



Book of Abstracts

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Global Environmental Changes:
Algal Response and Ecosystem Perspectives

Restoring, protecting and monitoring algal communities in polluted waters

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This study presents an innovative solution for the restoration of industrial waterways and degraded river channels. It is implemented using Rock-Based Algal Niches (RAN) and an autonomous water parameters monitoring system.

RANs are parabolic structures composed of at least 95% natural rock materials, primarily basalt, granite, and greywacke. The composition of the stones can be selected individually for specific water courses, considering water parameters and the preferences of aquatic organisms.

The algae selected for introduction into watercourses are organisms derived from populations native to the local ecosystem. The mix of species is chosen to support biodiversity and maintain balance in the aquatic environment, thereby preventing the dominance of a single species and the collapse of the ecosystem.

The effects of renaturation are continuously monitored by a system of autonomous measuring probes (buoys), which enable the measurement of selected water parameters and quantitative analysis. The system transmits all collected data to a central server, where it can be further processed using machine learning algorithms. This makes it possible to predict changes in the aquatic environment and take proactive measures in the event of unfavorable forecasts.