Adaptation and adaptedness of organisms: expanding fundamental knowledge by studying urban landscapes

Mark Mcdonnell*[1]

[1]Australian Research Centre for Urban Ecology (ARCUE) – Royal Botanic Gardens The University of Melbourne Victoria 3010, Australia

Abstract

Around the world the development and growth of cities and towns are having a significant impact on local and global biodiversity. Urban landscapes create environmental conditions that can exert considerable pressure on organisms, and often under accelerated timeframes compared to more natural environments. There is a growing interest in understanding the role of biological adaptation and micro-evolution in filtering the non-human species that persist in urban areas or which become locally extinct. Understanding the biological adaptations that allow organisms to persist in these landscapes has the ability to contribute not only to our understanding of urban ecological systems, but also to our fundamental knowledge around biological adaptations of organisms more broadly. This information will be critical if I are to design and manage urban environments under the pressures of global climate change and rapidly expanding populations of people living in cities and towns. In this presentation I will review the existing evidence around biological adaptation and micro-evolution of organisms in urban environments, present a framework for approaching future research, and discuss how this knowledge might contribute to the development of urban landscapes that are better able to allow organisms to survive, adapt and persist. I also highlight the urgent need to refine the terminology currently used to describe the adaptation of organisms to urban landscapes in order to improve scientific understanding and more effectively identify and communicate the actions required to create biodiversity and adaptation friendly urban landscapes for the future.

Keywords: landscape ecology, urban areas, biodiversity

*Speaker