

The use of geotechnologies as a support to protected areas management : case study of Macaé de Cima Protected Area, Rio de Janeiro State, Brazil

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Although the government shows intention to create protected areas, in the last decades, there is a lack of efficient planned actions, which makes it difficult the preservation of the Atlantic Forest in Rio de Janeiro State. The lack of accurate information and data regarding the protected areas makes it difficult to create strategies to guarantee nature conservation. This research work aims to present an alternative, at a low cost, to characterize protected areas, through the assessment of Macaé de Cima Protected Area, situated in Rio de Janeiro State, from thematic maps, using 1:25,000 scale. To the land coverage map, the ALOS (Advanced Land Observing Satellite) image from an AVNIR-2 sensor scene, which was classified in a semi-automatic manner by SPRING 5.1 (a free software developed by Spatial Research National Institute), classified by Battachayra method and having its final edition created on ArcGis9.3 software. The geomorphological map created by Lima (2008) was utilized to identify topography units on a 1:50.000 scale. Three mosaics from PRISM sensor enabled the production of a detailed map in the correct scale. The topography units identification provided by the geomorphological map allowed the delimitation of the landscape units that would be classified. Each of the topography unit specified on the map corresponds to a landscape unit to be defined. They were classified according to methodology proposed by Bólos (1981), considering the geosystems composition. Determining land cover and use allowed us to scale deforestation and to investigate human settlement advances on forest remnants. Although a large number of small owners were attracted to this area in the past few years, the forest in advanced stage (41%) is still the predominant, followed by forest in middle stages (30%). The human usages of land, as pastures (3%), agriculture (6%) and urban area (2%), represent a smaller percentage. Concerning geomorphological units, we came to the conclusion that Macaé de Cima Protected Area is mainly composed by steep mountains, which correspond to 73% of its area, in opposition to 21% formed by reshaped scarps, 2% by high hills and 4% by river plains. Therefore, the most important landscape units found were the biotic steep mountain and the biotic reshaped scarps. However, the major percentage of human use of the geosystemical structures deserves special reference, such as river plains and dissected/high hills. Even though the steep mountains are mainly biotic, which means that the ecosystem is the subset's primary element, we cannot forget to reflect on its vulnerability, compared to the rising pressure of the human presence in recent years. As a conclusion, Macaé de Cima Protected Area has a good conservation level overall, since 71% of its area is still covered by vegetation in intermediate and advanced reconstruction stages. Nevertheless, the current favorable conservation framework does not modify its high environmental sensitivity concerning possible changes at topography units cover and use. Once cleared, the forest will lose its hydrological functions and a natural succession won't be able to recover them. An appropriate management and planning is needed hence.