

## BOOK REVIEW

**Demographic Methods Across the Tree of Life, Oxford University Press. Eds. Salguero-Gómez, R. And Gamelon, M. Paperback: ISBN 9780198838609. 371 pages, €49,-**

Edited volumes face the challenge of large variability in the quality of the contributing chapters, and the risk of incoherence in style and detail. Overcoming these challenges means a lot of work for the editors, and, judging from the result in the form of *Demographic Methods*, the editors of this volume did spend that time and energy. Much to the credit of its editors and authors, this book is a very carefully crafted, wide-ranging collection of contributions, which are almost without exception of high quality and report useful ideas, resources and approaches. The collective authority of the authors is impressive, as is the range of approaches reviewed. The theme is considerably wider than a biodemography textbook (such as Carey & Roach's *Biodemography*, reviewed in this journal in 2020), as it pads the actual demographic methods (which form part 2 of this book) by six chapters on data collection and eight chapters on taking the methods further.

Demographic research centres on demographic rates: survival, reproduction and growth. Often these rates are not directly measurable and researchers resort to proxies, which allow comparisons between populations and species, but no absolute population growth estimation. The book's first chapters focus on proxies, such as population genetics, physiological states, social behaviour. They convincingly present these proxies as measures related to demographic rates, without, however, providing a way to calibrate them with growth or survival data. The link thus remains qualitative. The closing chapters of this part 1 introduce growth rings (from trees as much as from otoliths) and hence methods to directly estimate growth from longitudinal biogenic time series.

Part 2 provides an introduction, across eight chapters, of the mathematical and computational methods used in demographic research, from hierarchical regression over life-tables and (stochastic) matrix population dynamics (incl. integral projection models) to individual-based models and

integrated population models. One chapter is dedicated explicitly to survival analysis, which is much less widespread in ecology than in medicine.

Part 3, titled somewhat misleadingly "Applications", applies the methods of part 2 to scientific questions, rather than management case studies. For example, it illustrates how demography is used in evolutionary research and eco-evolutionary dynamics, or in socially structured populations. That is really very interesting and generic, and it is augmented by case studies with actual applications in some of the chapters of part 3, including one on epidemiology, which also closes the book.

All chapters describe the respective approach, and provide examples, without being detailed enough to go into implementational challenges. Obviously the aim of the book is to provide a starting point for biodemographic research, rather than a handbook of practice. Edited volumes with a methodological focus run the risk of being outdated at the time of going into print. It is thus a sound decision to not go into too much technical detail. Some chapters provide additional online material, but of variable quality, with the survival analysis supplement setting the highest standard in the form of detailed, well-explained and comment-rich code. A "further reading" section at the end of each chapter would have been a nice addition, pointing the reader onwards.

The book is sufficiently comprehensive to age slowly, and the cited references and case studies make for excellent starting points when delving into specific topics. The breadth of topics covered embeds every chapter in a wider context, which is essential for considering the best approaches for a given problem. Perusing the entire book is thus highly recommended, even if the main interest is in a specific technique. The audience is any quantitative ecological lab and demography university course at graduate or higher level. It also sits well on the shelves (even better: desks) of theoretical ecologists who dare to take the step towards confronting their theories with real-world situations and data.

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