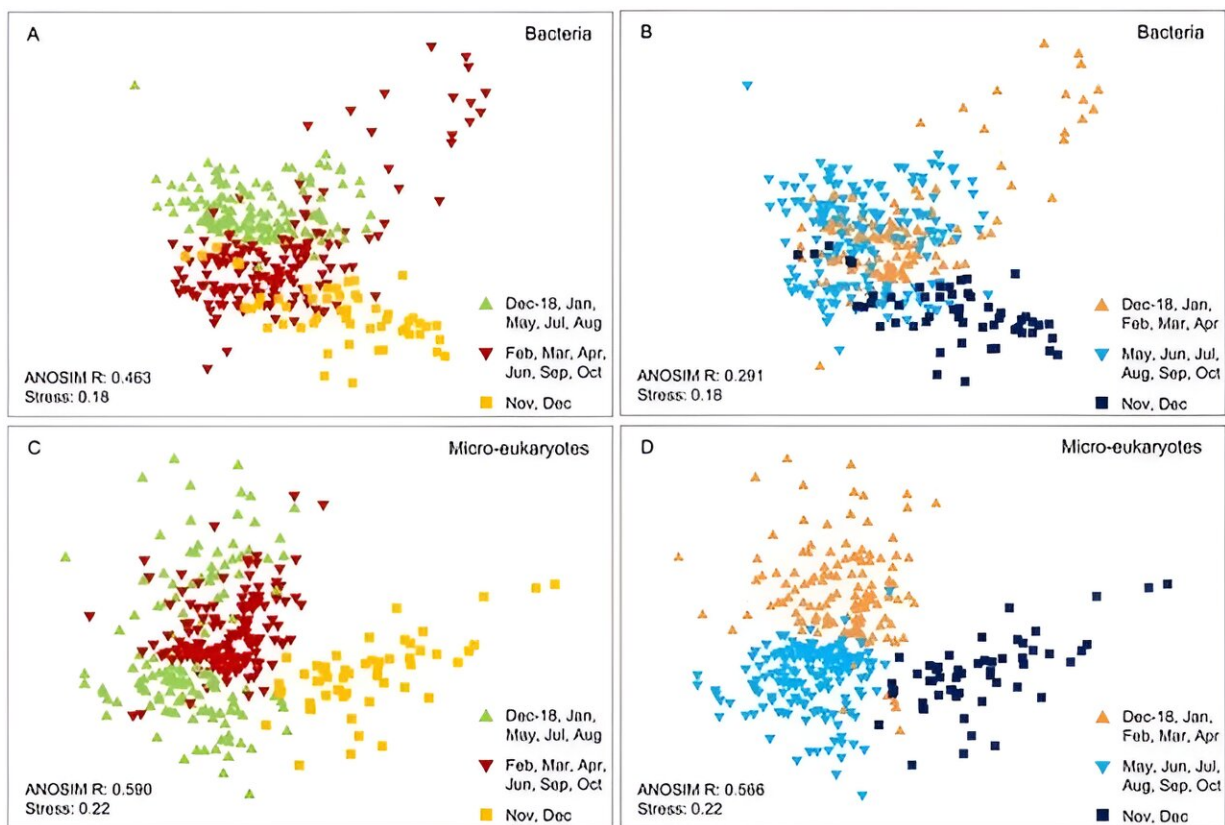


Researchers reveal complex response of microbial communities to wastewater fluctuations

April 12 2024, by Zhang Nannan



Seasonal variation of bacterial and micro-eukaryotic community composition in CWs. Credit: Li Xi

Microbial communities in constructed wetland (CW) sediments are often

disturbed by wastewater. It is necessary for the microbial community to maintain a relatively stable composition or biomass in order to continue to remove pollutants from wastewater.

A research group led by Prof. Wu Jinshui from the Institute of Subtropical Agriculture of the Chinese Academy of Sciences and Fuzhou University has investigated the changes in bacterial and micro-eukaryotic community composition in CWs over one year. Now, they have revealed complex processes of wastewater treatment by [microbial components](#) in full-scale surface flow constructed wetlands.

The study is published in [Bioresource Technology](#).

According to the researchers, wastewater fluctuations caused significant seasonal changes in the composition of bacterial and micro-eukaryotic communities. However, the abundance of 16S rRNA, nitrification and denitrification genes remained relatively stable across seasons.

In addition, with the decrease of nitrogen concentration in wastewater, the microbial community composition of CWs was also changed from heterotrophic to autotrophic.

At the same time, micro-eukaryotic communities were found to be more sensitive to [wastewater](#) fluctuations than bacterial communities.

"This study improves our understanding of the mechanism of functional stability maintenance of microbial community in CWs in South China," said Prof. Li Yuyuan, corresponding author of the study. "These findings also provide potential guidance for the research and development of CWs functional enhancement technology."

More information: Xi Li et al, Response of bacterial and micro-eukaryotic communities to spatio-temporal fluctuations of wastewater in full scale constructed wetlands, *Bioresource Technology* (2024). [DOI: 10.1016/j.biortech.2024.130626](https://doi.org/10.1016/j.biortech.2024.130626)

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