

BIODIVERSITY RESEARCH: BUILDING KNOWLEDGE BRIDGES BETWEEN ECOSYSTEMS

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A common inhabitant of the investigated water bodies are rotifers of the genus *Keratella*.



The collaborative BMBF project BIBS aims to bring together various, previously relatively distant research disciplines in order to improve our understanding of biodiversity. The results are compiled into a comprehensive synthesis in order to develop innovative management strategies.

ZALF is involved in three BIBS work packages. In work package 1, ZALF provided basic information, data from previous investigations as well as part of the research infrastructures within the AgroScapeLab Quillow as one of the joint study platforms.

Work package 2 examines the effects of aquatic-terrestrial coupling on landscape-wide biodiversity patterns. For this purpose, ZALF primarily conducts water-chemical and zooplankton investigations in kettle holes in the AgroScapeLab Quillow and in urban ponds in Berlin. The results are then combined with macroarthropod data and genetic sequencing data from other BIBS partners. The main processes and factors that influence biodiversity in the water bodies are examined in order to assess the impact of land use and urbanization and to draw conclusions regarding management measures. Initial results indicate a small influence of land use and an increased geogenic influence.

In work package 5, terrestrial ecosystems are examined and experimentally manipulated to investigate potential adaptation processes and the induced changes in organisms in response to novel ecosystems. In this context, we study extensively

The research project BIBS establishes knowledge links between various research disciplines as well as connections between ecosystems. This collaborative project uses the AgroScapeLab Quillow research infrastructure of ZALF. There, as well as in Berlin, terrestrial effects on the biodiversity of small water bodies and grasslands are examined. For grasslands in Berlin, the project particularly focusses on the effects of urbanization and new types of stressors (e.g. microplastics) on biodiversity and ecosystem services. The aim of the project is to develop management concepts for promoting biodiversity.

managed and unmanaged grasslands in the urban area of Berlin, focusing on the biodiversity, biomass and ecosystem services of the plant communities, and with special attention to invasive species. Furthermore, the effects of urbanization and new stressors such as microplastics on microbial litter decomposition and plant water use efficiency are examined.

Initial results show that the novel ecosystems provide ecosystem services (such as evaporation and nutrient absorption) to a similar extent as their natural counterparts, regardless of biodiversity. The biomass of indigenous plant species increased with biodiversity and the size of the respective grassland area, whereas the biomass of invasive species was mostly determined by the extent of urbanization (e.g. soil sealing and population density in the surroundings). The data will be further analyzed together with the project partners of the other sub-projects.

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