Wildlife-Habitat Relationships: Concepts and Applications, 3rd ed

Author: Niemi, Gerald J.

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Wildlife-Habitat Relationships: Concepts and Applications, 3rd ed.—Michael L. Morrison, Bruce G. Marcot, and R. William Mannan. 2006. Island Press, Washington, D.C. 520 pp. ISBN: 978-1597260954. Paperback, $50.00.—An attempt to

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summarize and provide guidance on the massive literature regarding wildlife–habitat relationships is truly a monumental task. Few wildlife biologists would dispute that we are in the sixth mass-extinction period. The primary cause of this is loss and change of wildlife habitat. Birds are no exception: even many common bird species are declining because of habitat changes. With this book, first published in 1992 and now in its third edition, Morrison, Marcot, and Mannan have done a great service to ornithologists interested in these relationships. The improvements from the second edition (1998) include updates that cite more recent literature, especially on population viability, genetic analyses, metapopulations, habitat modeling, ecosystems, and implications for conservation of species. This edition also contains a new glossary of terms and several excellent new tables (e.g., tables 3.3 and 11.2) that define and provide examples for important terms used in wildlife biology. The book has a wealth of useful information and covers three broad categories of wildlife-habitat relationships: (1) the conceptual foundation; (2) measurement, analysis, and modeling; and (3) the management context.

I hesitate to criticize a book that has assumed such a difficult task. However, the authors generally do not cover non-U.S. literature very well—a fault, I believe, of most North American researchers. This is a shame, given the wealth of information and methodologies in Europe, Australia, and other countries across the globe. The book also tends to focus on studies and examples from the western United States. This is not surprising, because all three authors have their roots there.

Examining certain parts of the book in detail, I found a few errors: the Author Index, under Lack, cited pages 6, 22, and 34, but Lack was not cited on page 6 or 22—though he was cited on page 5; "most" (page 54, first column, l–3) should be eliminated; and Robbins and Van Velzen (page 111) should be cited for their seminal work in establishing the roadside breeding-bird survey—too often we forget about the pioneering work of such individuals. There are also several larger problems and omissions that I found surprising. For example, given the amount of literature available on the topic, I see little need for citing the gray literature. I found chapter 3 to be a lengthy, rambling review of many topics, in need of critical editing and reorganization. The section on metapopulations was weak (pages 112–115). Several papers that I have found to be especially insightful and progressive with regard to wildlife–habitat relationships were not mentioned, for example research by Angelstam on edges and landscapes, Monkkonen's theory on heterospecific attraction (the antithesis of competition theory), Dufrene and Legendre's work on indicator species and habitats, Hubbell and Bell's research on the randomness of bird communities, and Gotelli and Graves's null-model approaches.

The book has many positives, certainly vastly more than the negatives. It has a strong, forthright approach on the importance of asking the right questions and pursuing the appropriate statistical analysis for those questions. For instance, the authors identify that the variance may be as important as the mean in many wildlife studies. They also point out the importance of doing power analyses prior to gathering data because this often identifies the appropriate number of samples that need to be gathered or, more importantly, whether the study should even be pursued. Similarly, they emphasize that assumptions of parametric statistical approaches are often neglected or inappropriately applied.

The book has an excellent review of the multitude of wildlife modeling approaches (chapter 10). These vary from an emphasis on the incorporation of uncertainty in models to simulation, disturbance, suitability, landscape, and decision-support models. The chapter also considers new approaches, such as those that use Bayesian analyses, expert systems, networks, and scenario modeling for optimization of land allocations. Indeed, studies of wildlife–habitat relationships have become increasingly complex and have logically succeeded to using advances in computer hardware and software. The chapter concludes with model validation, an often neglected part of underfunded research projects and time-limited graduate theses. All of these "new approaches" need this critical phase, especially with our greatly increased ability to abuse the numbers.

There is no question that the book should be read by every ornithologist involved in gathering and analyzing wildlife data and managing wildlife species. It will serve as a guide to the literature and the numerous issues that wildlife scientists need to consider when they design, gather, compile, analyze, and document wildlife–habitat relationships.—Gerald J. Niemi, *Natural Resources Research Institute and Department of Biology, University of Minnesota, 5013 Miller Trunk Highway, Duluth, Minnesota 55811, USA. E-mail: gniemi@d.umn.edu*