Health condition of nature reserves in cities, and the health of residents?Example of Bielanski Forest in Warsaw (Poland) by using the latest remote sensing tools (Tree Crown Map)

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Abstract:

Urban nature reserves are an important reservoir of urban greenery with preserved natural vegetation and valuable tree species up to 400 years old (relics of the former Mazovian Forest), as is the case with forests in Warsaw, capital of Poland. They are also areas serving the local community as recreational places acting mostly the only places of greenery in a dense structure urban district of the city. The Bielański Forest in Warsaw (case study) is an example of natural greenery (area of 130.35 ha) as a buffer zone (green lungs) between Bielański Hospital complex, University (UKSW) and dense urban buildings of Bielany disrict. Despite nature protection of forest site (established in 1973) the given area fulfills important health and recreational functions. The aim of the research is to determine the health condition of forest trees by using the latest available remote sensing (RS) spatial data and indicator (Map of Tree Crowns in Warsaw, 2018; Normalized Difference Vegetation Index, NDVI). In addition, the impact on health and recreation functions of the forest area was examined. The results show selected parts of the forest particularly endangered to users,

as well as, the most valuable areas that may prevent active and passive recreation. Moreover, due to poor management and legal restrictions of urban forests in Poland, this site is limited cultural or by usage diversity. Finally, the RS method can provide guidelines on how to change forest space to adapt it best to user needs, when applicable legal regulations for nature protection areas.

Key Words: Urban Growth, Land use/ change and Agricultural

Biography:

Andrzej Długoński

Andrzej Długoński has completed his PhD at Warsaw University of Life Sciences (Poland) in landscape architecture discipline. He is a researcher at Intitute of Biological Sciences at Cardinal Stefan Wyszynski University in Warsaw, a member of Revitalization Commmete of Łódź City Office. He gained his experience during foreign sholarships at Department of Geography at HU Berlin, as well as as an co-organizer of design workshops at University of Lodz. His papers treat the problems on green spaces designing and revitalization in big cities. He also focuses on the analysis of the condition of the natural environment through site observation.

Thilo Wellmann

Thilo Wellmann is working at the lab for Landscape Ecology at the Humboldt Universität zu Berlin, investigating the usage of remote sensing for ecologically integrated urban planning and founder of the initiative 'Remote Sensing for cities'. He receives a scholarship by the DBU (German Federal Environmental Foundation) and he is a Guest Scientist at the UFZ – Leipzig (Helmholtz Centre for Environmental Research). He is a winner of the 2020 Research Price from the BUND (Friends of the Earth Germany) for pioneering work on the topic of Sustainability.

Dagmar Haase

Dagmar Haase is engaged in the EU IP PLUREL as module leader for the sustainability assessment modelling of land use changes at regional level. She is working on urban flood risk assessment within the FLOODsite EU IP as well as coordinates the Tisza River Basin Case Study in the NeWater EU IP which focuses on conceptual and system dynamics modelling and qualitative mapping to mitigate urban flood issues. Since 2009 she is a director of Landscape Ecology Lab at the Department of Geography HU Berlin. She works also as a guest scientist at the UFZ continuing her work on urban land use change modelling, urban ecosystem services and flood risk assessment.

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