

OTHER

An Introduction to Population Genetics: Theory and Application

By Erasmus Nielsen and Montgomery Slatkin. 2013. Sinauer Associates, Inc., Publishers, Sunderland, MA, USA, 01375-0407. 298 pages, 62.95 USD, Cloth.

This textbook approaches population genetics from the perspective of coalescence theory which focuses on coalescence events where species lineages have merged. It contrasts with the more common classical approach by working backward from the present individual sample rather than forward from an earlier ancestor. In this text, both approaches are combined to examine the application of coalescence theory to human populations and populations of other organisms.

The authors have written this text for advanced undergraduate and graduate students with basic algebra and genetics training. The text introduces concepts from probability and statistics. In my opinion, the authors are probably hitting a much higher preparation level than this and students should have some probability and sta-

tistics background to fully understand the concepts and the material may be challenging to students without this background. Although the math presented in this text is more complex than basic algebra, it can likely be understood with that background although I think intermediate or advanced level algebra would give students a leg up. An introduction to Bayesian theory would also be worthwhile if the instructor was not grounded in this area.

Overall, the text proceeds through reviewing allele and gene frequencies, Hardy-Weinberg equilibrium, genetic drift, and mutation. It devotes limited space to bottlenecks which is a significant concept in population genetics and of great relevance to conservation. The remainder of the book addresses coalescence theo-

ry and how this theory is applied to analysing genetic data from populations. Appendices provide a quick introduction to probability theory, the exponential distribution, maximum likelihood and Bayesian statistical concepts, and a Chi-square table.

For classroom use, the authors provide chapter exercises and answers are provided for the odd-numbered ones. The layout and graphics are high quality and the text is error free.

My general conclusion of this text is that it is likely of interest only to instructors teaching a population genetics course that is advanced and focussed entirely

on coalescence theory. Its reference value is the same; limited to coalescence rather than classical population genetics. The by-word here is advanced as I believe the student will need to be somewhat advanced as well in his/her biological and quantitative background. I recommend this text only in that context and would encourage use of other available population genetics texts instead.

ROGER D. APPLGATE

Tennessee Wildlife Resources Agency, TN and Department of Biology, Tennessee Technological University, Cookeville, TN, USA