



Space geodiversity review: a case study in the southwestern region of Paraná State, Brazil.

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Considering the strong global concern for nature protection, improvements emerge to support techniques to understand physical and biological means of selecting areas for environmental conservation. Most techniques take into consideration mainly the biological characteristics of nature, however as the nature is a complex of biotic and abiotic elements it becomes thus necessary the creation of parameters to understand the diversity of abiotic elements, their distribution, occurrence, threats and values as well.

This paper aims to identify, quantify and perform a spatial analysis of the distribution of geodiversity in the southwestern region of Paraná State, Brazil, from the different concepts of geodiversity with the use of techniques on digital cartographic database in a Geographic Information System - GIS.

Gray (2004) conceptualized geodiversity as the natural distribution of geology, including rocks, minerals, fossils, soil characteristics, land forms and processes (geomorphology), and their connections.

Geodiversity is composed by the variability of abiotic nature, including lithological elements, tectonic, geomorphological, edaphic, hydrological, topographical and physical processes of the Earth surface, seas, oceans, together with natural endogenous, exogenous and anthropogenic processes that include a diversity of particles, elements and places (Serrano and Ruiz Flaño, 2007).

Different methods of quantitative assessment of geodiversity in different territories were applied by Carcavilla et al (2007), Pellitero and González-Amuchastegui (2010), Navarro (2010), Katerina and Dušan (2008), Serrano et al (2007; 2009), Kozłowski (2010), Zwolinski and Stachowiak (2012), Thomas (2012), Hjort and Luoto (2010; 2012), Pellitero et al (2014), and Silva (2014).

Considering geodiversity as the abiotic elements which constitute the landscape; it is important to mention that such set may vary spatially according to the occurrence of different geological formations, rock types, landforms, occurrence of fossils, drainage system, soil and other processes that outline the geodiversity.

In addition to the wealth index number, which presents a quantity and area ratio, another way of analyzing the geodiversity of a case study is the abundance, dominance or the relative frequency of geodiversity (Carcavilla et al, 2007).

As for the southwestern region of Paraná State case study, we used a set of cartographic databases at the 1:250.000 scale; for example: geomorphological and soil compartments, rivers, geological formations, structural lineaments, as well as temperature, rainfall and humidity average maps. The maps were organized relating the attribute tables, quantifying the sum of different elements each sample cell contained in a regular grid of 4km².

As a result, a map of the geodiversity wealth index of the region has been generated. High geodiversity wealth index comprises more carved valleys with steep slopes on some structural lines; on the other hand, less wealthy areas are located on softer relief plateaus with large hills, more homogeneous soils and lower relief structural control.

These results, as well as adjustments and efficiency of the method seem to indicate an important tool for area management, especially regarding the selection of priority areas for nature conservation.