

Grassland ecology

Peter D. Moore

Grassland Ecosystems of the World. (International Biological Programme, 18.) Edited by R.T. Coupland. Pp. 401. (Cambridge University Press: Cambridge, 1979.) £25. *Perspectives in Grassland Ecology: Results and Applications of the US/IBP Grassland Biome Study.* Edited by Norman R. French. Pp. 204. (Springer: New York, Heidelberg and Berlin, 1979.) DM54; \$29.70.

SOME thirteen years after the initiation of the International Biological Programme for the collection of information concerning the productivity of the world's biomes, the publication of the accumulated data is gaining momentum. The book books reviewed here are concerned with grassland ecosystems; the first (edited by Coupland) is a condensed comparative synthesis of information from various sites around the world, and the second (edited by French) is a more detailed set of papers from the United States IBP grassland team.

In some areas of the world grassland is believed to represent the climax vegetation type, existing as a response to climate, soil, natural grazing or fire. In other regions, grasslands have developed as a result of human management practices. Often it is difficult to distinguish the two with certainty. In Coupland's book, grasslands are divided initially into climatically determined types and those actually sown and managed by man. Then, within the climatic subdivision, natural and semi-natural grasslands are distinguished — the latter being exploited by man either for hay crops or for grazing.

Each type is dealt with in a separate section subdivided into chapters concerning primary production, consumer organisms, microorganisms, ecosystem synthesis and modelling, nutrient cycling, and the exploitation, management and conservation of grassland systems. This arrangement is particularly valuable, as it permits an easy cross-reference from one

section to another. It makes it simple, for example, to check back from tabulations of the efficiency of energy capture in Indian grasslands to equivalent data in a similarly constructed table for prairie systems in the United States.

This facility reflects creditably upon those responsible for the design of the volume and upon the editor, who has ensured a uniformity of expression and presentation which greatly aids those who wish to obtain comparative figures with ease. This must be regarded as the primary function of a book like this one, which seeks to present a global collation of IBP grassland data.

Perhaps a surprising inclusion in the book is a section on croplands, reviewing graminaceous agroecosystems. Sadly, this is the least informative section, containing many casual pieces of information in a generally uncoordinated manner. It is largely derived from data emerging from the Polish Agroecological Station at Turew, Poland, but really a wider synthesis of world literature is necessary if this were to be a useful discussion.

Coupland concludes the volume by attempting to make generalisations concerning the structure and production of grasslands. This is a formidable task and tends to take the form of a summary of the range of variation found within grasslands of different types. It is useful mainly in that it identifies those areas of study which need further attention, such as the role of fire in grassland management.

Perspectives in Grassland Ecology, edited by N. French, is more limited in its geographical coverage, being solely concerned with the US grasslands, but it is far more diverse in its structure. It is essentially a series of independent papers concerning grassland studies in North America. Some, such as Lauenroth's paper on grassland primary production, are attempts to review areas of grassland study and to place them in their wider context. Others are concerned with very specific research topics, such as Detling's study of the factors controlling the productivity of the C4 grass *Bouteloua gracilis* in mixed grassland in Colorado.

The collection of papers deals with a range of topics, many of which will be of interest to ecologists in general, such as the role of stress in grassland ecology (Dodd and Lauenroth), biomass trophic pyramid structure in grasslands (French, Steinhorst and Swift) and nitrogen input and output (Woodmansee). Finally there is a series of papers concerning ecosystem modelling in grasslands and its value in management studies.

The two books are thus very different in approach. Both supply valuable sources of information and current ideas in the field of grassland ecology. □

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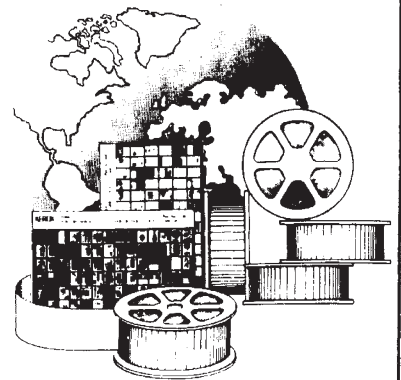
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