



# mountains2016

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I International  
Conference on Research  
for Sustainable Development  
in Mountain Regions

Book of Abstracts



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*Book of abstracts*

*Edited by*

Centro de Investigação de Montanha (CIMO)

Instituto Politécnico de Bragança, Portugal  
2016

## Table of Contents

	Pag.
Organization .....	6
Major supporters.....	6
Other supporters and sponsors .....	6
Committees .....	7
Keynote speakers .....	8
Abstracts.....	12
Keynote addresses.....	13
Oral sessions.....	18
Poster sessions .....	147
List of authors.....	212

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### **S03P07**

#### **Can zooplankton biodiversity be used to evaluate trophic state and water quality of a mountain reservoir?**

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Zooplanktons are a keystone in the ecosystem functions transferring energy to higher trophic levels. Moreover, zooplankton community is susceptible to quick responses with changes in the environment. Therefore, this community can be regarded as a valuable indicator of ecological integrity and water quality. Serra Serrada is a mountain meso-eutrophic reservoir (latitude: 41°57'12"N; longitude: 6° 46' 44"W; altitude 1300 m) in Portugal, which is prone to water level fluctuations. Despite of being an artificial lake, zooplankton showed high biodiversity including 13 taxa of Rotifera, 12 taxa of Cladocera and 3 of Copepoda. Some of these species, such as *Ceriodaphnia quadrangula*, *Drepanothrix dentate* and *Holopedium gibberum* are classified as rare in the context of Iberian Peninsula. In order to assess the role of zooplankton community composition as environmental indicator, the present research aimed to compare the values obtained for Carlson's Trophic State Index (TSI) (based on total phosphorous concentration (TP), water transparency (SD) and chlorophyll 'a' concentration) to the obtained zooplankton metrics like: (1) The trophic state index of rotifer abundance (TSI N rot); (2) the ratio of crustacean abundance to rotifer abundance and (3) the ratio of large (>10 µg) cladoceran abundance to total cladoceran group abundance. All the components of TSI increased during the low level phase. Although, rotifer being dominant in all phases (except in the emptying phase, where Copepoda was dominant), TSI N rot increased in the low level phase, when TP and Chl a concentrations increased and SD decreased. Crustacean/Rotifer ratio also followed the same pattern, showing the lowest value in the low level phase. Results for large Cladocera/total Cladocera ratio were not so elucidative. Therefore, zooplankton metrics were in line with TSI, confirming that zooplankton community can be a good indicator of reservoir water quality and of ecological integrity.