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Green Roof Ecosystems

 Springer

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Foreword

Ralph Waldo Emerson once wrote: “The creation of a thousand forests is in one acorn.” Let the knowledge, concepts and theories contained in this book be the acorn that inspires thousands of professionals to advance the technical performance of green roofs. For far too long, green roofs have been misunderstood and over simplified in terms of ecological performance. The challenges to creating diverse and resilient systems in our anthropogenic urban environments are well recognized. Due to weight, cost and loading restrictions, green roofs attempt to compress biological and ecological function into the narrowest of profiles, limiting natural processes and nutrient cycles. In response to these constraints the industry has evolved to simplistic low diversity solutions which provide less ecological services than what is possible in the urban fabric of our cities where these benefits are in greatest need.

Today’s urban footprint is composed of more than twenty percent roof cover. This vast urban land cover provides an immense opportunity to solve many of our environmental concerns, especially if we convert these spaces to integrated and highly functioning living architecture. E. O. Wilson the noted American biologist and theorist stated: “We should preserve every scrap of biodiversity as priceless while we learn to use it and come to understand what it means to humanity”. Furthermore, we should endeavor to create biodiversity on every surface of our cities, as it helps to fulfill the basic needs of humanity.

Despite the efforts of many within the green roof industry, roofs for the most part remain under-utilized, forgotten places with exceptional opportunities to be reclaimed and repurposed as vibrant, functional centers of nature and human enjoyment. As a green infrastructure tool, green roofs provide some of the highest quality eco-services benefits available for solving a multitude of social and environmental ills, despite the fact they are too quickly dismissed early in the design process because of a lack of understanding of their potential. Greater knowledge about ***Green Roof Ecosystems*** will only increase implementation of this vital and natural solution.

Recently a renewed interest in landscape planning seeks to link ecological services and community needs. And increasingly, public policy recognizes that creating livable and healthy communities requires connected landscapes in order to provide for clean air, clean water, public fitness, wildlife diversity and ecological

benefits. The natural capital in our cities and efforts to restore it need not be considered at a single site or scale. Rather, natural ecology needs to be assessed and restored across scales. Widespread implementation of green roof technologies can set a foundation for mitigating and reversing environmental deterioration of the Anthropocene, as well as, dramatically broadening our response by providing new ways of thinking about ecological restoration. This process will be greatly enhanced by an interdisciplinary team approach to validate the robustness of the approaches underlying the restoration of ecosystem processes.

Green Roofs for Healthy Cities established the *Journal of Living Architecture* in order to identify the state of the art in green roof and green wall research, to identify the best in class, and share these findings with as many professionals as possible. This book represents a seminal compilation of research and technical knowledge about green roof ecology and how functional attributes can be enhanced. Written by over twenty leading experts and researchers in the field of green roofs, the narration covers in detail a number of important topics rarely discussed. While documenting current research, trends and theory, this book delves further to explore the next wave of evolution in green technology, defining potential paths for technological advancement and research.

This effort represents an informed and progressive way of approaching our environmental response to urban design. It makes a compelling case that the long-term health and viability of our communities depend upon highly functioning green roof ecologies that connect green spaces to create a resilient tapestry of natural diversity spanning the urban landscape. ***Green Roof Ecosystems*** will be an invaluable reference for individuals who have the desire to implement ecologically conscious green roofs, such as planners, policy makers, agencies, and professionals who have substantial interest in designing them. (i.e.; landscape architects, ecologists, engineers, architects, biologists, and other holders of environmental knowledge). Ecological intelligence expands the context of life as it enlarges who we are as a person, and this book provides a wealth of intelligence for those interested in the topic of green roofs.

Kansas City, MO

Jeffrey L. Bruce, FASLA,
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