

Urbanization and City Partnerships for the Maintenance of Biodiversity

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The impacts of urbanization on the maintenance of biodiversity are profound and affect at both local and global levels. While urbanization associated changes in the land cover and built environments directly impact the local biodiversity, the increased resource demands of urban dwellers indirectly affect the biodiversity at locations far removed from the boundaries of cities. These impacts often lead to reduction in genetic diversity and compromise the evolutionary and adaptive capabilities of species under a changing environment. Through drawing examples from our own research, we show that 1) global demand for pharmaceutically important compounds escalated harvesting of medicinally important plant species in the Western Ghats biodiversity hotspot leading to reduction in genetic diversity, 2) genetic improvements of rice to meet global food demand led to reduction in genetic diversity in genetically improved rice varieties as compared to traditionally cultivated rice varieties in the Eastern Himalayan region, and 3) forest trees in the eastern North America have migrated in response to changes in the climate during the post-glacial era maintaining the regional biodiversity. These challenges provide opportunities for cities to take actions for minimizing ecological footprints and build a variety of partnerships to make far reaching positive impacts on the maintenance and sustainable use of biodiversity. These partnership opportunities include 1) industrial partnerships promoting development of alternative sources of pharmaceutical compounds, 2) partnerships with gene banks and native communities to promote conservation of indigenous crop cultivars, and 3) partnerships with neighboring cities to maintain habitat connectivity facilitating species migration to maintain biodiversity under changing climatic conditions.

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