

Ecosystem Services and Urbanisation. A Spatially Explicit Assessment in Upper Silesia, Central Europe

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Urbanisation is a complex spatiotemporal process taking place across landscapes even in areas far beyond urban cores; therefore, directly and indirectly affecting the functions, processes and services of ecosystems. Urbanisation is a difficult process to monitor, quantify and plan. Landscape areas located outside of urban cores are heavily affected by urbanisation, yet they provide fundamental ecosystem services (ES). To date, the evidence of the spatial variability of the relationship between ES and urbanisation is scarce. In this contribution, a spatial analysis was carried out in Upper Silesia, central Europe, to explore the provision of ES and the levels of urbanisation to advance the use of ES in planning. The potential provision of ES was assessed using an approach based on land use land cover. The technomass indicator was used to assess urbanisation as a continuous variable. To ascertain the spatial variability between urbanisation levels and ES provision across the landscape, a geographically weighted regression model was used. The results show a statistically significant variability across the landscape for several ES, showing that this relationship does not remain constant. The spatial variability of urbanisation affects ES in a differentiated manner. The proposed method allows for the direct use of the ES framework in landscape planning to assess the impacts of urbanisation outside of urban areas. © 2019 Published under licence by IOP Publishing Ltd.