



Importance of biodiversity for urban resilience

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In view of all the damage caused by natural disasters (especially flooding) that has affected large numbers of regions throughout the world over the last ten years, urban areas appear to be little prepared for this type of catastrophe. Today, improving their resilience, i.e. their capacity to recover rapidly after catastrophic event, appears to be a real issue at stake in societies' sustainable development. More generally, global climate change and its consequences in terms of risk imply the ability of cities to absorb disturbance. Due to their organization in the form of subsystems, the multiple aspects of their functions and the dynamics that drive them, these urban territories must be considered as complex systems (Le Moigne 1977). Within these urban systems, networks (in the sense of an urban technical network as defined by Gabriel Dupuy (1991)), are links between inhabitants and the actors involved, the symbolic links of belonging to the same community, to the same organized territory. As supports and even objects of interactions between the different sub-systems in the urban system and with the outside environment, they supply, unify and irrigate all the constituent elements of urban territories. In this way, natural networks participate in organizing and regulating the system by being the vector of relations between its different constituent elements. This strategic position makes natural networks extremely influent in the dynamics of maintaining the global urban system.

At the same time, special attention is paid to the urban biodiversity with differentiated management of green spaces, wildlife corridors, building-integrated biodiversity... The services provided by natural systems in the city are vital especially in terms of regulation (air and water filtration) and cultural services (recreation, cognitive development...). More ecological models indicate that high biodiversity provides redundancy within each functional group. If species respond differently to environmental fluctuations, declines in one group are compensated by increases in another and so biodiversity contribute to the resistance of natural system to disturbance (Peterson et al., 1998, Gunderson, 2000).

Biodiversity is essential to understand the role of the natural system in the urban resilience. Yet, today, there is a knowledge gap about the importance of biodiversity in the development of resilient urban area. This work presents how studies of biodiversity can contribute to understand resilience in urban ecosystems. Specifically, we study how the uses of indicators in a GIS conduce to better understanding of the role of biodiversity in urban resilience.

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