

Cambridge University Press

978-0-521-67833-9 - Ecology of Cities and Towns: A Comparative Approach

Edited by Mark J. McDonnell, Amy K. Hahs and Jurgen H. Breuste

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Ecology of Cities and Towns

A Comparative Approach

The unprecedented growth of cities and towns around the world, coupled with the unknown future effects of global change, has created an urgent need to increase ecological understanding of human settlements, in order to develop inhabitable, sustainable cities and towns in the future. Although there is a wealth of knowledge regarding the understanding of human organisation and behaviour, there is comparatively little information available regarding the ecology of cities and towns. This book brings together leading scientists, landscape designers and planners from developed and developing countries around the world, to explore how urban ecological research has been undertaken to date, what has been learnt, where there are gaps in knowledge, and what the future challenges and opportunities are.

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This book is dedicated to the memory of Katarina (Nina) Löfvenhaft,
colleague and friend.

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Preface

Calls to study the ecology of urban areas were first made in the early twentieth century by both social scientists and traditional ecologists (i.e. plant and animal ecologists) (Adams, 1935, 1938). Some 40 years later, the Ecological Society of Australia held a symposium and published a follow-up book entitled *The City as a Life System* (Nix, 1972) which aimed to stimulate public and professional interest in the ecology of cities. At about the same time, a workshop was convened in the USA by The Institute of Ecology (TIE), now defunct, which brought together ecologists from a diversity of disciplines to identify national and regional urban needs. The proceedings of this workshop were published in a book entitled *The Urban Ecosystem: A Holistic Approach* (Stearns and Montag, 1974). Unfortunately, these books were not widely distributed and thus these early workshop efforts did not stimulate new North American or Australian ecological studies of human settlements. In contrast, European and some Australasian researchers have embraced the ecological study of urban ecosystems for over 30 years (e.g. Numata, 1976, 1977; Newcombe *et al.*, 1978; Boyden *et al.*, 1981; Bornkamm *et al.*, 1982; Natuhara and Imai, 1996, 1999; Breuste *et al.*, 1998; Sukopp, 1998, 2002).

Over the past 10 years there has been a growing call to increase our knowledge of the physical, biological and social components of cities and towns in order to develop a greater understanding of their ecology and to help mitigate some of the impacts that human settlements are having at local, regional and global scales (Grimm *et al.*, 2000; Collins *et al.*, 2000; Pickett *et al.*, 2001; Alberti *et al.*, 2003). These efforts are understandable and laudable given the increasing realisation that the growth of cities lies at the core of many environmental and social problems facing the world today. With the unparalleled growth of human settlements around the world, coupled with the unknown effects of global change, there is now an urgent need to increase our ecological understanding of cities and towns.

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The inspiration for this book came from a symposium held at the International Association for Landscape Ecology (IALE) World Congress in Darwin, Australia, in 2003 and a workshop held in Melbourne the same year. Leading ecologists, landscape architects and planners met to discuss and assess the current state of the field of urban ecology. One modest goal of these meetings and this book was to bring together researchers from around the world. Although studies in North America, Europe and Asia have produced excellent advances in the field of urban ecology, there have been relatively few interactions between the different groups. This book is intended to build on our current level of ecological understanding of cities and towns, which was last summarised by McDonnell and Pickett (1993b) and Breuste *et al.* (1998), and to promote the use of the comparative ecological approach in the study of human settlements.

A book such as this could not be put together without the help of many different people. We would like to thank our fellow members of the Steering Committee from the original workshop in 2003: Margaret Carreiro, Glenn Guntenspergen and Jari Niemelä, who provided valuable input and feedback regarding the structure of the workshop, and hence this book. Thanks also to Kirsten Parris and Jari Niemelä who organised the follow-up symposium at the 2004 Conservation Biology meeting at Columbia University, New York City. M. J. M. and A. K. H. would like to thank Phil Moors and Pauline Ladiges for their support of the 2003 workshop and the subsequent efforts in compiling this book. The many staff and students at the Australian Research Centre for Urban Ecology (ARCUE) were also instrumental both during the workshop and the compilation of this book.

We are indebted to the Baker Foundation for their generous ongoing financial support for ARCUE, without which we could not have undertaken this project. We would also like to acknowledge their financial assistance for the 2003 workshop and symposium and subsequent preparation of this book. Generous financial and in-kind support for the workshop was also provided by the US Geological Survey, the School of Botany at the University of Melbourne, and the Royal Botanic Gardens Melbourne.

We would also like to thank all of the scientists who participated in the 2003 symposium and workshop and the follow-up symposium in 2004, as their involvement helped to shape the ideas presented here. We would like to express our gratitude to Alan Crowden for encouraging us to produce a book and for facilitating its publication with Cambridge University Press. We are grateful to all of the contributors for their enthusiasm in preparing their chapters, and their efforts in reviewing and providing feedback on chapters submitted by their peers.

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The overall quality and content of the book was greatly enhanced by several groups of people. We would like to thank Maggie McDonnell and Adam, Barbara, and Kelly Hahs for their assistance in compiling the index. We are grateful to Lily McDonnell for creating the cover illustration. Julia Stammers has provided invaluable assistance during the editing, proof-reading and indexing stages. Finally, we acknowledge and appreciate the efforts of the Cambridge University Press production team including Dominic Lewis, Alison Evans, Charlotte Broom and Lindsay Nightingale in creating the book. In particular, Lindsay's sharp eye and remarkable editorial skills significantly improved its quality and readability.