



Effect of CaO_2 on the organic content and respiration of sediments

This project studies the effect of calcium peroxide (CaO_2) on the organic content and the respiration of sediments from a shallow lake after an exposure time of 3 months.

Depending on the extent of the practical work, this topic is suitable as a **study project** (for 1 or more students) or as a topic for a **bachelor thesis** or **part of a master thesis**.

Calcium peroxide has been used in lake therapy for several years. It is based on the assumption that calcium peroxide (CaO_2), which is applied as granules to the sediment or introduced superficially, slowly decomposes and that the O_2 released in the process promotes microbial degradation of the organic matter accumulated in the sediment. It is promoted as an environmentally friendly alternative to dredging water bodies. However, there is a lack of systematic studies and contradictory statements in the literature on the success of this measure. Within the framework of the ZIM-funded project, the mechanisms of action of a CaO_2 -containing preparation are to be further clarified.

For this purpose, a long-term experiment with twelve sediment cores from a shallow lake was set up in December 2022. Four cores remained untreated (control), four were treated with a dose of 50 g m^{-2} of a CaO_2 -containing preparation, and four with 100 g m^{-2} . After the exposure time of a quarter of a year, the possible effect of the CaO_2 application will now be investigated. For this purpose, the supernatant water is examined with respect to oxygen concentration, pH value and concentration of phosphorus (SRP) and ammonium. Oxygen concentration will be measured with high resolution down to the uppermost sediment layers using a needle optode and micromanipulator. The sediment cores are then cut and individual deep lamellae are expected to be analyzed with respect to the following parameters: dry weight, loss on ignition 450°C and 550°C , organic content (TOC), elemental analysis (CNS), oxygen respiration potential. Students will compare the parameters of treated and untreated sediment cores.

Type: Study project or Bachelor thesis
or part of a Master thesis

Supervisor: Dr. Jacqueline Rücker

Contact: j.ruecker@b-tu.de

Start: from March 2023

Students: 1 or more

The practical work takes place at the Research Station of the Department of Aquatic Ecology in Bad Saarow (3 h by train from Cottbus). There is the possibility of an overnight stay in Bad Saarow.