An Investigation of the Relationships between Ecosystem Services, Human Health, and Social Deprivation for Wales using Spatial Data Analysis Techniques in GIS Environment

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Being able to analyse the relationship between people and nature has always been challenging as it involves bringing together the insights from a range of disciplines such as natural and social sciences. In this framework, it is of key importance to monitor and measure possible correlations between factors such as ecosystem services, human health, and social deprivation. Given that knowing how they are related helps policy makers to decide about sustainable land use and land management – especially in relation to the increasing biodiversity loss and ecosystem services degradation.

The aim of this study has been to explore relationships between ecosystem services, human health, and social deprivation using Wales as a case study. The specific objectives of the study included identifying, mapping and giving possible explanations for any observed relationships.

The methodology developed involved first creating a recreational layer showing the size and location of all potential recreational areas in each Welsh local authority. Subsequently, a range of quantitative analysis methods adopted from social and natural sciences were used to determine the degree of correlation between the observed socio-economic factors and recreational areas.

Results showed that the relative size of potential recreational area varies widely within the 22 local authorities comprising Wales. In addition, not all observed socio-economic factors were found to be correlated with recreational areas. On the one hand, some of the examined variables, such as income and employment deprivation showed high correlations with poor recreation options. On the other, very poor correlations were reported between recreation options and variables such as life expectancy and long-term illness. All in all, findings are in agreement to previous studies suggesting that human health is determined by a complex interplay of more than the observed determinants, including for example biology and genetics or living and working conditions.