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Researchers develop a web application for the evaluation of the ecological status of rivers in the Spanish Mediterranean basin

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With just one click, the system provides a list of the macroinvertebrate community that should live in a specific point in any river of the Mediterranean basin, as long as there are no environmental alterations in that point. The list of macroinvertebrates provided by the model is compared against the real list to determine the degree of alteration of the habitat.

University of Granada researchers have designed a web application called MEDPACS (MEDiterranean Prediction And Classification System), a project inspired in similar projects developed in other countries as the United Kingdom and Australia.

University of Granada researchers have developed a web application that evaluates the ecological status of any river of the Spanish Mediterranean basin by estimating the variety of aquatic macroinvertebrates that live in each river. The researchers plan to extend the applicability of this model to all rivers in Spain.

This application –called MEDPACS (MEDiterranean Prediction And Classification System)– is inspired in similar projects developed in other countries as the United Kingdom (RIVPACS project) and Australia (AUSRIVAS). This project was developed within the framework of the project known as GUADALMED, where seven Spanish universities collaborated to test different methods for the evaluation of the ecological status of rivers in the Spanish Mediterranean basin. The purpose of this project was to develop an evaluation method aimed at meeting the provisions of the Water Framework Directive of the European Parliament and of the Council, where a framework for Community action in the field of water policy is established.

At present, with just one click, the system provides a list of the macroinvertebrate community that should live in a particular stream habitat in any river of the Mediterranean basin, as long as there are no environmental alterations in that point. The list of macroinvertebrates provided by the model is compared against the real list, to determine the degree of alteration of the habitat. To obtain the forecast list, the model performs a series of calculations and evaluations including parameters such as the distance between the particular stream point and the source of the stream, the slope or the geological materials in the upstream area. Thus, a forecast is provided on the macroinvertebrates that should be expected to live in that point of the stream.

The model automatically generates maps and reports on the ecological status of the stream.

The developers of this forecast model affirm that MEDPACS is a useful tool for all organizations belonging to the Spanish Department of Agriculture, Food and Environment (such as river basin management offices, water agencies, etc), and collaborating agencies and companies involved in the evaluation of the ecological status of surface water bodies.

Mobile Data Collection

University of Granada researchers also have developed the application ACADARI (application to collect data about rivers). This application is installed on mobile devices and PDAs, which collect data on the stream in situ, thus allowing researchers to later import these data into a spreadsheet and MEDPACS. This way, transcription errors are avoided. ACADARI collects data such as geolocation data, physical and chemical data (flow, temperature, pH, conductivity and oxygen in water), and records the macroinvertebrate and macrophyte communities living in the stream.

For further information on the MEDPACS Project, please visit <http://medpacs.ugr.es/>. This project has been conducted by the research group Animal Biology and River Ecosystems of the University of Granada. This project was funded by different national projects, by the Spanish Ministry of Agriculture, Food and Environment, and by an excellence project of the Andalusian Regional Government.

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