

CHANGES IN BENTHIC DIATOM ASSEMBLAGES AND THEIR RELATIONSHIP WITH ENVIRONMENTAL VARIABLES IN A RIVER OF CENTRAL CHILE

Fabiola Cruces L. & Patricio Rivera R.

Department of Botany, University of Concepción

In Chile the use of diatom communities as water quality indicator is not common yet. A study to establish the diversity and structure of benthic diatom assemblages and their relationship with environmental variables was carried out at Maule River (VII Region, Chile). Samples for physical, chemical and biological analysis were collected from sites along the river covering zones with different land uses to obtain the major spatial variability on environmental conditions. The environmental measured were: temperature, pH, total phosphorous, total nitrogen, suspended solids and turbidity. The diatom samples were collected from submerged stones, and for getting the algal material were scraped off the upper surfaces of the stones. The biological (composition and abundance of each taxa), and physical-chemical data were analyzed through the multivariate ordination. According to specific physical and chemical parameters, the best water quality was recorded by the sampling sites located near to mountain. The obtained results showed an increase in the concentration of those parameters which are related with the level of nutrients in the water (phosphorus and nitrogen) and those related with the material from the basin (solid suspended and turbidity), from the upper part towards the lower part of the river, been the total phosphorous, suspended solids and turbidity the most important variables into the data set. The diatom assemblages also showed significant changes in their composition between the different sampling sites of the river. Some of the dominant species in the river were: *Staurosira construens*, *Staurosirella pinnata*, *Pseudostaurosira brevistriata*, *Fragilaria vaucheriae*, *Achnanthidium minutissimum*, *Bacillaria paxillifer*, *Nitzschia fonticola* and *Ulnaria ulna*, among others. Finally, it is possible to indicate that the water quality observed in the river would be principally depending on the environmental conditions surrounding the sampling site.

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