

Ant Ecology

**Lori Lach, Catherine L. Parr and Kirsti L. Abbott (editors), 2010. *Ant Ecology*.
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Bert Hölldobler and Edward O. Wilson's grand synthesis '*The Ants*' celebrated its 20th anniversary last year. This book, which has been cited more than 5,300 times during these years (checked by Google Scholar 11.06.2012), opened up new horizons and stimulated many myrmecologists to establish and expand new areas of research on ants. Last year's publication of '*Ant Ecology*' could be seen as the biggest milestone book in myrmecological research after this praised opus. *Ant Ecology* came at an ideal time for synthesising and summarising what myrmecologists have learned in the last 20 years, and pointing which directions myrmecologists should move in the coming years. The foreword to the book was contributed by Edward O. Wilson. There, he points out that the number of myrmecologists and myrmecological studies have increased quickly, and myrmecology can take its place among other taxon-identified disciplines, such as ornithology and herpetology.

Ant Ecology has 16 chapters, excluding the final 'synthesis and perspectives', which fall into four parts. The first part discusses current knowledge of ants' evolution, biogeography, diversity patterns and conservation. Written by Philip Ward, the first chapter outlines the major issues of ants' origin, taxonomy, phylogenetics and evolution. In the second chapter Brian Fisher explores the biogeography of ants, with a general overview of the palaeogeographical distribution of fossil ants, the distribution of extant endemic genera in different continents, and three phylogenetic-based case studies. In Chapter Three, Robert Dunn and his colleagues review hypotheses about ant diversity across geographical and environmental gradients, specifically altitude gradients. Alonso, in Chapter Four, reviews

the current status of ant conservation and asks fundamental questions about where and which ants should be conserved. The second part is focused around community dynamics. In Chapter Five, Parr and Gibb reevaluate competition as the 'hallmark' of ant ecology and review factors that can interrupt it. Ness and colleagues focus (Chapter Six) on mutualism and its different forms, and its dynamics in ants. In an interesting essay (Chapter Seven) Blüthgen and Feldhaar review food and shelter quality and availability as factors that can influence ant ecology. In the last chapter of Part Two (Chapter Eight), Philpott and colleagues explore the impact of disturbance on ant diversity and function. The third part is focused on ant population ecology. The four chapters of this part discuss the foundation, life cycle and growth and reproduction of colonies (Chapter Nine: Peeters and Molet); colony structure and its demographic, genealogical and spatial structure variations and complexities (Chapter 10: Steiner, Crozier and Schlick-Steiner); kin and nestmate recognition and its roles in different ecological contexts (Chapter 11: d'Ettorre and Lenoir); and foraging and defence systems in ants (Chapter 12: Dornhaus and Powell). Overall, this section gives the reader a deep and a detailed review of ant ecology at the colony and population scale. The final section deals with invasive ants. Suarez, McGlynn and Tsutsui (Chapter 13) and Krushelnycky, Holway and LeBrun (Chapter 14) give critical ideas about biogeography and taxonomic patterns of invasive ants and their community and population structures. Lach and Hooper-Bùi (Chapter 15) give insight into the impact of invasive ants on native ants and other taxonomic groups. The final chapter (Chapter 16) concerns the most recent approaches, protocols

and techniques which are applied for controlling invasive ants (Hoffmann, Abbott and Davis).

Ant Ecology covers many current approaches and findings of ant ecology. An introductory chapter to each part by the editors serves as a good summary of the chapters' content. The authors of each paper are well placed in their research field to review their topics. In each chapter there are boxes which can be seen as protocols for ecological studies on ants, written by experts on the respective areas. As expected with a diverse coverage of the themes, there are differences in the degree of comprehensiveness and in the style of chapters. Although this variation mirrors, partly, the diversity of contributors in the volume (53 authors), it also reflects our current strengths and weaknesses in different aspects of

ant ecology. For example, patterns of ant species composition (beta diversity) and drivers of these patterns across diverse spatial and temporal (historical) scales remain poorly understood. Consequently, only geographical gradients in alpha diversity are discussed in this book (Chapter 3). There is also a bias in the text towards North America and Australia, which points toward a need for research in other regions, specifically in the vast and diverse biomes of Asia.

Overall, I found this volume very interesting and useful. It takes a critical step in our attempts to understand ant ecology. As a result, it is a "must-read" for all myrmecologists. It will hopefully stimulate lively and critical discussions, among graduate students studying ants and at professional meetings.