## An Introduction to Population Ecology. *G. Evelyn Hutchinson.* xi + 260 pages. Yale University Press, New Haven. 1978. $17.50.

During the past two decades, population biology has become one of the most flourishing and exciting areas of biology. As a synthetic discipline, it has drawn workers from ecology, genetics, mathematics, physiology and systematics who are interested in populations as units of study. Associated with the growth of the field has been the appearance of a large number of texts concerned with diverse aspects of the biology of populations. One might ask therefore whether a new work, even by such a distinguished scholar as Professor G. Evelyn Hutchinson, has any new material or perspectives to offer. The answer is yes. An Introduction to Population Ecology is a masterly exposition of the history of man's thinking about populations as well as a somewhat idiosyncratic review of current research in the field.

The book is derived from a course of lectures concerned with ecological principles given by Hutchinson to students at Yale. The book is composed of six chapters and an appendix entitled Ratiocinator Infantium or "the modicum of infinitesimal calculus required for ecological principles." The first three chapters are concerned with processes in unispecific populations. Chapter 1 covers the growth of populations and the Verhulst logistic equation with its more important modifications. Attention is drawn to the paucity of data from natural populations illustrating S-shaped growth curves. Despite recent interest in colonizing species and biogeography, there are few quantitative studies which describe populations developing initially from a few individuals. Thus the logistic growth curve remains very much a laboratory phenomenon.

Life tables, demography and survivorship curves are treated in Chapter 2. Data from a variety of organisms are compared. Due to their sedentary habit, plants provide suitable material for demographic studies, and Hutchinson reviews data from four contrasting groups of plants (*Polytrichum, Acer, Ranunculus* and several grass genera). It is evident that few generalities can be made about patterns of survivorship even in closely related species. Maxine Watson's studies of *Polytrichum* reveal little variation in the survivorship curves for the six species she studies, whereas data from related herbaceous plants illustrate a great variety of patterns. Clearly for investigators with almost limitless patience there is a great deal of work to be undertaken on the demography of plants.

In Chapter 3, which is concerned with life history evolution and reproductive behavior, Hutchinson introduces two new terms to clutter an already jargon-filled area. Prodigal and prudent reproduction refer to organisms with contrasting levels of fecundity and whose descendants have different survival probabilities. In general, organisms having prodigal reproduction will be under the influence of r-selection, those having prudent reproduction will be more subject to K-selection. Despite the variety of reproductive methods found in plants, only 2 paragraphs out of a total of 27 pages in the chapter are devoted to plants.

The remaining chapters of the book deal with interactions among species, niche theory, competition and other topics which are usually considered more in the realm of community ecology. This is particularly the case in the last chapter which is concerned with food chains, species diversity and the stability of communities. The coverage here and elsewhere in the text strongly reflects Hutchinson's own research interests and those of his close associates. Numerous examples are taken from aquatic and avian communities whereas terrestial insects and plants receive less attention.

To those accustomed to reading scientific texts the large number of footnotes may be distracting. All references and extensive quotations are cited as footnotes and in some instances (pp. 106–107) whole pages are transformed to 'footnotes.' The work contains many illustrations. Graphs, histograms and tabular material are well executed but the line drawings (e.g., Figs. 82, 84, 85) vary greatly in quality.

The main strength of this work lies in its enjoyable blend of complex theory and historical insight, presented with the clarity of expression which has always been a trademark of Hutchinson's writings. Since the book is derived from a course given to arts as well as science students, it should appeal to the occasional social scientist, historian and other non-biologist interested in tracing the development of the discipline and its impact on cultural and intellectual history. I would also anticipate that the content and style of "An Introduction to Population Ecology" would make this book suitable reading material for advanced undergraduate courses in ecology. However, the work strongly emphasizes animal populations and thus contains little material of direct relevance to the practicing plant taxonomist.—Spencer C. H. Barrett.



## The Floristic Regions of the World. *Armen Takhtajan.* 247 pages. "Nauka," Leningrad. 1978. 2 rubles, 30 kopecks. (In Russian, with an English table of contents.)

This small book represents a floristic treatment on a global scale by an eminent, well-travelled botanist with broad experience. Takhtajan recognizes six floristic kingdoms; subkingdoms within these; regions within the subkingdoms; and numerous provinces within regions. The accompanying (loose) map indicates the kingdoms by color and the regions by numbers; the other subunits in the floristic scheme are not indicated on the map, but are geographically delimited in the text. His Californian Province exactly parallels Howell's California Floristic Province (which Takhtajan acknowledges). The area encompassed by this Province is described, endemism characterized at the generic and specific level, a list of characteristic plant species is given, and a number of references are cited. This format is used repeatedly for other Provinces. The manuscript went to the printer in 1977, and a number of papers and books published that year are cited. Takhtajan's book invites comparison with Walter's relatively recently translated "Vegetation of the Earth," but the latter is largely concerned with eco-physiological effects on vegetation rather than on floristics per se. The two books complement each other almost perfectly. Though Takhtajan's book is mostly in Russian, the English table of contents, the lists of binomials, the map, and the extensive bibliography will make his message easily accessible to those who do not read Russian. This is the sort of book that invites translation, and I hope that this will occur in the near future.—Robert Ornduff.