

Crawley, M.J.: Herbivory – The Dynamics of Animal-Plant Interactions. Studies in Ecology, vol. 10. Oxford, London, Edinburgh, Boston, Melbourne: Blackwell 1983. x+437 pp., several figs. Hard bound £ 27.50.

Although all animals directly or indirectly depend on plants, the study of interactions between herbivores and plants may be designated as an underdeveloped area in biology. This is probably due to the historical dichotomy which has arisen between botanists and zoologists. Now that ecology is leaving infancy one may expect attention given to herbivore-plant interactions to increase rapidly. It seems that the era of a deep interest in how animals and plants interfere with each other has commenced. A pioneer book in this field is "Herbivores: their interaction with secondary plant metabolites", edited by G. A. Rosenthal and D. H. Janzen (1979), which focuses on the role of plant chemicals and their significance in plant-animal relationships. Emphasis is on interactions at the level of individuals. The present book by M. J. Crawley also pays attention to factors which determine the consumption of plant parts. In addition, however, it brings together the literature on animal-plant relationships at the species and ecosystem level. Since the study of plant-herbivore dynamics is still in its beginning, the reader cannot expect to find well-documented explanations of the basic laws governing such plant-herbivore interactions at the community level. It is not a matter of lack of theoretical models, which have established, for instance, the role and importance of density-dependence, spatial and temporal heterogeneity, time-lags and age-structure effects. But few if any studies have elucidated these processes for both the plant and the herbivore involved.

Crawley presents a series of models accounting for the dynamics of plant-animal interactions, and also a wealth of natural history, but time has yet to come when an irrefutable and unifying synthesis of the mechanisms determining plant-herbivore interactions at the ecosystem level will be available.

Present knowledge is too limited for such a goal. Crawley's book, however, will stimulate research in this area and due to its extensive and critical review of a large body of literature, and at the same time indicate gaps in our knowledge and reveal relationships among hitherto unconnected facts. Indeed, the literature reviewed is extensive (comprising almost 1100 references, of which more than 50% dates from 1974–1981), giving the book at some places an encyclopedic touch. Although herbivory occurs in most major animal orders, the research cited shows that most studies were performed on mammals and insects. Interestingly, both groups show differences in their dependancy on plants. Whereas many mammalian herbivore populations are food-limited, insect populations, in spite of their far greater size fluctuations, are normally regulated by other factors.

The plan of the book includes a discussion of plant populations and the effects of animals on plant demography, followed by a treatment of animal populations in relation to plant food. Another chapter is concerned with plant-herbivore dynamics, largely based on population models. A chapter on community dynamics describes in a mainly qualitative way aspects of under- and overgrazing, plant succession, effects of resource concentration (e.g. monocultures), herbivore guilds, etc. In a concluding chapter the author presents in a lucid way a series of statements and views and indicates a number of trends which seem to arise, although, due to the complexity of natural plant-herbivore systems, "generalizations are going to be few and far between".

Crawley has produced a well-written and stimulating introduction to students of herbivory, and at the same time a valuable source book with thought provoking contemplations on the principles underlying one of the very apparent features of Nature: animals eating plants.

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