

The why of what was and is where

Carolyn Harrison

Basic Biogeography, 2nd Edn. By Nigel Pears. Longman:1985. Pp.358. Pbk £9.50, \$17.95.

WHEN *Basic Biogeography* first appeared in 1977 it made its mark as a text that was readable, lucid and sensitive to the demands of the learning process. In this second edition the same structure is retained and revision has involved modest addition rather than comprehensive recasting.

Part 1 introduces basic concepts and terms as they apply to vegetation, soils and ecosystems. The approach is essentially an ecological one, rather than chorological or evolutionary, and through it the student will gain a rudimentary knowledge of some of the complexities exhibited by natural and disturbed ecosystems. Part 2 stands largely on its own and provides an account of selected examples of the vegetation and soils of Britain. A final

chapter describes the impact of man in terms of land-use history and land-use conflict.

The addition of topics such as homeostasis, plant strategies, island biogeography and carrying capacity, as well as a teaching model of nutrient cycling, strengthens the book as an introductory text, while the new, bolder type lends added crispness to the page. Appealing, too, are the discussion sections at the end of each chapter; these serve to encourage a more critical approach to the subject material, which otherwise is presented in a descriptive fashion. Even so, it is to be hoped that inquisitive students will be moved to examine more fully the ecological basis of the concepts and theories upon which the book is founded. If they do not, many of them will remain ignorant of the true extent of controversy which each topic generates amongst ecologists. On balance, however, I am optimistic that the new edition of *Basic Biogeography* will provide just the right kind of spur to dig deeper into the subject that most students need.

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Ecology writ large

Robert H. Smith

Ecology: The Experimental Analysis of Distribution and Abundance, 3rd Edn. By Charles J. Krebs. Harper & Row: 1985. Pp. 800. Hbk \$32.50; pbk £12.95.

Ecology: Individuals, Populations and Communities. By Michael E. Begon, John L. Harper and Colin R. Townsend. Blackwell Scientific/Sinauer: 1986. Pp.880. Hbk £29.80, \$33.95; pbk £14.50. To be published in April.

CAN a single textbook now give an adequate account of the science of ecology at university level? In the 1950s and 1960s, comprehensive coverage of the subject was achieved in the successive editions of Odum's *Fundamentals of Ecology* (first published by Saunders in 1953), which served as the standard text for many years. More recently, however, there has been a trend among publishers to produce series of shorter books written for students by a specialist in a particular field, perhaps indicating the extent to which ecological theories and ecological studies have blossomed and borne fruit during the past two decades.

Two substantial textbooks dominated undergraduate reading lists during the 1970s: Ricklefs's *Ecology* (Nelson, 1973) and Krebs's *Ecology* (Harper & Row, 1972). Krebs's book has now run to the third edition and must still be considered

the leader among general ecology texts. It is against this competition that the newcomer from Begon, Harper and Townsend must be judged. Both books are some 800 pages in length (compared with about 500 pages of text in the 1959 edition of Odum), and include an extensive, up-to-date list of references to original papers. Both, too, justify the answer "yes" to the question posed at the beginning of this review.

The flavour of Krebs is brought out in the full title, *Ecology: The Experimental Analysis of Distribution and Abundance*. The emphasis on the experimental approach has raised ecology above the level of observational natural history, and is one of the main features of Krebs's own research on small mammals. Hypotheses and comparisons are presented throughout the book, and readers should be left in no doubt that ecology is an area of science which, though not in the same "hard science" league as physics and chemistry, has firmed up considerably in recent years.

Krebs has taken account of the main developments in ecology since the earlier editions and has produced a substantially revised volume. Gone are Chapters 26 and 27, "Human Population" and "Food Production"; brought forward and given more prominence is "Evolution and Ecology" which sets the scene for new sections such as those in the chapter on habitat selection; much increased is the coverage of community ecology and species diversity. Of course, a reader wanting to find out

about a particular topic cannot expect to find everything in this or any other textbook. Many sections are tantalizingly brief, but throughout Krebs refers to the primary literature and there is a selected reference list in each chapter as well as a full bibliography at the very end. Overall, those who already know Krebs's *Ecology* will find the new edition a mature version of an old favourite, while those new to the subject still have something of a treat in store.

Begon, Harper and Townsend sub-title their book *Individuals, Populations and Communities*, which describes the logical progression that they follow through the 22 chapters. Their approach integrates almost all areas of ecology, while recognizing that there are different (but interconnected) levels at which the subject can be studied. Appropriate examples are discussed throughout, and the authors mix plant and animal examples in a wholly natural way; the distinction they make (stemming largely from Harper's seminal work of the past two decades) is between unitary and modular organisms rather than animals and plants, a classification which would be inappropriate in most areas of biology but is probably the best one for ecology. The argument that the characteristics of individuals are the products of natural selection, and that the characteristics of populations depend on the individuals that make up those populations, is emphasized in a number of places, and rightly so; the authors thereby avoid leading students towards the pitfall of implicit group selection.

Indeed, the book is commendable in almost every respect, though there are some points to quibble over. I found the three introductory chapters rather ponderous, though much of the material is important. I have reservations about the emphasis on reproductive value in the chapter on life history variation, because the authors do not make clear how the relative fitnesses of alternative life histories should be compared using reproductive value. Also, the explanation of the use of zero isoclines to analyse stability of predation dynamics is fudged somewhat — crystal clear for competition but not so for oscillating populations, and students may well be confused.

As a whole, though, the book is excellently written, well-presented and emphasizes the areas of ecology currently attracting most research interest. The freshness of approach and the breadth and depth of coverage make most of the opposition seem a rather stale and restricted diet by comparison (Krebs excepted). All ecology teachers and students would do well to sample this *nouvelle cuisine*. □

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