Geophysical Research Abstracts
Vol. 20, EGU2018-16234, 2018
EGU General Assembly 2018

Improving Ecosystem Environmental Services in urban areas of four European cities

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More than half the world's population lives now in cities. In this context, it is of utmost relevance for humans to maintain resilient and healthy ecosystems, through the promotion of biodiversity and biotic and abiotic processes, to contribute to the maintenance of human well-being.
The impacts of ecosystem maintenance and functioning are particularly significant in urban contexts with high population densities and high environmental impacts. The services provided, range from psychological well-being to maintenance of pollination functions, pest control, air quality purification, and reducing the occurrence of extreme flood events, to provisioning services of food or freshwater. The high concentration of people and goods implies that the malfunctioning of urban ecosystems can result in enormous losses and even loss of human lives.
Urbanization produces fragmentation and degradation: ecological connectivity and ecosystem status are significantly affected, in their quantitative and qualitative aspects. Urbanization reduces ecological resilience, ecosystem functioning, and biodiversity, affecting ecosystem service delivery and its potential benefits.
Cities are complex socio-ecological systems, and the need for and capacity to improve well-being varies significantly both within the same city and between different cities. The demand for, and use of, ecosystem services is therefore equally diverse and context dependent, with transdisciplinary approaches being needed to capture this complexity and to amplify the findings to higher spatial and institutional levels.
Green urban infrastructures (including technical solutions with an ecological component, to solutions based entirely on nature) increase ecological connectivity and quality, improve biodiversity and functioning, and provide multiple ecosystem services and direct improvements in well-being. Urban green infrastructures have an indirect effect on welfare by mitigating the negative cascade of impacts produced by urbanization. Urban green infrastructures are defined as a set of ecosystems, linked to a spatially coherent system through flows of organisms, interacting with the landscape matrix in which they are embedded, that can be used to conserve and sustain or increase biodiversity, ecosystems, their functions and provide environmental services to human populations.
The URBANGAIA project is developing a base for ecological and socio-economic knowledge, based on a participatory strategy, citizen science and new technologies (smartphones), to create tools to improve the planning and management of urban green infrastructures at the cities of Coimbra, Vilnius, Ghent and Leipzig.