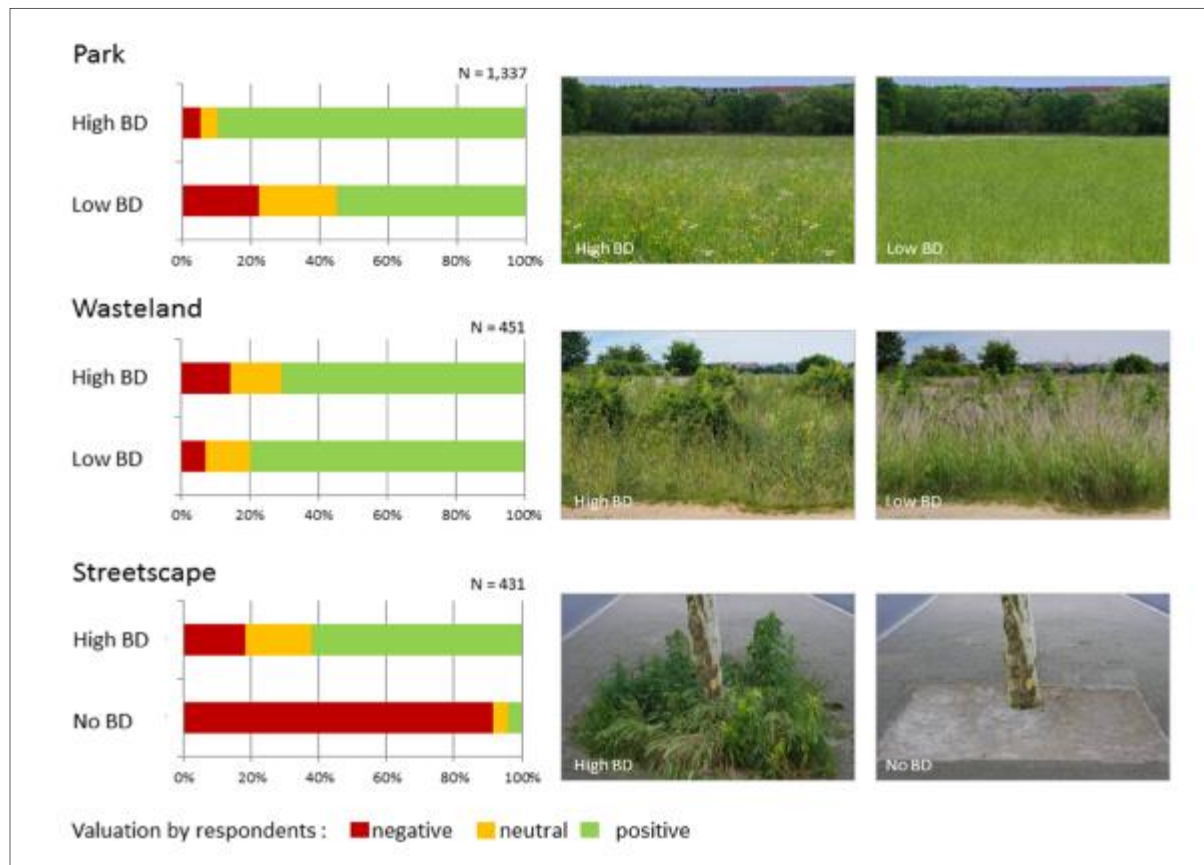
(4) Compilation of photographic material to be combined with the valuation questions. The material aimed on showing three biodiversity levels (plant species richness) for each greenspace type, and also including a no-vegetation variant for the streetscape scenes. The photo material was derived by standardized photo shootings.

(5) Conducting vegetation surveys in exactly those places and at the same time where the photo shootings were conducted to assess the exact species richness shown in the pictures.

- (6) Attributing the photo material to the three biodiversity levels (low, medium, high plant species richness).
- (7) Provision of an online version of the questionnaire and a version for face-to-face interviews.
- (8) Recruiting participants in standardized ways, (a) with random approaches in urban greenspaces, public places, sporting facilities, administrative offices etc., and (b) by the help of unions, societies, newsletters etc.
- (9) Ensuring the respondents' protection of privacy while performing the field survey and handling the data.

## BIODIVERSITY MEETS PEOPLE

At the European level, our survey showed that many people are in favor of high urban biodiversity, which was largely preferred over lower biodiversity levels. In general, forest scenes received highest ratings, followed by parks, wastelands and streetscapes. In Berlin [Figure 2], people clearly preferred the high biodiversity level in urban park meadows over the low biodiversity level of the same scene. Wastelands were also valued majorly in the positive and neutral range, whereas the high biodiversity level of wastelands gained slightly more ratings in the positive range than the low biodiversity level. For streetscapes, the high-biodiversity level gained ca. 60% of positive ratings. In comparison, a no-vegetated version of the same streetscape received ca. 5% of positive ratings only [Figure 2].



**Figure 2** – Panels display that people in Berlin (Germany) prefer high levels of biodiversity (High BD) over low diversity (Low BD) in parks and wastelands; in streetscapes, people prefer high diverse wild plant assemblages over the “clean” no BD-version [Figure from 9]

## PREFERENCES OF MULTICULTURAL SOCIETIES

Our field survey included a wide range of sociocultural backgrounds, that is, people of all walks of life. For example, in Berlin, slightly more respondents were female, and had a mean age of 41 years ( $\pm 16$ ). About 25% of the respondents in Berlin indicated an impaired health status, about 60% were currently employed, and ca. 50% had a university education. About 18% of the Berlin sample reported to have a personal migration background. In this regard, the Berlin sample showed that all landscape types were

similarly valued by people with and without migrant background. Slight differences in the valuation were indicated between older and younger persons in Berlin, but solely for urban parks, and not so for forests, wastelands and streetscapes. No, or minor, differences in the valuation of the landscape types were detected between the gender for parks, forests and streetscapes. With similar results for the other cities, the survey demonstrates broad support for urban biodiversity in multicultural European cities.

## **PLANNING FUTURE URBAN LANDSCAPES**

Important beneficial effects of green areas to people in cities have already been demonstrated well [e.g., 2] and justify green systems even in growing cities. The insight that urban people largely value high biodiversity positively supports planning and management approaches that aim at enhancing biodiversity as far as possible in urban landscapes. Our study revealed moreover that urban people also appreciate “wild” vegetation at wasteland sites and in streetscapes. This outcome points to unexploited opportunities in including informal greenspaces into urban green systems. Establishing a biodiverse-friendly management in a wide range of urban greenspaces is a great opportunity for biodiversity conservation and the people who use them—a win-win situation, with positive feedbacks on human health and wellbeing [4].

## **CONCLUSIONS**

1. Positive valuations of urban biodiversity prevail among the respondents, and different urban landscape components such as park, wasteland and streetscape.
2. Results deliver strong arguments for managing urban landscapes biodiversity-friendly to meet both, the preferences of urban people and to increase their value for nature conservation.
3. The concept of combining biological and cultural diversity research (“Biocultural diversity”) has worked well on the transnational scale. It has potential for being applied in other urban world regions.

## **ACKNOWLEDGEMENTS**

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**Глава V/14: ИННОВАЦИОННЫЕ ПОДХОДЫ К АНТРОПОГЕННОЙ РЕКОНСТРУКЦИИ ЛАНДШАФТА В УСЛОВИЯХ УРБАНИЗИРОВАННОГО НЕФТЕГАЗОВОГО РЕГИОНА**  
**Chapter V/14: Innovative Approaches of Anthropogenic Landscape Reconstruction in the Urbanized Oil and Gas Region**

**Наталья Бауэр, Любовь Шабатура, Ольга Яцевич\***

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\*Эл. Почта: [maru-safronova@rambler.ru](mailto:maru-safronova@rambler.ru)

Тюменский индустриальный университет, ул. Володарского 38,625000, Россия

**РЕЗЮМЕ.** Статья посвящена актуальной теме антропогенной реконструкции ландшафта городской среды с точки зрения повышения ее устойчивости и эстетической выразительности. Особое внимание уделено инновационным подходам создания компенсирующей природы в городской среде за счет осуществления экологической реконструкции постиндустриальных ландшафтов. Понимая, что современные экономические возможности достаточно ограничены, строительство в этих целях садов и парков традиционного типа становится затруднительным. Подобная ситуация вынуждает искать решения в нетрадиционном направлении, не прибегая к созданию крупномасштабных объектов, а распределяя средства на ландшафтный дизайн локальных фрагментов города, приближенных к источникам экологической напряженности. Распространяясь на общественные и коллективные пространства в виде улиц, дворов, скверов, площадей, формируя культурный ландшафт нового качества на месте бывшего промышленного производства, ландшафтные преобразования позволяют решить важнейшую задачу реновации городской среды. Отмечаются приемы организации городских ландшафтных объектов с учетом требований экологии и эстетики.

**Abstract.** The article is devoted to the theme of the urban environment anthropogenic reconstruction of the landscape from the point of view of increasing its sustainability and aesthetic expression. Special attention is given to innovative approaches to the creation of a compensatory nature in the urban environment through the implementation of ecological reconstruction of postindustrial landscapes. Realizing that today's economic capabilities are quite limited, the construction of parks and gardens of the traditional type is challenging. This situation forces to look for solutions in unconventional direction without resorting to the creation of large-scale facilities and allocating funds for the landscape design of the local fragments of the city, close to the sources of environmental stress. Spreading to the public and collective space in the form of streets, courtyards, squares, forming the cultural landscape of a new quality on the former site of industrial production, and landscape transformations allow to solve the major problem of renovation of the urban environment. There are methods of organization of urban landscape taking into account requirements of ecology and aesthetics.

**КЛЮЧЕВЫЕ СЛОВА:** экологическая реновация, инновационные подходы, ландшафтный дизайн, устойчивая городская среда, индустриальный ландшафт, ландшафтные компоненты.

**Keywords:** ecological renovation, innovative approaches, landscape design, sustainable urban environment, industrial landscape, landscape components

**ВВЕДЕНИЕ**

Ландшафт современного города отражает все разнообразие и противоречивость происходящих в нем процессов. Рассмотрение города в качестве разновидности антропогенного ландшафта, подверженного интенсивному воздействию человека, определяет не только необходимость