comprised of (or derived from) more vagrant-prone taxa than would be expected? The authors provide countless examples of patterns and phenomena, but offer little original analysis (although several citations make an attempt), leaving the family accounts a bit like those *Amazing Animals* books we read as kids. This is not a knock against the volume—it is not intended as the last word on vagrancy, but rather an attempt to put in print what we have learned in past decades, organized in a logical way, with the more astonishing examples explained and celebrated.

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BOTANY

FLORA OF NORTH AMERICA: NORTH OF MEXICO. *Volume 10: Magnoliophyta: Proteaceae to Elaeagnaceae.*

Edited by Flora of North America Editorial Committee. Oxford and New York: Oxford University Press. $95.00. xxiv + 456 p. + 1 pl.; ill.; index. ISBN: 9780197576076. 2021.

ECOLOGY

INTRODUCTION TO QUANTITATIVE ECOLOGY: MATHEMATICAL AND STATISTICAL MODELLING FOR BEGINNERS.

By Timothy E. Essington. Oxford and New York: Oxford University Press. $91.00 (hardcover); $45.95 (paper). xvi + 304 p.; ill.; index. ISBN: 978-0-19-284347-0 (hc); 978-0-19-284348-7 (pb). 2021.

Mathematical and statistical ecology have largely existed as two separate subdisciplines until around the turn of the millennium, where their coalescence was driven by increased computational power and heightened awareness of the importance of stochastic processes (B. E. Kendall. 2015. *Ecology* 96:3117–3125). Mathematical and statistical ecology together found their way into volumes (e.g., R. Hilborn and M. Mangel. 1997. *The Ecological Detective: Confronting Models with Data.* Princeton (NJ): Princeton University Press; J. S. Clark. 2007. *Models for Ecological Data: An Introduction.* Princeton (NJ): Princeton University Press; B. M. Bolker. 2008. *Ecological Models and Data in R.* Princeton (NJ): Princeton University Press) that is the tradition out of which *Introduction to Quantitative Ecology* is born. Essington brings dynamic models (Part I) and fitting dynamic models to data (Part II) together, along with a dash of skills (Part III) for undergraduate and graduate students of ecology with as little training as some coursework in calculus and probability. This book is structured such that it can be followed continuously for the individual reader or if one were to use this as a main textbook for a course. Several parts of the volume would additionally be useful as reference material (especially much of Part III and Chapter 7, Random Variables and Probability). The author aims to emphasize the "why" and then link to the "how," and is successful in presenting most of the content in this pedagogical fashion.

The main text begins with a crash course in the Fundamentals of Dynamic Models (Part I). In addressing the "why" of modeling, Essington debunks common myths surrounding the development and use of models, which provides novice ecologists with a good grounding in the purpose and design of ecological models. The author goes on to explain in detail the strategy with which to approach building models as abstractions of reality while also answering questions of interest. This part gives a fairly traditional introduction to population modeling, introducing students to the classic equations for single-species populations, structured population modeling, and two-species population models (competition and predator-prey; mutualism is absent). Beyond what is conventional for textbooks written at this level, stochastic population models and several other advanced topics are presented throughout the chapters, which provide supplementary information for curious and more advanced students.

The foundational statistics of quantitative ecology are provided in Fitting Models to Data (Part II). Despite Essington's aim to explain the "why," this is a "how" heavy part, with a brief introduction explaining the importance of ecological statistics (Chapter 6), and chapters that focus on the underlying mathematics of probability, likelihood, model selection, and Bayesian statistics. Commonly used probability distribution and the situations in which they are employed are concisely summarized. Essington introduces students to the concept of likelihood and its use in parameter estimation, and explains the use of the Akaike information criterion in model selection. Lastly, the author introduces Bayesian statistics (Chapter 10), focusing on applications of Bayes' theorem in model selection and parameter estimation. This last chapter of Part II is strongly "why" focused to help readers understand the sophisticated mathematical and algorithmic material, but not delve deeply into the complex "how"; especially

as Bayesian statistics is a rapidly developing field requiring substantial prior knowledge.

Essington closes the volume with Skills (Part III) and Putting It All Together and Next Steps (Part IV). Part III includes chapters with a mathematics refresher, using spreadsheets and R, modeling in spreadsheets and R, sensitivity analysis, and statistical modeling. Some of this content is typically reserved for appendixes, but fits within the author's "how" approach. Chapters on sensitivity analysis (Chapter 15) or calculating maximum likelihood estimates are not always provided in similar publications, and their inclusion is warranted and will certainly be of use to the learner. The final part shows how to fit and interpret a simple dynamic model to data clearly and concisely, integrating the main tools of the book from Parts I and II in one elegant case study.

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EVOLUTION

New Horizons in Evolution.

Edited by Solomon P. Wasser and Milana Frenkel-Morgenstern. Academic Press. Amsterdam (The Netherlands) and New York: Elsevier. $127.50 (paper). xix + 362 p.; ill.; index. ISBN: 978-0-323-90752-1. 2021.

This collection of 10 essays might be the most remarkable Festschrift any biologist is likely to encounter. The reason is that the collection honors Eviatar Nevo, an evolutionary biologist whose breadth and depth of superb empirical work is without equal. The volume does justice to Nevo's long, remarkable career by including contributions that span the gamut from the sensory systems of subterranean mammals to evolutionary medicine.

The volume includes two original research presentations and eight review papers. Each of the eight review papers is a course unto itself on its topic. They are all exceptionally scholarly and some are encyclopedic: the paper by Peng et al. on the evolutionary history, genetics, and genomics of emmer wheat cites 314 references. Many also offer provocative hypotheses that challenge readers to see familiar topics in a new light. The paper by Koonin et al. posits a critical role for conflict in the evolution of a staggering range of phenomena; some of these are topics traditionally seen through the lens of conflict such as eusocial insect colonies but others, like protein folding, are far less familiar battlegrounds in the minds of most mainstream evolutionary biologists.

The review papers will engage any reader, albeit in different ways. The review by Burda on the sensory systems of mole rats and mole-rats (read the chapter to understand the difference) is a delightful tour of where ecology and neurobiology meet. The essay by Shapiro on the challenges that genomic discoveries offer to many of evolutionary biology's traditional paradigms is a compelling argument to think more deeply about whether the evolution we teach is really the evolution that has occurred.

The original research papers are starkly different in subject matter. Conley et al. describe how the visual structure of the habitat influences metapopulation processes in collared lizards. Carmi et al. offer a novel model for the evolution of protein domains through chromosomal translocation events. It is a tribute to Nevo's diverse interests that the juxtaposition of such different papers in one volume does not strike a dissonant chord.

The final essay in this volume is by Nevo himself, reviewing the many discoveries he and his colleagues have made in what he calls the "evolution canyons" of Israel. These four steep canyons present sharply divergent microclimates across a narrow boundary, with hot, arid south-facing slopes and cool, moist north-facing slopes separated by as little as 250 meters. The canyons and the organisms living in them have offered new insights into local adaptive differentiation in the face of extensive gene flow and incipient sympatric speciation. The biodiversity in these sites has provoked research into topics as diverse as the existence of circadian clock genes in Archaea and Proteobacteria to the effects of the thermal environment on developmental instability and fluctuating asymmetry in woody plants.

This is a magnificent volume honoring a unique career. Evolutionary biologists should not pass it up.

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Evolutionary Developmental Biology. *Current Topics in Developmental Biology, Volume 141.*

Edited by Scott F. Gilbert. Academic Press. Amsterdam (The Netherlands) and New York: Elsevier. $178.50. xxiii + 427 p.; ill.; no index. ISBN: 978-0-12-814968-3. 2021.

This book contains 12 chapters, collectively intended by the editor to "highlight some of the places where evo-devo meets the unknown" (p. xvi). In his preface, Gilbert mentions the toll exacted by the SARS-CoV-2 pandemic on the gestation of this volume, and offers a veiled warning about its relative shortcomings, citing the lack of discussion of plant and protostome evolution. To these lacunae we might add the