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Book review

K.J. Gaston, The Structure and Dynamics of Geographic Ranges, Oxford University Press, ISBN 0-19-852640-7, £66 (hardback), ISBN 0-19-852641-5, £27.50 (paperback), 2003 p. 266

Anyone knows that the distribution of biological populations and species is, to some extent, geographically bounded. Yet, explaining why such limitation occurs is not a trivial matter. The issue is further complicated by the fact that distributional ranges are difficult to define and quantify. Kevin Gaston addresses these problems, providing a synthetic review of current knowledge on the structure of geographic ranges.

The book is divided into five chapters. The introduction presents some background information, makes the case for the need and opportunity to study the structure of geographic ranges, and states the objectives of the book. Chapters 2–4 represent the core part of the book, providing a comprehensive review of the literature on geographic ranges. Chapter 2 discusses range edges, particularly the determinants of their spatial position. Chapter 3 is concerned with the size of geographic ranges, their variability and their frequency distribution. Chapter 4 looks more closely into the internal structure of geographic ranges, including the distribution of abundance within geographic ranges, its relationship to environmental gradients, and the intraspecific abundance–range size relationship. The last chapter attempts to provide an overview of the implications of patterns in the structure of geographic ranges for several current environmental issues, including range contractions and extinctions, the selection and design of protected areas, climate change, biological invasions and reintroductions.

Gaston's approach is pattern- and data-driven, rather than conceptually motivated. In spite of the impressive literature review, the book lacks new insights illuminating the patterns summarized by the review. For example, when closing the chapter on range edges, Gaston concludes that "the literature provides good empirical examples of [···] different kinds of explanations, but rather little insight into how they relate to one another, and almost no comprehensive understanding of why any given species occurs where it does and not elsewhere." In addition, many sections end abruptly, giving the impression of having been written in haste. The reader who, attracted by the title of the book, expected a volume full of ideas and insights about the ecology and evolution of geographic ranges will surely be disappointed.

Gaston should be praised for the breadth of his review. Yet, the book lacks discussion of some current ideas directly relevant to the topic of the book. The most obvious omission is the neutral theory of biodiversity and biogeography (Hubbell, 2001; Bell, 2000, 2001), which predicts many of the patterns discussed in the book, but from a perspective radically different from that advocated by Gaston.

In summary, I believe the strength of this book lies on its role as a road map to the literature on the structure of geographic ranges. For this reason, the list of references at the end of the book is its most valuable section. Yet, a bibliography, no matter how extensive, does not seem enough justification for a book, and interested readers can probably find their way to these references with the aid of bibliographic databases and review papers.

References

Bell, G., 2000. The distribution of abundance in neutral communities. American Naturalist 155, 606–617.
Bell, G., 2001. Neutral macroecology. Science 293, 2413–2418.
Hubbell, S.P., 2001. The Unified Neutral Theory of Biodiversity and Biogeography. Princeton University Press, Princeton, NJ.

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