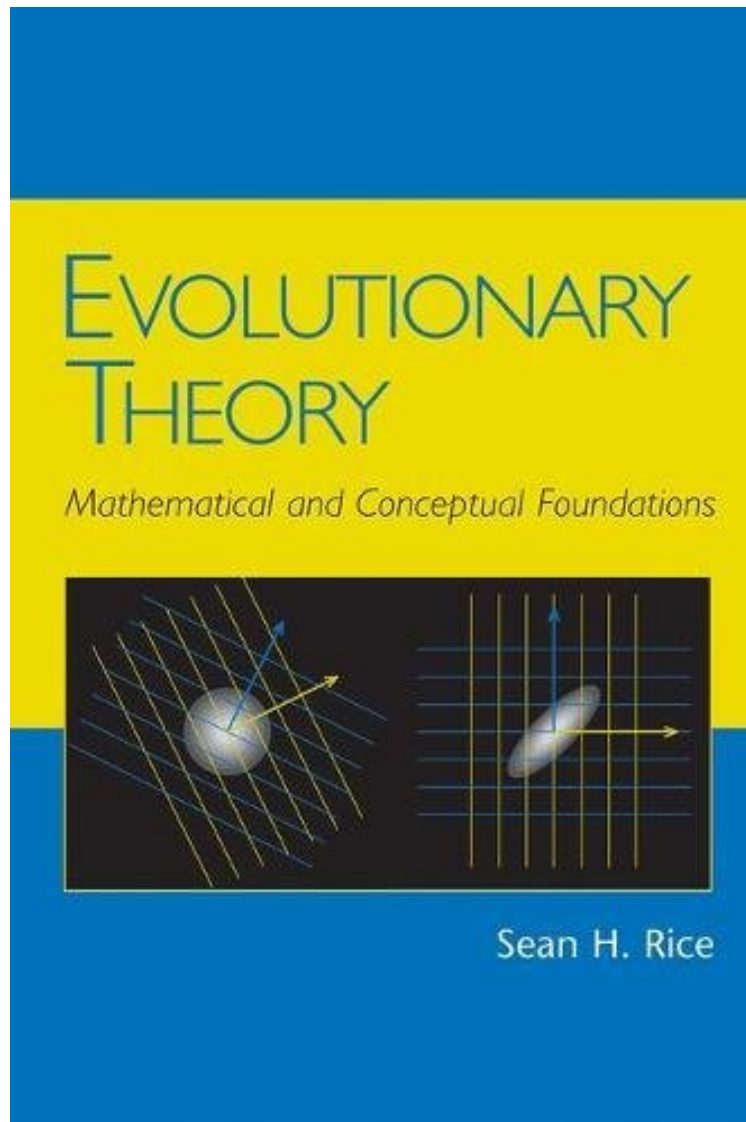


# Evolutionary Theory: Mathematical and Conceptual Foundations

*Sean H. Rice*

*ebooks | Download PDF | \*ePub | DOC | audiobook*



DOWNLOAD



READ ONLINE

#1362335 in Books Sinauer Associates, Inc. 2004-06-01 Original language: English PDF # 1 6.00 x .70 x 9.00l, 1.35 #File Name: 0878937021370 pages | File size: 79.Mb

**Sean H. Rice : Evolutionary Theory: Mathematical and Conceptual Foundations** before purchasing it in order to gauge whether or not it would be worth my time, and all praised Evolutionary Theory: Mathematical and Conceptual Foundations:

0 of 0 people found the following review helpful. I can't add anything significant to what other reviewers have ...By MI can't add anything significant to what other reviewers have said. Rice's is a unique and theoretically deep presentation. There are a few common topics that aren't covered, but there is no other introduction to population

genetics that covers all of the topics that Rice does. More importantly, much of what he covers is tied together in a way that gives the reader deeper insights into all of the material in the book. 0 of 0 people found the following review helpful. Five Stars By Ozan K Nice book for people work in evolutionary theory. 12 of 13 people found the following review helpful. Excellent, brief introduction By B. O Fallon At first glance Dr. Rice's book appears to be a somewhat generic introduction to population genetic theory. The first few chapters, which lay out the basic selection- at-one-or-two-loci seemingly required of all such texts, are written clearly, but nonetheless seem basically interchangeable with most other discussions of the topic. In my opinion, however, Rice's brilliance really shows through in the subsequent chapters, in particular his exposition of the Price Equation (presented in chapter 6). Here, Rice presents arguments and explanations of the fundamentals of the evolutionary process that I found unique, easy to follow, and full of deep insight. The mathematics require nothing more than algebra, but nonetheless the concepts really influenced my way of thinking about evolution. The later chapters deal with several specific issues (developmental evolution, multilevel selection, etc), and sometimes require fairly advanced mathematics (eg. tensor analysis). The chapter on multilevel selection provides a fairly clear introduction to using the Price Equation to actually solve population genetic problems. The text is fairly short, and some sections don't get the attention they deserve (particularly on coalescent theory). Nonetheless, the clearly presented introductory material, combined with the deep insight offered by some of the later chapters, should make this book of interest to both early graduate students as well as population genetics mavens.

Evolutionary Theory is for graduate students, researchers, and advanced undergraduates who want an understanding of the mathematical and biological reasoning that underlies evolutionary theory. The book covers all of the major theoretical approaches used to study the mechanics of evolution, including classical one- and two-locus models, diffusion theory, coalescent theory, quantitative genetics, and game theory. There are also chapters on theoretical approaches to the evolution of development and on multilevel selection theory. Each subject is illustrated by focusing on those results that have the greatest power to influence the way that we think about how evolution works. These major results are developed in detail, with many accompanying illustrations, showing exactly how they are derived and how the mathematics relates to the biological insights that they yield. In this way, the reader learns something of the actual machinery of different branches of theory while gaining a deeper understanding of the evolutionary process. Roughly half of the book focuses on gene-based models, the other half being concerned with general phenotype-based theory. Throughout, emphasis is placed on the fundamental relationships between the different branches of theory, illustrating how all of these branches are united by a few basic, universal, principles. The only mathematical background assumed is basic calculus. More advanced mathematical methods are explained, with the help of an extensive appendix, when they are needed.

"All evolutionary biologists should be made to understand this material, and Rice's volume is the best place for them to begin. Anyone who wants to call themselves evolutionary theorists should work their way through this unique book." --Joe Felsenstein, *The Quarterly of Biology* About the Author Sean H. Rice is Professor in the Department of Biological Sciences at Texas Tech University. He received his Ph.D. in Ecology Evolutionary Biology from the University of Arizona. Dr. Rice's work in evolutionary biology has explored a wide range of topics, including developmental modeling, morphological evolution in both invertebrates and vertebrates, population and quantitative genetics, macroevolution, and the philosophical and conceptual basis of evolutionary theory. His theoretical work currently focuses on two broad areas: (1) developing a rigorous theoretical framework for the study of developmental evolution and (2) the mathematical and conceptual foundations of evolutionary theory.