the meeting was, and it is a great pleasure reading it. The reason is the inspiring content, which certainly will stimulate new research in this budding branch of ecology. The editors have also achieved a highly attractive design of this volume: There are definition chapters, short reviews of topics related to novel ecosystems, instructive case studies, and 'perspectives' that often take an anecdotal and thus quite entertaining approach to the subject.

After an introduction that justifies the term 'novel ecosystems', the book starts with five chapters trying to define novel ecosystems, including a case study from the Everglades. The third main part explores what we know (and do not know!) about novel ecosystems, with a perspective explaining why ecological novelty is not so new for palaeoecologists, a case study on novel forest ecosystems in Puerto Rico, and chapters on invasive alien plants and infectious diseases. This is supplemented by Part 4 on when and how to intervene in novel ecosystems. Here, I found the perspective by Joseph Mascaro particularly interesting that describes the conceptual shift in biodiversity research from the analogy of 'rivets in an aircraft' to appreciating the actually higher flexibility of ecosystems where interactions and functions can be replaced by new species. This sets the stage for a balanced and considered management of novel ecosystems, for example on the Seychelles. Part 5 comes under the heading 'How do we appreciate novel ecosystems?' and features as diverse topics as engaging the public, valuing, policy issues and an interesting case study on shale bings in central Scotland. Part 6 points out new directions for research and management of novel ecosystems. The final part consists of a chapter by the editors on what is known and what is done with novel ecosystems. There is an index at the end of the book, while references are provided after individual chapters.

My impression is that Richard Hobbs, Eric Higgs and Carol Hall did a great job in assembling and editing the 42 chapters of the book written by 51 authors. Most contributors are from North America, while the other continents are represented by rather few scientists, and Asia has not a single contribution. The latter is slightly strange realising for how long and profound ecosystems have been used and shaped in China and India. Most chapters are relatively short, with an easily accessible essay style but rather few original tables and figures. The book is technically well done; virtually no typos could be spotted, and the overlap among individual chapters is minimal.

In conclusion, I recommend this book to all researchers and practitioners working on man-made ecosystems. Its format is a novelty in itself, analogous to the systems described: diverse, heterogeneous, functional and unfinished. It manages to point out the potential that these systems have without reducing the value of traditional conservation and without opening the doors to biological invasions. Or to say it in a nutshell: "In a world of rapid human-induced change . . . the power of the novel ecosystem concept is its pragmatism" (p. 17). There are few comparable books on the market, so there is no risk in buying this one that certainly will form a baseline for the science unfolding on this topic.

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Numerical Ecology, P. Legendre, L. Legendre., 3rd ed., Elsevier, Amsterdam (2012). 990 + xvi pages, Price: €77.00, ISBN: 978-0-444-53868-0 (paperback) or 978-0-444-53869-7 (ePUB)

Wine lovers apparently prefer character over balance: recognisable strengths are more important than overall grandeur. Legendre & Legendre (L&L) is a statistics book for connoisseurs. It has many recognisable quirks, persistent also in its 3rd edition, but it has the best taste of all books on multivariate statistics for ecologists. There was little doubt that I would recommend this book to any quantitative ecologist even before I started reading it. Its 2nd edition (from 1998) was the book that I turned to when all other books on the topic had failed me. But why did I not use the book from the beginning? Well, Numerical Ecology, in the new 3rd edition as much as in the previous editions, is highly informative but at best very awkward to use as reference. The index is, put plainly, virtually unusable; even topics to which entire sections are devoted are not listed. In terms of usability, this is no small matter. Imagine you search for the Hellinger transformation: under H? No, under T for transformation. For non-linear regression: blank. For GLM? Likelihood? Probit? Standardised regression coefficients? Blanks, although all of these topics are covered.

A second issue that L&L have put between the reader and statistical understanding is their characteristic (read: unconventional) classification of analyses into Q and R problems (Q refers to (dis-)similarities between species, R between sites). The 14 chapters fall into four separate themes (not outlined as such): basic statistical, physical and mathematical concepts (chapters 1–3); simple multivariate analysis (chapters 4–7); grouping and ordination (chapters 8, 9 and 11, chapter 10 is a bit of a miscellaneous section including path analysis as well as matrix comparisons or the forth-corner problem) and a final theme on non-independent data (time series and spatial analysis, chapters 12–14). The book closes on references, a completely redundant list of R-packages with their author lists and the earlier-mentioned highly incomplete index.

The main changes to the previous 2nd edition are references to software at the end of each chapter, specifically the functions in various R-packages that implement the methods discussed, a chapter on spatial eigenvectors (chapter 14) plus seven or so new sections interspersed throughout the book. I particularly liked those on transformations for community-composition data and co-inertia analysis.

Another characteristic of the book is the brief mentioning of applications of a specific statistical method in an ecological context. Funny enough, most of these applications are from one of the authors, and typically no data or details are provided, except for some ecological background and a reference.

My main problem with L&L is that chapters are rarely comprehensible by themselves, they often refer back to the introductory chapters or use nomenclature introduced elsewhere. For the reader, this means that the first three chapters are absolutely necessary for understanding the later chapters (and the three following multivariate chapters are extremely helpful).

What I really love about this book is that for most methods the formulae are given. Thus, we learn the statistical reasoning, the mathematics and the ecological interpretation. And that is also one of the great advantages of L&L over an earlier book with a similar title (Borcard& Legendre: *Numerical Ecology with R*, Springer, 2011), which is much more a how-to-, while this book is a why-treatise.

Let's have a look at some details. The physics-based introduction is enlightening – but unrelated to anything else in the book. The focus on multivariate responses is justified by a curious statement: "... univariate statistical methods are inappropriate with most ecological data" because they implicitly assume that "the p unidimensional $\mathbf{y}_j$ variables in $\mathbf{Y}$ are linearly independent of one another" (page 145). This reasoning only applies to approaches that replace multivariate by a series of univariate analyses. Instead, most ecologists aggregate a community data set into indices such as evenness or mean distances, in which case the statement does not hold. It is no surprise that chapters 4–7 are largely dealing with the difficulties of analysing multivariate data correctly, and, more importantly, being able to interpret the findings. I also found it confusing that the correlation matrix is introduced as $\mathbf{P}$ (capital rho) but in the example is called $\mathbf{R}$. The reason is statistically straightforward but probably hidden in some initial chapter (which I could not find): Greek letters for random variates, Latin letters for actual realisations. So two variables $\mathbf{y}_i$ and $\mathbf{y}_j$ are correlated with a coefficient of linear correlation ρ_{ij}, but two measured vectors of values are correlated with $r = 0.4$. While this is statistically sound, it is also highly confusing for ecologists that are unaware of probability theory. For those (like me) struggling with Q and R, the consequences for analyses are concisely explained in Box 7.1. Also the section on multiway contingency tables (6.3) is really good, easily making up for recurring phrases that "several computer programmes allow" without mentioning any (or the R functions in the software section).

Will L&L lead to better multivariate analyses? Only if the reader is willing to invest the time to read at least 400 of the 990 pages. I think multivariate statistics is still in a phase of consolidation, like univariate statistics was until the establishment of GLMs. There is a lot of expertise and technology, but I could not detect a guiding idea, a leitmotiv, from which the various multivariate analyses follow (the maximum likelihood of multivariate statistics, if you like). I had (naively?) hoped that this 3rd edition would use distance-based redundancy analysis (or something like it) as the vantage point from which most other methods are special cases or variations. Who would be better placed than Pierre Legendre to develop such a central access point to multivariate statistics? For the time being, this field so relevant to ecologists will remain a fragmented method pool in which L&L provide an essential swimming aid.

Numerical Ecology is a definite must-have for any quantitative ecologist. But the poor craftsmanship of the publisher (paper is semi-transparent, references to chapter numbering are misplaced, lines with symbols overlap the next line, small-caps for case-sensitive R packages) makes me strongly recommend the searchable electronic version over the flimsy-paged paperback version.

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