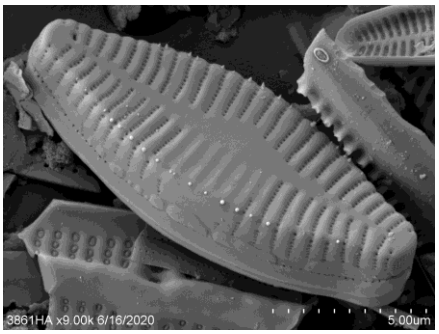
Title: Refining of the ecological preferences of diatoms based on historic and recent collections

Contact person: Bart Van de Vijver (bart.vandevijver@plantentuinmeise.be)
Research group: ECOSPHERE, University of Antwerp & Research Department, Meise Botanic Garden
Promotor: Prof. Dr Bart Van de Vijver

Summary: The European Water Framework Directive (WFD) of 2000, requests that all EU member states perform water quality assessment based on biological, physical- chemical and hydro-morphological elements. The biological monitoring includes fish fauna, macrophytes, macroinvertebrates and benthic diatoms. The latter have already proven to be very reliable bioindicators for general water quality monitoring which led to biological indices being adjusted to comply with the guidelines of the WFD.

The monitoring systems are continuously improved following updates in species identification and definition of ecological profiles. The past 2 years, one of the dominant diatom groups in our rivers and lakes, the genus *Fragilaria*, has been the subject of important revisions, increasing the number of recorded species in Europe from 5 to more than 30. A lot of these species had been previously described in the nineteenth century but later merged into morphologically broad complexes. Several of these complexes showed (too) broad ecological preferences, resulting, when present in the samples, in less confident water quality results.



Unfortunately, for most of the historic type material, the ecological data are lacking making it impossible to know what environmental features characterize these species. There a new study is proposed to determine, using historic collections combined with modern-day samples, the ecological preferences for most of these *Fragilaria* species. The diatom assemblages in the type material of several species will be identified. Additionally, a similar analysis will be made of modern-day samples where these species were also recorded. As for these samples, the ecological parameters have been measured, multivariate analysis will allow to compare and connect the historic populations with the modern ones and as a result, the ecological preferences for the present species can be refined.

Keywords: Flanders – water quality – microscopical algae – historic collections

Practical info: This proposal does not include field work. All samples have been collected from historic herbaria an during a previous water monitoring campaigns in Belgium and Europe. A substantial part of the research will involve microscopical analysis. Samples will be analyzed in the Diatom, Phycology and Myxomycete Unit at Meise Botanic Garden. As most of the research will be performed in Meise Botanic Garden, disposing of a personal car is a plus.