

*The **ECOSPHERE research group** aims to study aquatic and valley ecosystems that are continuously challenged by natural and anthropogenic stressors. The research focuses on acquiring fundamental and applied knowledge at different levels of structural and functional organisation in order to underpin environmental management decisions.*

## MASTER THESIS SUBJECT 2024

### Biogeochemical and ecological characterization of natural and artificial waterbodies in Meise Botanic Garden

Research group: ECOSPHERE

Hosting laboratory: Meise Botanic Garden

Promotor(s): Prof. Dr Bart Van de Vijver & Prof. Dr Jonas Schoelynck

Daily supervision: Mrs Myriam de Haan



*View on the new Island Garden near the Castle of Bouchout (©Meise Botanic Garden)*

- This topic mostly contains  literature study,  lab work,  field work,  experimental work,  GIS,  numerical modelling,  other: .....
- Possession of driver's license B is  needed,  recommended,  not needed
- Possession of certificates needed:  FELASA C,  other: .....



Meise Botanic Garden (formerly National Botanic Garden of Belgium) is located in Meise, just north of Brussels. This research institute with its 90 ha large domain, harbors a unique collection of local and exotic plant species, ordered in a unique pattern mimicking natural assemblages in both temperate and tropical conditions. A wide variety of water bodies has been installed, both in the indoor (=greenhouses) and outdoor sections of the Garden. These water bodies range from larger lakes, smaller pools, brooks, wet areas, artificial basins both indoors and in the 90 ha domain. Natural streams, spring areas and even an (artificial, recently created) waterfall, are part of the domain around the Research Institute. Some of these water bodies are more than a century old, whereas others have been recently created.

Surprisingly, a biotic and geochemical characterization of these water bodies has never been performed. It is expected that the different conditions under which they occur (due to the structuring of populations in the Garden) has resulted in a large variability in e.g. trophic status of the water bodies and diatom communities. Earlier preliminary research on diatoms in two water bodies already showed an incredible diversity and abundance of diatom species. Three species new to science were recently described from these water bodies. Studying the different aquatic (eco)systems of Meise Botanic Garden characterising the biological and ecological status of the water bodies is essential to assess future development plans.

The past few years, there is a growing interest in a better assessment of the European diatom flora which resulted in the recent description of a large number of new species. The unique features of the water bodies Meise Botanic Garden, especially with its typical tropical indoor conditions, can therefore lead you to the discovery of one (or more) diatom species new to science.

The work will consist in 1. Inventorying all possible water bodies and their physical characteristics, 2. Sample the diatom communities in the selected waterbodies and characterise their geochemical features, 3. Study the diatom communities.

Several approaches (temporal, spatial) can be suggested and will be discussed together with possible candidates. The addition of historic material from the herbarium can be taken into consideration.

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