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Application of a Geobiodiversity Index to Natural Protected Areas in Northern Portugal

Antonio Vieira¹, Gabriella Emilly Pessoa², Valdir Adilson Steinke³, Antonio Bento Gonçalves⁴, Saulo Folharini⁵, Jorge Novais⁶, Sara Silva⁷, and Tiago Marques⁸

¹Institute of Social Science, Communication and Society Research Centre, University of Minho, Guimarães, Portugal (vieira@geografia.uminho.pt)

²Department of Geography, University of Brasília, Brasília, Brazil (gabriellaemilly@gmail.com)

³Department of Geography, University of Brasília, Brasília, Brazil (valdirsteinke@gmail.com)

⁴Institute of Social Science, Communication and Society Research Centre, University of Minho, Guimarães, Portugal (bento@geografia.uminho.pt)

⁵Institute of Social Science, Communication and Society Research Centre, University of Minho, Guimarães, Portugal (sfolharini@gmail.com)

⁶Institute of Social Science, Communication and Society Research Centre, University of Minho, Guimarães, Portugal (jorge.novais.98@gmail.com)

⁷Institute of Social Science, Communication and Society Research Centre, University of Minho, Guimarães, Portugal (sara.catarina.g@gmail.com)

⁸Institute of Social Science, Communication and Society Research Centre, University of Minho, Guimarães, Portugal (tmarques.geo@gmail.com)

The majority of studies on geodiversity and geoheritage have been focused exclusively on the analysis and evaluation of abiotic elements. Although some authors have highlighted the important connections between abiotic and biotic elements, it was not enough to highlight them systematically. In this sense, it is necessary to do the geodiversity potential analysis in a more complete sense. That is, all elements should be contemplated.

In the context of the project "Clictour - Climate change resilient tourism in protected areas of Northern Portugal", three protected areas were chosen as case studies. These areas are located in northwest Portugal, namely the Peneda-Gerês National Park, the Alvão Natural Park, and the Litoral Norte Natural Park. Despite their geodiversity richness, these parks were established mainly based on their biodiversity.

The objective of this proposal is the application of a geobiodiversity index. This index is based on the work done by Steinke (2021), which is capable of indicating the most relevant areas of geological, geomorphological, and vegetational aspects to be conserved within existing legal instruments.

The methodological procedures were centered on segmenting the three areas in hexagonal cells. The parks were subjected to a spatial matrix analysis in GIS and geostatistical environments capable of articulating the various elements and generating an agglutinating index for each cell.

The results reveal the existence of a high index value for geodiversity in the different protected areas, being more significant and extensive in the Peneda-Gerês National Park. It also shows the importance of integrating the analysis of geodiversity and biodiversity, especially in natural protected areas. The present study points out the importance of the compartmentalization approach

in hexagonal cells, capable of providing a multilevel approach in studies of complex spatial analysis.

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