

# 6<sup>th</sup> UFZ Research Green Roof Newsletter

## UFZ – Research Green Roof



Photo: The UFZ Research Green Roof in April 2021

Author: André Künzelmann, UFZ

More information on the UFZ Research Green Roof: <http://www.ufz.de/forschungsgruendach>

**New section: Topics for student theses** (to be found under "Topics for students")

Questions to UFZ Research Green Roof: [forschungsgruendach@ufz.de](mailto:forschungsgruendach@ufz.de)



## Research green roof

at the Helmholtz Centre for Environmental Research – UFZ



Europäische Union

Europa fördert Sachsen.



Europäischer Fonds für regionale Entwicklung



This construction measure is co-financed by tax funds on the basis of the budget passed by the members of the Saxon state parliament.

## Research partners:



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LEIPZIG



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Centre for Environmental Research

## Praxis partners:



Ingenieurbüro Blumberg



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## Research on the UFZ Research Green Roof

### Working group "Biodiversity"

The season for the biodiversity group started in April. In a planting campaign on 28 April, 2021, the plant population on the wetland roof has been enriched with indigenous plant species such as great burnet (*Sanguisorba officinalis*), yellow loosestrife (*Lysimachia vulgaris*) and meadow bistort (*Bistorta officinalis*).

To improve the entomological research possibilities, marsh plants were also planted in the littoral areas of two ponds located on the grounds of the Science Park. This enables comparative plant-specific studies of insect visits between natural habitats and green roofs. Initial evaluations of catches from 2020 indicate that different groups of insects not only seek out plants close to the ground, but also those at roof height at around 15 m.

Another planting campaign of native species for the other green roof types will take place in the near future.



Planting campaign on the Research Green Roof on 28 April, 2021

Author: André Künzelmann

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## Working group "Process-related indicators of different green roof variants"

This April, a team from the Germany-wide broadcasted ZDF show *Plan B* visited us on our research green roof here at UFZ and talked with us about questions relating to multifunctional green roofs and their potential to contribute to the mitigation of the effects of climate change in the city. The focus, here, was naturally on the wetland roof which is our green roof champion when it comes to evaporative cooling effects, water retention, and species-rich vegetation. The show also visited the Pressel Moorland located just north-east of Leipzig and interesting carbon capture project in industry and food production. Here at UFZ, we are delighted to present our work on green roofs and urban blue-green infrastructure to such a wider audience in this innovative and solution-focused TV format. We hope that the format will increase the awareness about and visibility of wetland roofs as effective and efficient technologies. The show will be broadcast in summer 2021, stay tuned for updates.



Fig.: Take of the ZDF series *Plan B* on the Research Green Roof  
Authors: Celia Somlai, Jan Knappe (UBZ)

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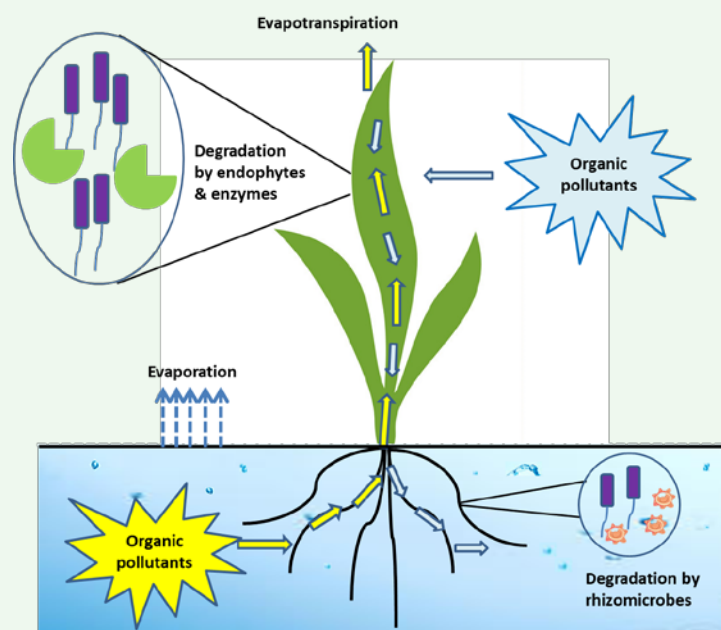
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## Working group "Green Roofs as a Pollutant Sink"

The pollutant sink working group (UFZ Departments ISOBIO, TUCHEM und UMB) aims to investigate uptake, transport, and transformation/degradation processes of air- and waterborne environmental pollutants; in order to evaluate green roofs' potentials for pollutant removal.



Author: Xiao Liu (ISOBIO)

M.Sc. Haiyan Yu is doing her PhD at the Tongji University Shanghai, China, and has started a research stay at the Department ISOBIO. She is investigating the fate of air- and water-borne urban contaminants such as aromatic hydrocarbons (e.g. naphthalene and benzothiazole) by urban green infrastructures making use of stable isotope based methods, and will mainly work with the wetland roof.



Haiyan Yu  
Joint PhD student  
Tongji university  
Shanghai, China

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## Working group “Climate study and climate modeling of the impact of green roofs on buildings and cities “

The WG Climate Modeling (UFZ-Dep. Urban and Environmental Sociology) investigates the potential of different green roof systems for climate adaptation in urban areas by considering the partitioning of incoming energy into heat fluxes. For this purpose, a variety of measurement devices (including lysimeters and radiation sensors) have already been installed on the research green roof during 2020.

In addition, ultrasonic sensors are going to be installed on the green roofs in the next weeks, which enable the detection of temperature and wind fluctuations. Based on these measurements, the sensible heat flux of green roofs can be determined using a recently developed technique.

Since a significant influence of the green roofs on the ambient air is expected especially during the summer months, the measurements will focus on this period.



Fig .: Ultrasonic sensors and air temperature measurement (below)  
Author: N. Wollschläger (SUSOZ)

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## New Students and Young Scientists Conduct Research on the Research Green Roof

The following doctoral and qualification theses as well as internships started between February and April 2021:

### WG Climate modeling:

- **Willy Stöckel: Determination of the ground heat flow from green roofs** (Bachelor thesis at the University of Leipzig, UFZ supervisor: Niels Wollschläger, duration: 03-09/2021)

### WG Pollutant sink:

- **M.Sc. Haiyan Yu: Behavior of aromatic hydrocarbons in connection with urban green infrastructures using stable isotopes** (PhD student at Tongji University Shanghai, China, UFZ supervisor: Prof. Dr. Hans Hermann Richnow, duration: 01/2021-01/2022)

### WG Biodiversity in cooperation with WG Pollutant Sink:

- **Johanna Sehr: Studies on the occurrence and degradation capacity of fungi on green roofs** (Bachelor thesis at the University of Leipzig, supervisors: Dr. Peter Otto, Dr. Dietmar Schlosser, duration: 04-09/2021)

## Expansion of research capacities

At the beginning of April, a wetland roof segment was installed on a single-family house in Leipzig-Grünau to clean the gray water. The aim is to examine the cleaning performance of the wetland roof on an annual basis. In addition, the evapotranspiration of the marsh plants, which has an influence on the urban microclimate, is to be determined.



Fig.: Wetland roof for greywater treatment  
Author: L. Moeller (UBZ)

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