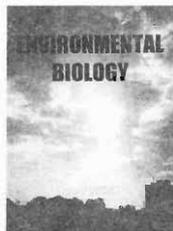


Environmental Biology

Man and his Environment

M D Subhash Chandran



Environmental Biology
Biswarup Mukherjee
Tata McGraw-Hill, New Delhi
1996, pp.691, Rs.395.

The travails involved in writing an ecology text book are expressed by R L Smith in *Ecology and Field Biology* (Harper Collins, 1990): "The fragmentation of ecology into specialised subdisciplines with their own journals and books requires many hours devoted to reading and becoming acquainted with new concepts and advances in many areas. Keeping up with the literature is more difficult and demanding than ever. While most ecologists become more specialised and restrict their reading and research to a narrow area... a text book author is forced to become more and more of a generalist, ranging over the broad landscape of ecology, attempting to make something of developing patterns, discovering interrelations among various fields, and synthesising that information into some kind of a coherent whole."

One of the two choices for the author is to write about what he knows best and skim over the rest. This could result in an idiosyncratic book reflecting his own, often a narrow view of ecology. The second, more difficult approach is to write a general text, which provides an overview of the subject, reflecting the broad diversity, that makes ecology such an exciting field.

Biswarup Mukherjee's *Environmental Biology* is surely a step towards fulfilling the second choice. Mukherjee's efforts to survive the pitfalls of specialisation, to provide an holistic treatment of the subject, is commendable. The 40 chapters are grouped into 9 parts. Part 1 deals with the ecosystem, its structure and function. Parts 2 and 3 provide an insight into the biotic and abiotic factors and their impacts on the environment and the biota. Parts 4 and 5 explain the system dynamics. Parts 6 and 7 deal with the different habitats, the communities they support and the environmental setting. Parts 8 and 9 highlight the environmental problems and strategies to deal with them. A glossary enhances its value. The book is profusely illustrated. But the coloured plates are somewhat disappointing and many of the diagrams are crammed.

Beginning with the concept of an ecosystem the book gets into environmental factors and their effects on the biota. The part discussing the growth and development of the biota, in places slumps into mediocrity revolving merely around the classical theories of Clement's (1916) Monoclimax and Tansley's (1935) Polyclimax, the discourse on succession is rather retrograde. Parts of the chapters on community organisation and stratification are rather inept. Vain efforts are made to apply the impressionistic picture of stratification in the tropical rain forest (after P W Richards, 1952) to the northern tropical moist deciduous forests of India. Examples are not given for the top strata of trees of 30–45m. *Wendlandia notoniana* (misspelt as *Weilandia*), a small tree cannot belong to the second strata of 18–27 m. Astonishingly, just three shrubs (*Woodfordia floribunda*, *Indigofera*

pulchella and *Clerodendron infortunatum*) are given as examples of the third strata of trees of 8–14 m. Sweeping generalisations such as that the forest understorey is an abode of ‘monkeys, chimpanzees, gorillas, squirrels’ etc. could have been avoided. The presentation of the niche concept, however, is well done.

The chapter on population growth and regulation, with its elements of mathematics, could be quite useful. The chapter dealing with association and integration among organisms has no mention of mycorrhizal association, pollination or fruit dispersal. Ecosystem dynamics and energetics are well written chapters. Mukherjee is at his best in the chapters on fresh water and marine environments which are spread over 100 pages.

The author seems to be treading on unfamiliar grounds while dealing with some of the biomes of India. Bamboos and the grass *Cynodon dactylon* cannot be characteristic of the tropical wet evergreen forest. *Bambusa* (bamboo) is not an evergreen member of Lauraceae. *Schleichera trijuga* belongs to Sapindaceae and not to Myrtaceae. Ground weed *Lantana camara* and *Euphorbia antiquorum*, a succulent xerophyte, cannot be characteristic of the second storey trees of moist, deciduous forest. The galore of errors continues in this portion of the book.

The part on human impact and environmental hazards is very informative about pollution although it needs to be enriched with data from the 1990's. The last part of the book on environmental awareness and management deal with system analysis, conservation and wild life management and non-conventional energy. Although published in 1996 and reprinted in 1997, one wonders,

why this part of the book is silent on momentous events of the decade like the Earth Summit of 1992!

Despite the need to revise and update parts of the book, the value of this prodigious work lies in its educativeness. Shortcomings apart, the book is ideally suited for learning the routine curriculum in ecology. The author aims the book mainly at students and the layman. The major theme of the book is man and his environment. Mukherjee's commitment to environment is amply reflected in his work, in his personal views and in the many apt quotations. The author strongly feels that the biggest need of the hour is for ordinary people to learn something about ecology.

The anguish of the author and his concern for the environment are expressed towards the end of the book: ‘It is not a question as to when we will meet the final catastrophe: a hundred million years – due to cooling and glaciation; a few thousand years – due to the cold regime; 10,000 years – due to global warming and final flooding; or a few centuries – due to exhaustion of resources. Here we can take an optimistic view and say that large scale cyclic environmental catastrophes have been a part of the earth's five billion year old history and what we have done so far is to accelerate ourselves towards such a situation. What we need today is to stabilise the process, reform ourselves towards sustainable development and preserve our environmental quality for the future generations.’

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