



Review

Cities and biodiversity: Perspectives and governance challenges for implementing the convention on biological diversity (CBD) at the city level

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ABSTRACT

City governments are fundamental to implement international environmental agreements, such as the convention on biological diversity (CBD). Even though many of them are not directly involved in the negotiation of international agreements, which are signed by national governments, most of those agreements are in fact implemented at the city level. The importance of city governance to tackle the challenges of biodiversity loss has increased as urban population has grown enormously in the last decades, particularly in developing countries. The way cities are designed, planned and governed influences the magnitude of their direct and indirect impacts on biodiversity.

This paper analyzes the relationship between cities, local governance and biodiversity. Initially, we examine the relationships between cities and biodiversity by looking at the major influences cities have on biodiversity loss or conservation within and outside the city boundaries, as well as the benefits of biodiversity conservation to cities, such as the provision of ecosystem services. The paper then moves to understand what are the main urban processes and governance mechanisms that can be improved to make cities effective to implement the directives of the CBD.

Urbanization creates new challenges for biodiversity conservation. As a large part of the world's population moves from rural to urban areas, there are changes in the link between human activities and biodiversity, and consequently to the way we should think biodiversity conservation policies. However, scarce attention has been given to understand how to make cities more biodiversity friendly, both within the urban fabric, but particularly in faraway places.

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1. Introduction: How are cities related to biodiversity, particularly with regards to implementation of the CBD?

The convention on biological diversity, or CBD, has three broad (and ambitious) objectives: to conserve and sustainably use biological diversity while fairly and equitably sharing the benefits from the use of its genetic resources. The progressive degradation of ecosystems is the main threat to biodiversity – or biological diversity, defined as the “variety of life on Earth and the natural patterns it forms” as per the CBD. The 2010 target to reduce the rate of biodiversity loss set by governments during the World Summit on Sustainable Development in 2002 will not be achieved (SCBD, 2010).

The way cities¹ develop definitively influences biodiversity conservation and the distribution of its benefits among different groups in society. The CBD has formally recognized the importance of involving cities and local governments in its implementation since the Ninth Conference of the Parties (COP-09) of the CBD in Bonn, in 2008. This was further strengthened at CBD COP-10 in Nagoya, in October 2010 by the official endorsement of ‘The Plan of Action on Sub-national Governments, Cities and Other Local Authorities for Biodiversity’ by the CBD’s 193 Parties (CBD COP, 2010).

However, the processes of interaction between cities and biodiversity are little understood, both in theory and in practice. This

conceptual gap needs to be filled if we are to make progress on the implementation of the CBD given that (a) cities are consumption centers of the world’s resources; (b) more than half of the global population live in cities and; (c) this proportion will grow in the future. Moreover, key decision-makers, whose decisions affect biodiversity, live in cities. Many decisions made by city inhabitants directly affect biodiversity in the city and beyond. To start this discussion, we pose several fundamental questions to be addressed in this paper.

Firstly: How do cities influence biodiversity? There are three levels of interaction between cities and biodiversity. Cities and biodiversity interact within the urban fabric. There is a variety of species living within city boundaries, the so called *urban biodiversity*, including those species well-adapted to the urban life, such as rats or pigeons. Urban biodiversity can influence the form of the city as well as its inhabitants. The development of a city also impacts directly urban biodiversity and how it is distributed among the different groups of the population. Urban biodiversity seems to be the most researched area so far.

Cities can also have a huge impact on the biodiversity in their nearby surroundings, what we call here *regional biodiversity influence*. City activities generate sewage, solid waste and air pollution, which generally impact the biodiversity in the nearby areas, such as rivers and marine or terrestrial hinterlands. The expansion of cities, both spatially and economically, also has tremendous impacts on the surrounding areas. Moreover, many resources needed in a city come from its surroundings (materials, water, food, etc.).

Additionally, cities consume large amounts of resources coming from faraway places, influencing the biodiversity of those places,

¹ There are many definitions for cities. In this paper, we will use a broad definition of a city as a geographically limited area dominated by a mostly urban landscape, which can include a part of, one or various administrative units. In certain contexts in the paper, the word city is also used to represent its inhabitants or governments. We will assume in most of the cases that cities are sub-national governments, as there are few city states.

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