INNOVATIVE APPROACHES FOR THE STUDY OF BIODIVERSITY AND WATER QUALITY ASSESSMENT IN THE ALPINE REGION: THE INTERREG ALPINE SPACE PROJECT ECO-ALPSWATER

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Abstract

The adoption of innovative approaches for monitoring and safeguarding lake and river ecosystems is the object of a new project - Eco-AlpsWater - co-financed by the European Regional Development Fund through the Interreg Alpine Space programme. The project, which begun in April 2018, will last three years, involving 12 partners belonging to 6 countries in the Alpine region (Austria, France, Germany, Italy, Slovenia and Switzerland). One of the main objectives is to develop and apply state of the art methods for the monitoring of cyanobacteria and bacteria, microalgae and fish based on the use of High Throughput Sequencing (HTS) techniques, complementing traditional approaches and anticipating the route in the development of new generation water monitoring systems. Owing to the ability to produce a wide variety of toxins, a specific attention is given to the identification of potentially toxigenic cyanobacteria. Traditionally, their monitoring in aquatic ecosystems was based on microscopic examinations. Nevertheless, traditional approaches suffer many drawbacks due to limitations in the correct microscopic recognition of diacritical characters. The new HTS technologies are providing a comprehensive picture of taxonomic composition and biodiversity of cyanobacteria and other biological elements in the Alpine region based on the analysis of samples collected in over 50 lakes and rivers. In order to evaluate general patterns in cyanobacteria composition related to cyanotoxin production, the survey is completed by the concurrent examination of sample aliquots for the determination of a wide variety of cyanotoxins in water samples and biofilms in lakes and rivers.