

Spectral characterization of *didymosphenia geminata* under laboratory conditions: Bases for a monitoring and early warning system in river systems of south Central Chile

Esse C.

Fustos I.

González K.

Aguayo C.

Encina-Montoya F.

Figueroa D.

Lara G.

Navarro C.

The effects of climate change and the severe anthropization of local river systems have contributed to the alteration of ecological processes, affecting the water quality in these systems and thus generating conditions for the emergence of algal species. In this context, the object of the present study was to evaluate the potential of remote detection techniques to obtain a spectral characterization of *D. geminata* under controlled laboratory conditions. This would provide the basic information for the design and implementation of a monitoring and early warning system. *D. geminata* cells obtained from two southern Chilean river systems were cultivated in the laboratory and analysed using hyperspectral techniques to construct their spectral signatures. The results showed the feasibility of distinguishing between the presence and absence of *D. geminata* when it occurs in association with other diatom present in the environmental. The results could be the first step towards the design and implementation of a monitoring and early warning system to facilitate existing inspection activities. © 2018 The Author(s). Journal compilation and 2018 REABIC.

Diatom

Hyperspectral analysis

Invasive algae

Remote sensing

Spectrometer