



Conference Abstract

The use of groundwater crustacean communities as indicators for aquifers quality in the semi-arid region of north-central Chile

Sanda Iepure[‡], Nicolas Gouin[§], Angeline Bertin[§], Ana Isabel Camacho[|], Antonio González-Ramón[¶], Concha Jiménez de Cisneros Vencelá[#], Tiziana Di Lorenzo[□]

[‡] University of Gdańsk, Faculty of Biology, Department of Genetics and Biosystematics, Gdańsk, Poland

[§] CEAZA, Raúl Bitrán 1305, Campus Andrés Bello, Universidad de La Serena, La Serena, Chile

[|] Museo Nacional de Ciencias Naturales, Madrid, Spain

[¶] Instituto Geológico y Minero de España, Madrid, Spain

[#] Instituto Andaluz de Ciencias de la Tierra (IACT), Granada, Spain

[□] Institute of Ecosystem Study of the CNR, National Research Council of Italy, Florence, Italy

Corresponding author: Tiziana Di Lorenzo (tiziana.dilorenzo@ise.cnr.it)

Received: 27 Sep 2018 | Published: 02 Oct 2018

Citation: Iepure S, Gouin N, Bertin A, Camacho AI, González-Ramón A, de Cisneros Vencelá CJ, Di Lorenzo T (2018) The use of groundwater crustacean communities as indicators for aquifers quality in the semi-arid region of north-central Chile. ARPHA Conference Abstracts 1: e30126. <https://doi.org/10.3897/aca.1.e30126>

Abstract

Chile has large extensions of arid and semi-arid regions throughout the whole country, where the intensive demands and use of water resources, especially groundwater for irrigations and mining activities, increased dramatically over the last decades. The aquifer depletions due to water abstraction for irrigation and nutrient loads, exert major alterations of water quality, groundwater recharge and the natural renewal rate. All these factors diminish the aquifer value for the users and contribute to the degradation of groundwater as environment and habitat for fauna. This intensive use of groundwater resources in Chile brought to significant social and economic benefits, but their inadequate management resulted in negative environmental, legal and socioeconomic consequences. In this study, we aimed at providing a first assessment of environmental alterations of groundwater ecosystems from agricultural watersheds in northern Chile by specifically evaluating the effects of nitrogen and pesticide loads on groundwater communities and identifying the ecosystem service alterations due to agricultural activities. The study has been performed

in a glacial aquifer from Coquimbo region; 250 km north of Santiago de Chile, the floodplain of which is dominated by agriculture (fruits trees, vineyards). Due to low regional precipitations (100-240 mm/year) the aquifer is primarily recharged by snowmelt from the Andean chain and surface runoff. The relative groundwater levels, groundwater temperature, chemical analysis of nitrogen and total phosphorus and pesticide concentrations were examined, along with the evaluation of crustacean biodiversity and spatial distribution pattern. Stygofauna taxonomic richness and the presence of stygobites have been related more to groundwater level stability than to chemical water parameters indicating that over-exploitation has a negative impact on habitat suitability for groundwater invertebrates. Groundwater biota assessment is essential in understanding the impact produced by agriculture activities on groundwater as a resource and as ecosystem, a nexus that becomes more and more widely recognized. The rationale and the preliminary results of this study are summarized in the Suppl. material 1.

Presenting author

Tiziana Di Lorenzo

Supplementary material

Suppl. material 1: Supplementary File

Authors: Iepure Sanda, Nicolas Gouin, Angeline Bertin, Ana Isabel Camacho, González-Ramón Antonio, C. Jimenez-Cisneros, Tiziana Di Lorenzo

Data type: Poster

Filename: Chile poster.pdf - [Download file](#) (2.01 MB)