

Book Reviews

Elseth, G.D.; Baumgardner, K.D.: Population Biology. New York: Van Nostrand 1981. 623 pp., 188 figs., 40 tabs. Hard bound £ 18.70.

To use this book effectively a familiarity with the basic principles of integral and differential calculus as well as a knowledge of elementary probability and statistics is assumed. For those needing a review of these facts an appropriate, but extremely shortened "Appendix" is included.

First, we will give some references to the classification and content of the book, which has been divided into four chapters and the "Appendix" mentioned above.

Chapter 1 "Mathematical models: applications and implications" presents basic concepts of mathematical modeling and emphasizes their use in modeling biological phenomena (a) Mathematical models in population biology and b) probability theory and stochastic models). The necessity for models of biological systems and the development of methods for their mathematical formulation are stressed. This emphasis on model building and model testing is realised throughout the text.

Chapter 2 "Genetics of populations" covers material normally discussed in the field of population genetics (a) Population genetics: An overview; b) Random mating and genetic equilibrium; c) Components of variation and resemblance and d) Inbreeding and assortative mating).

Chapter 3 "Ecology of populations" deals with problems generally regarded as ecological in nature (a) Ecology of populations: spatial distribution; b) Population growth; c) Population fluctuations and regulatory mechanisms; d) Interspecies relationships: Interactions between trophic levels and e) Interspecies relationships: Organization into communities). These ecological discussions proceed from a description of single species populations to an investigation of interspecies relations and community structure.

Finally, chapter 4 "Evolution of populations" contains the well-known material on evolutionary processes (a) Natural

selection; b) Differentiation of populations and speciation and c) Patterns of variation). This discussion combines concepts of genetics and ecology – for example in the treatment of natural selection.

All chapters are followed by an ample number of problems of varied degree of difficulty, which are divided into two groups: First, a section containing worked example problems designed to illustrate and amplify basic theory and to demonstrate the development of alternative models. The second group consists of problem exercises designed to test the reader's ability to apply the given information to new situations. The answers to these exercises are given at the end of the book. Both categories of problems are a major and integral part of each chapter.

Finally an extensive bibliography of approximately 400 references provides the reader's possibility for advanced and extended studies.

The book is excellently written in a very informative style with clear text headings and an enormous number of illustrative figures.

Population genetics, population ecology and evolution are integrated into a single text, but – according to the author's opinion – in a fashion such that the component parts can be dissected out for individual course needs. There is no doubt that such an extensive book covering different fields may be useful for the corresponding courses for advanced undergraduate and graduate students.

There are many excellent textbooks on population genetics, population ecology and evolution available. As far as we see this new book "Population Biology" by Elseth and Baumgardner presents almost no new material. Finally, this implies the following critical comment: The present book, indeed, must be characterized as an excellent and commendable book, but nevertheless it seems to be superfluous.

M. Huehn, Kiel