

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 2025-2026

Biodiversity and Ecology of historic diatom assemblages in the Semois valley (Prov. Luxemburg, Belgium)

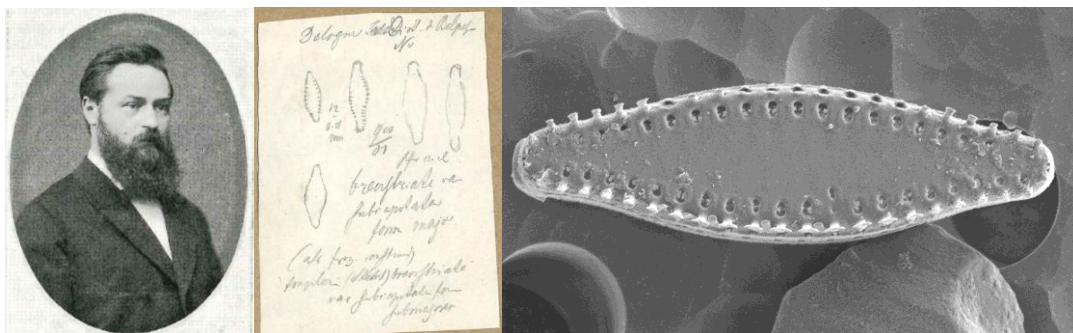
Research group: ECOSPHERE

Hosting laboratory: Meise Botanic Garden

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

Co-promotor: Margaux Pottiez & Dr Damien Ertz (Meise Botanic Garden)

Diatoms (Bacillariophyta) are one of the most abundant and diverse algal groups in freshwater and moist terrestrial ecosystems. Their characteristic silica outer shell (= valve) and the significant responses on changes in their physical and chemical environment make them excellent bio-indicators used in both applied environmental, biogeographical and paleo-ecological studies.



Charles-Henri Delogne, original drawing of Fragilaria brevistriata and SEM image of the same species.

Belgian diatom research started in the middle of the nineteenth century by famous scientists such as Henri Van Heurck and Charles-Henri Delogne. Their work led to the creation of the world-renowned historic diatom collection, now conserved in Meise Botanic Garden. Part of this collection contains material from Belgian localities in the valley of the Semois river, collected between 1875 and 1880.

The Semois valley is situated in the southern part of the province of Luxemburg, close to the city of Bouillon. Delogne, born in that region, gathered more than 150 samples from various habitats including wet walls, seepage areas, brooks, pools and fountains. The diatom diversity in many of the samples is extraordinarily high with a considerable number of species that were described as new

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to science. Most of the samples, however, have never been studied in detail but form an important source of diatom biodiversity in Belgium.

The present proposal aims to study this biodiversity in a selection of historic samples, collected under different environmental conditions. It will not only allow us to study more in detail several diatom species that were described from that region, but also to discover unknown taxa that await a description. To compare the historic diatom flora with the modern-day situation, a new diatom samples will be collected from various localities in the Semois valley that are identical to, or close to the historic Delogne samples. This will allow us to evaluate the actual situation of the diatom biodiversity in comparison with the diatom flora collected 150 years ago.

This proposal can include field work in the Semois Valley when modern-equivalent samples will be collected at the historic sampling sites. A substantial part of the research will involve microscopical analysis. Samples will be analysed in the Phycology lab in Meise Botanic Garden. As most of the research will be performed in Meise Botanic Garden, disposing of a personal car is a plus (but not mandatory).

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