



BOOK REVIEWS

CALL FOR BOOK REVIEWS

The Book Review Editor welcomes volunteers to review books, maps, and charts for the *Journal of Coastal Research*. Please send a post card with your coastal interests, name and address to me. I will do what I can to offer you suitable books, but no promises. Please be patient as we have to deal with international mails.

NOTES FOR BOOK REVIEWS

One of the aims of the *Journal of Coastal Research* is to review a wide range of publications concerned with coastal topics. These will include not only research texts produced for the international market, but also more limited regional and local publications.

Each review will provide a synopsis of content and objectives (research, educational, commercial, etc.) of what the book is about and the target readership. This may then be followed by a personal appraisal of the publication's merits, be they good, bad or indifferent. Reviewers should try to make a positive recommendation of the book's value to the scientific community, but at the same time bear in mind the potential market and the price. Please try not to be too vitriolic in your condemnations or too fulsome in your praises without stating adequate reasons. Remember you may meet the author one day!

Normally reviews should be between 300 and 600 words in length, typed (in English) in the usual journal format (double-spaced, single-side, etc.). The Book Review Editor reserves the right to edit! Please provide full information on the book at the top of the review. Full information includes title, author(s), date and place of publication, number of pages, ISBN (or equivalent) number, and price. If the publication is somewhat 'obscure,' then please include an address from where it may be obtained. Remember that some people may try to order the book on the strength of your review and they need

all the help they can get.

Reviews should be submitted to the *Journal of Coastal Research*, Book Review Editor within two months of receiving the volume. Reviewers may keep publications they review.

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Introduction to Dynamic Programming,
Leon Cooper and Mary W. Cooper.
Pergamon Press, Oxford, 1981, 289p.
ISBN 0-08-025065-3 (hardcover):
0-08-025064-5 (softcover)

This book is intended as an introductory text, at the final year undergraduate or beginning post-graduate level. It assumes a reasonable background of mathematical skill. Fortunately it pays particular attention to worked examples, so that those without total fluency may still limp through the examples, acquiring enough grasp of the fundamentals to nod knowledgeably at the exercises. The text is designed to be used as part of a course — it is not intended for self teaching.

What is dynamic programming? Briefly, it is an optimization technique, or better, an approach to optimization. If a problem can be formulated into a mathematical model it may be possible then to separate it into a larger number of simpler components, which may themselves be solved in an optimal way. Assembly of these smaller optimal solutions gives an optimal solution to the initial problem. Naturally there are limitations to such an approach: it is not always possible to solve even the smaller problems; there may be too many simpler problems to solve — when the sheer computational

magnitude becomes overwhelming; or we may be unable to discern an adequate mathematical model in the first place, far less make decisions about optimality. In general terms, it is not immediately clear what problems can be tackled successfully — which is why this is an approach, rather than a definitive technique.

Two of the best known problems tackled by dynamic programming are the travelling salesman problem, and the knapsack problem. The travelling salesman problem involves finding the optimal route (in terms of time, money or any other quantifiable variable) between several locations, where each location is visited once, and once only. The knapsack problem [referred to in the book as 'The Wandering Applied Mathematician (continued)'] is one where several items of different sizes and values must be chosen in order to maximise the overall value, but subject to a total size constraint.

How is this applicable to coastal science? Only marginally — none of the problems chosen by the authors come close to the kinds of problems likely to be encountered by readers of this journal. If you spend time and effort packing a landrover (or even the family car), or have a fixed number of sites to visit, there are obvious applications (don't have too many sites — even dynamic programming is severely taxed when the number of locations to be visited exceed about 17!). It is difficult to imagine widespread application of dynamic programming to coastal science.

One way to tackle such problems is through computer power: sadly little attention is given to algorithmic description of the techniques described, although quite clearly the approaches given in the examples could be written for a computer (micro-, mini-, or mainframe). Whether they would then represent a computationally efficient solution is never assessed. The authors are aware of the applicability of computers in this area, but never address them directly in the examples.

The examples themselves are not very exciting. This is by no means exceptional in applied mathematics text books; they are there as flesh on the mathematical bones, and often seem a little forced. In a similar way, there is no explanation given of the choice of approach, or an examination of alternatives. Removal of the 'real world' component of the problems to leave only the mathematical formulation would not detract greatly.

The index is rudimentary. It is nevertheless a useful text, which is probably well-suited to its intended market. It is not particularly appropriate

as a source book for interested outsiders wishing to see how dynamic programming might be applicable to them.

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Environmental Effects of Offroad Vehicles: Impacts and Management in Arid Regions,

Edited by R.H. Webb and H.G. Wilshire.
Springer-Verlag 1983, 534p. Price: DM132
(\$US 52.40), ISBN 3-540-90373-8

This is something of a 'curate's egg.' Basically the book is about the degradation of the Californian Desert by the uncontrolled use of motor bikes and cars, a.k.a. ORVs. The book's interest to the coastal scientific community is that similar sorts of problems occur on coastal dunes and, to a lesser extent, on coastal wetlands. Oddly enough, it would appear that coastal types and desert types have followed the same tracks (metaphorically), but have never really sat down to compare notes. True some of the essays in this book cite coastal studies, but they are mostly passing references, although one essay — that by Gilbertson — is about Australian coastal dunes. But overall we seem to have been doing the same things, happily unaware of each other's presence.

This book should help bring things together. It comprises 23 essays (all disclaimed as official US viewpoints or policies, so it will make comforting reading in Central America), covering all aspects of the mis-use of vulnerable desert environments by uneducated ORV drivers. The essays are divided into five sets — physical abuse, biological abuse, rehabilitation, case studies and management. In all but the 'case studies' set, the first essay is a rather general 'scene setter,' e.g. 'Soil and soil formation in arid regions' and 'Plant ecology in deserts.' I found these general essays a little unnecessary, although undeniably, they make the volume more marketable. The essential basis of the book is the detailed account of the degradation process. The rapidity and irreversibility of many geomorphological and ecological changes is frightening (so too, in a different manner, is the article on natural asbestos pollution). Major changes in vegetation cover (often illustrated by splendid photographs), animal pop-