Preface

The idea of a book synthesizing patterns of body size across different taxa was an outgrowth of the working group "Body Size in Ecology and Paleoecology: Linking Pattern and Process across Taxonomic, Spatial, and Temporal Scales," supported by the National Center for Ecological Analysis and Synthesis (NCEAS) during 1999–2003. This group, composed of a diverse set of scientists working on different taxa at different taxonomic and scientific scales, had been inspired by and organized during a 1998 Penrose conference aimed at integrating ecology and paleontology. Despite our divergent backgrounds, our common research interests all revolved around body size: Just how similar are large-scale body size patterns across plant and animal species and across evolutionary time? How does the relative magnitude of these important factors change for different taxa? And what mechanisms underlie the body size patterns observed? To address these questions, we compiled what is now a widely cited global database of mammalian body size, distribution, and taxonomy (MOM v.3.1; Smith et al. 2003) as well as several other body size datasets at regional and global scales on plants, birds, and other taxa (*http://www.nceas.ucsb.edu/projects/2182*). Our efforts led to several dozen papers, several organized symposia at meetings of both the Ecological Society of America and the American Society of Mammalogists and, ultimately, an NSF-sponsored Research Coordination Network (RCN) concentrating on macroecological patterns of mammalian body size (IMPPS; http://biology.unm.edu/impps_rcn/). More important, the interactions profoundly changed the scientific approaches, perspectives, and research interests of some of the individual members.

Our original NCEAS group faced a number of daunting challenges. First, ten years ago there was a paucity of comprehensive data on body

size that made examining emergent patterns very difficult. Indeed, much of our time and resources went into collecting and analyzing such data. Second, we found that we spoke different "scientific languages"; hence, considerable effort went into figuring out how to integrate divergent taxonomic, hierarchical, and biological perspectives. Because we were scattered around the world and many of us attended different national meetings, there was little opportunity for dialogue outside our working group. Yet we found that the development of interpersonal relationships was very important to overcoming scientific isolationism and creating a productive working relationship. We were fortunate that the funding structure in place at that time for NCEAS working groups led to a total of eight meetings; twice what is supported now. These "extra" meetings allowed us to overcome many of these social and scientific barriers. Third, there was limited institutional and financial support to continue projects that spanned diverse disciplinary and conceptual boundaries beyond the tenure of the working group. Our ability to do so was especially hampered by the rigid structure of universities and funding agencies (such as the NSF). The physical and philosophical segregation of paleoecological from ecological and evolutionary disciplines made it difficult to conduct or fund synthetic work spanning these traditional boundaries. Thus, we encountered substantial obstacles in our efforts to sustain and broaden collaborations.

Over the past ten years, a number of other groups have been formed to examine body size patterns and evolution. These include a recent working group at the National Evolutionary Synthesis Center (NESCent), "Phanerzoioc Body Size Trends in Time and Space," organized by Jonathan Payne, Jennifer Stempien, and Michał Kowalewski, and the NSF-sponsored Research Coordination Network, "Integrating Macroecological Patterns and Process across Scales" (IMPPS; http://biology.unm.edu/impps_rcn/) organized by Felisa Smith, Kate Lyons, and Morgan Ernest. Although the taxonomic scope of these two groups is different, both aim to synthesize emergent organismal and ecological data and patterns across multiple spatial and temporal scales, and both include paleontologists and ecologists, theoreticians and empiricists. These efforts are leading to important new data compilations and contributions. For example, the NESCent group recently published a paper synthesizing body size trends across the entire history of life on earth, a span of some 3.6 billion years (Payne et al. 2009) and our RCN group has examined patterns of mammalian body size for each order on each continent over its evolu-

tionary history (Smith et al. 2010). The continued interest in the patterns of body size evolution over space and time highlights its acknowledged importance in physiology, ecology, and community and ecosystem structure. It also indicates a continued lack of synthetic knowledge about the universality of patterns and processes across taxonomic, temporal, and spatial scales. We sincerely hope our volume will help bridge some of these gaps.

Finally, as is often the case, this volume took much longer to come to fruition than we originally (and perhaps naively!) intended. We thank all the authors for their patience, but especially those authors who met our deadlines, particularly considering that we did not meet them ourselves. Sadly, a series of serious health and other issues impeded our efforts. We hope they agree that the result was worth the delay.

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