

**P019** Biogeochemistry and microbial ecology of metal-sulfur-nitrogen interactions in wetlands  
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Wetland ecosystems in the Netherlands suffer severely from sulfur and nitrogen pollution due to industrial and agricultural activities. For preservation and restoration purposes it is necessary to understand the fundamental processes taking place in these wetland ecosystems in response to pollution. Increased influx of sulfate and nitrate results in sulfide formation, which in turn causes internal phosphate eutrophication and direct toxicity. Furthermore heavy metals are mobilized resulting in acidification of the ecosystems.

This part of the project focuses on the key microbial players of the sulfur, nitrogen and iron cycles involved in the abovementioned processes. Continuous and batch reactor systems loaded with iron-sulfides or thiosulfate were used to enrich and isolate nitrate- and nitrite-reducing bacteria. In this way over 60 isolates representing different trophic groups were obtained. A selection of these isolates are currently identified and characterized in more detail. In addition molecular techniques such as 16S rRNA gene libraries and FISH analysis were used to characterize the bacterial diversity of the reactor systems and the various polluted ecosystems.