

## Book Reviews

### The Asian Elephant: Ecology and Management

R. Sukumar

Cambridge University Press, 1989

Paperback edition 1991

255 pp.

Price: approx. £40 UK

ISBN: 0-521-36080-3-X

This is a book on a very topical and emotional subject. It is a pleasure to read such a rational and objective discussion of the problems of elephant management. For those who are involved in or simply interested in elephant ecology and management in Africa, the similarities and differences between Asian and African elephant ecology and management problems discussed provide much food for thought. In addition the relatively little information available on Asian elephant biology is scattered through the literature and this book goes some way toward consolidating this knowledge, as well as providing a comprehensive reference list and plenty of new findings from the author's own doctoral research.

Chapter 1 provides an interesting historical overview of the long and intimate relationship between man and elephants in Asia. The discussion on elephant status and distribution in Chapter 2 gives detailed information on this topic for various countries in Asia. This is of little interest to African readers but serves to give an impression of the fragmented nature of Asian elephant distribution. Of greater interest is the lack of knowledge regarding elephant populations in heavily forested areas such as Burma, Laos, Kampuchea and Vietnam. This parallels the situation in west and central Africa and the author makes the important point that estimates of elephant numbers in heavily forested regions are at best educated guesses.

The detailed description of the author's study area (Chapter 3) and elephant movement within the area (Chapter 4) makes tedious reading, and the most relevant parts for local readers are the more general discussions on elephant ecology and management. Chapter 5 provides a thorough discussion of Asian elephant feeding and nutrition and compares many of the findings with African elephants. The proportions of browse and grass in the diet of Asian elephants varies with seasonal rainfall in the same way as for African elephants.

Chapter 6 looks at the impact of Asian elephants on vegetation. It appears that there is little potential for Asian elephants to cause extensive damage to their environment. The density of elephants in the study area is low, but even if it should increase, the Asian elephant apparently does not have the same propensity for pushing over trees as its African relative. There follows a good, brief

overview of the processes governing elephant-vegetation interactions, and the author proposes a refinement of Caughley's stable limit cycle hypothesis. The influence of rainfall on ecosystem stability and resilience is introduced to propose different stable limit models of elephant-vegetation dynamics for different vegetation types. The author himself suggests that this concept was implicit in Caughley's work and there seems to be no great value in making this explicit.

At the end of this chapter the author makes the irresponsible statement that 'The predictions of irreversible population disaster and desertification associated with African elephants, or other mammals, have not been proved as yet'. Considering the large population crash at Tsavo in 1970-71 (to which the author refers later in the chapter) and many studies documenting extensive habitat destruction by African elephants, one wonders how much further the situation would have to deteriorate before the author would consider it as valid proof.

The discussion on crop raiding in Chapter 7 is relevant to the local situation. The fact that this is the first systematic study of crop raiding by elephants makes it especially valuable as the approach used by the author has been cautious and coherent. Distinguishing between the destruction of annual crops and perennial crops is essential and makes a large difference in the economic impact attributed to crop raiding by elephants. The destruction of annual crops is of far less economic importance than the variation in rainfall, while the economic value of the destruction of perennial crops is significant.

There is an excellent discussion on population dynamics and demography, with a valuable exercise in population modelling, which enables predictions to be made regarding the various factors affecting Asian elephant conservation. Trends in population numbers, adult sex ratios and the proportion of males in the population are examined using different mortality rates, and the implications of the changes in growth rate of the population are also discussed.

The final chapters cover some problems of interaction between elephants and man and provide some suggestions for solutions. Occasionally the problem has become the focus of attention far in excess of its importance. For example, the author states that about 15 000 people die of rabies each year in India while only 100 - 150 people are killed by elephants.

Nevertheless the author makes the important observation that 'When elephants affect people by damaging cultivated crops or resorting to manslaughter, they create powerful social and economic justifications for their elimination.' This is a problem that is particularly relevant to the African situation and the approach offered in this book gives some hope to providing solutions that do not involve elimination. I can recommend this book as essential reading for anyone involved in large mammal management and conservation and as extremely enjoyable and absorbing to those who take a less active interest in this field. The price of the book may unfortunately be a deterrent but this is not unusual in these troubled economic times.

M.K. MUSGRAVE

Department of Zoology, University of the Witwatersrand, P.O. Wits, Johannesburg

## Key to Parasitic Nematodes

Edited by K.I. Skryabin

Printed by Amerind Publishing Co., New Delhi, distributed by E.J. Brill, Leiden, The Netherlands (1991)  
4 Volumes; 1097 pages  
Price: US \$505

The nematodes are a difficult group. Their generally small size and conservative body form and anatomy, both internal and external, leave few useful diagnostic characters so that their identification beyond genus level is often the preserve of the specialist. Indeed, more and more specific determinations are being made with the aid of the scanning electron microscope and biochemical attributes. The recent publication (1991–1992) of the English translations of the classic four-volume work on parasitic nematodes (i.e. about 48% of known nematode species), *Opredelite! paraziticheskikh nematod*, edited by Academician K.I. Skryabin, is therefore to be welcomed with reservations.

Written between 1949 and 1953, the volumes contain keys to superfamilies, families and genera, supplemented by historical reviews, anatomical descriptions and notes on selected species. The sub-orders Spirurata and Filariata are dealt with in Volume 1, the Oxyurata and Ascaridata in Vol. 2, the Strongylata in Vol. 3 and the Camallanata, Rhabditata, Tylenchata, Trichocephalata and Diocotophymata in Vol. 4. This last volume also contains a 1314-entry bibliography listed by sub-order and a check-list of the known (to 1950) animal hosts of nematodes listed and reviewed in the keys. This valuable reference list, partly superseded by M.C. Round's *Check List of the Helminth Parasites of African Mammals*, is divided into those recorded from (I) man and (II) animals (A. domestic mammals, B. domestic birds, C. other animals, invertebrates and vertebrates). There is no such list for the plant nematodes.

The classification system used in this series differs significantly, particularly in the higher taxonomic categories, from that found in more modern texts such as Dr Lynda Gibbons' *SEM Guide to the Morphology of Nematode Parasites of Vertebrates* and A. Maggenti's *General Nematology*; but then the classification of the nematodes is still in a state of flux and revisions are frequent! The authors, however, justify the use of their system in a critical review of the alternatives available at the time. The classification of certain sub-orders such as the Ascaridata is described in the editor's foreword and the dust-jacket blurb as a 'radical revision'. These sections make heavy reading, but the text is nevertheless detailed and well written. However, it pre-dates the generally accepted modern division of the phylum into two classes, the Adenophorea and Secernentia. The many drawings, though adequate, would probably not be accepted by taxonomic journals today.

I believe that the keys in these volumes, although somewhat dated, are sufficiently user-friendly to be useful to non-specialist parasitologists and research students wanting to classify nematodes to family or genus level before sending them away for specific identification. Other aspects of the text are even more dated, particularly in the context of the literature on functional biology, phylogeny and evolution now available. One such section that interested me was the comprehensive presentation of differences between four hypotheses on the phylogeny of the often-pathogenic strongyles — the hookworms and their kin. The views of Skryabin, Dougherty, Schulz & Delamure are presented separately and then discussed critically.

Except for the illustrations, the books are well produced. They are, however, very expensive and many libraries will, as ours did,

question the purchase of the series. Indeed, I cannot see that they will have more than rather limited use except to the specialist nematologist who may be interested in the nuances of Russian thinking during the 1950s on the classification and phylogeny of the phylum — collector's pieces perhaps. Their value to less specialized parasitologists lies solely, I believe, with the keys which provide a valuable entrée into the identification of both animal and plant parasitic nematodes. Other facets of nematology, notably anatomy, classification and phylogeny are dealt with in a more up-to-date fashion in more recent books so that I cannot help wondering whether this series is worth the very high cost.

### References

- Gibbons, L.M. 1986. *SEM Guide to the Morphology of Nematode Parasites of Vertebrates*. Commonwealth Institute of Parasitology, St Albans, 19 pp.  
Round, M.C. 1968. *Check List of the Helminth Parasites of African Mammals*. Commonwealth Agricultural Bureaux Technical Communication No. 38, St Albans, 252 pp.  
Maggenti, A. 1981. *General Nematology*. Springer-Verlag, New York, 372 pp.

C.C. APPLETON

Department of Zoology & Entomology, University of Natal,  
P.O. Box 375, Pietermaritzburg 3200

## Fauna Iberica, Vol. 1. Mollusca Cephalopoda

Angel Guerra Sierra

Museo Nacional de Ciencias Naturales, Consejo Superior de Investigaciones Científicas, Madrid, 1992  
327 pages and 19 colour photographs  
Price: 2,800 Pesetas, about R70 (in Spanish)

It is ironic that the best-known species are sometimes also the most poorly described, because everyone is expected to be familiar with them. This is certainly the case for North Atlantic cephalopods, but this book should go some way towards rectifying the problem. This monograph on Iberian cephalopods is the first volume in a series within the Iberian Fauna project; the next three volumes are already in press.

This book will be of considerable use in universities and marine research institutes, as well as to non-specialists interested in cephalopods. It has introductory sections on the systematic position and geographic distribution of cephalopods, morphology and anatomy of adults, characteristics of immature stages, natural history of cephalopods and recommendations for collection, preservation and study techniques. The body of the book, some 200 pages, deals with the Iberian cephalopods in systematic order. The region covered includes the Bay of Biscay, the Mediterranean outflow and the western Mediterranean Sea east to Corsica and Sardinia. There is a checklist of species in systematic order and a key to orders and families. Within the families, diagnoses are

given for supraspecific taxa, and keys to genera and species in the region are provided. For each species there is a short description, the geographic and vertical distribution, a section on biology and references to other works, plus a comment on the species' commercial importance, where relevant. Almost all the species are generously and attractively illustrated, though the stippling sometimes conceals the anatomical detail.

The book ends with a 23 page bibliography, an annotated list of synonyms and combinations, a glossary, a taxonomic index and valuable additional colour photographs of live cephalopods. The glossary and illustrations of morphology provide a bonus for non-Spanish readers in assisting with Spanish terminology for cephalopod body parts; thus it could be confirmed that 'funiculo' refers to the tentacular stalk (the dictionary gives the translation as funicular).

There are apparently very few errors; the caption to the figure of ommastrephid carpals is incorrect and could cause confusion. *Loliolopsis* is mis-spelled and there is a typographical error for *Megalocranchia* in the index, but other spelling errors (correctly *Chenopteryx*, *Thelidoteuthis*) turned out to be mine and not the author's. In all, this is a well-produced book, carefully constructed and checked and very useful for anyone dealing with cephalopods of the Iberian region.

M.A.C. ROELEVELD

South African Museum, Cape Town

The additional plates, depicting extra-limital species that occasionally visit southern Africa, must have been done in an afternoon, and a short one at that. For example, the Longlegged Buzzard looks not so much buzzard as kestrel. However, Lockwood has made a few significant improvements, and here I think of the hornbills in particular. Also, the illustration of the Dusky Flycatcher struck me as another pleasing improvement.

Roberts 6 unfortunately falls dismally short on several technical aspects. First, the quality of the paper used in the revised version is sub-standard. It is distracting to see the inverted silhouette of a distribution map glowing at you from the back of the very page you are trying to read. The colour reproduction is less than adequate, and there was great variation in the colour quality of my copy. Plates have been enlarged in the new version, but to the detriment of the book as a whole, as many of the plates have been over-enlarged and several birds have their tails or skull-caps whipped off. It was particularly irritating for me to see that even the woodhoopoes were not spared the full length of their tails! Many of the plates in the review copy had a dark black line running horizontally across the bottom. One can only hope that this was the exception and not the rule.

In his extensively revised fifth edition of Roberts, Gordon Maclean set a very high standard for handbooks on the biology of southern African birds. Apart from a few cosmetic changes, Roberts 6 did not strike me as 'completely revised' or as having 'a vast amount of new information', as the publishers claim on the dust-jacket. In general, Roberts 6 is better than its predecessor, but if you already have Roberts 5, you will be better off hoping (and saving) for a markedly revised Roberts 7.

MORNÉ A. DU PLESSIS

FitzPatrick Institute, University of Cape Town, Rondebosch 7700

## Roberts' Birds of Southern Africa

Gordon L. Maclean

6th edition 1993, John Voelcker Bird Book Fund, Cape Town  
Price: R69,95

The publishers claim that Roberts 6 is a 'completely revised edition' and differs from its predecessor in the following ways: species texts have been updated, distribution maps have been updated, dichotomous identification keys have been placed together before the colour plates, a number of colour plates have been revised or added by Geoff Lockwood, and German bird names have been added.

I was somewhat disappointed when I investigated these purported improvements. Although 12 species texts have undergone major revision, there is little evidence of this filtering through to the rest of the species other than perhaps for their mensural data. The Bimaculated Lark is still included on the basis of a 'single, probably escaped aviary bird', yet under 'Habits' it is described as 'likely to be solitary in southern Africa'. Distribution maps in field guides and handbooks are never likely to be very accurate, and Roberts 6 is no exception. The identification keys have been significantly improved, but there appear to be inexplicable omissions from certain groups (e.g. Turnstones, and all three Phalaropes from the 'Wader Key'). The German names are a welcome reminder that the winds of change are blowing in our economy's favour — may we see Japanese names added soon.

## Biochemical Protozoology

Edited by Graham Coombs and Michael North

Taylor & Francis Ltd, London/Washington DC 1991  
55 Chapters; 635 pages  
Price: R231.00

ISBN 0-7484-0001-X

A detailed understanding of the biochemistry of organisms is essential in highlighting both shared features and those that are distinctly different. In the case of parasites, focusing on their biochemical peculiarities and how they are adapted at the molecular level for survival in their hosts has become the key to developing new targeted drug therapies. Although this book does not deal with chemotherapy *per se*, it is comprised of a well-selected series of reviews, by expert authors, that consider recent advances in research on the biochemistry of certain important protozoa. The range of protozoa dealt with reflects the priorities of current research on the causative agents of major human and, to a lesser extent, veterinary diseases; in addition, ready availability and established methods of laboratory maintenance have resulted in

certain parasitic protozoa offering enhanced research opportunities over others. Thus, in essence, much of the available material refers to malaria parasites and trypanosomes. *Giardia* is dealt with fairly extensively, but *Cryptosporidium* and *Toxoplasma* receive little attention, owing to the paucity of research on these organisms. The book does, however, include the first comprehensive review on the biochemistry of *Pneumocystis*.

One fifth of the text focuses on the proteinases of parasitic protozoa; this indicates the recent upsurge in interest in the proteolytic enzymes of these organisms and is an appropriate weighting of the topic. Although there are a number of reasons why this current interest in proteinases has occurred, the most important, in a text of this nature, is the availability of a range of peptide derivatives which have been designed to selectively inhibit specific proteinases. Consequently, these agents have the potential for providing opportunities for the development of exploitable novel anti-parasitic drugs.

The last chapter in the book is entitled 'Possibilities for new anti-protozoal drugs: the TDR/WHO approach'. This is an appropriate closing chapter and is filled with important information ranging from a listing of potential targets for the chemotherapy of parasitic protozoa to information on funding opportunities. It is stressed that a drug that acts on several parasites by aiming at a common unique biochemical feature would be highly desirable. Furthermore, it must be remembered that the populations affected by diseases caused by parasitic protozoa are mainly residents of developing countries, therefore the cost of drugs is crucial to their applicability.

That this book deserves a place on the shelf of scientists involved in biochemical parasitology is indisputable. More than fifteen years has lapsed since the publication of the last text devoted to the biochemistry of parasitic protozoa and the field has expanded enormously.

T.F.H.G. JACKSON

Medical Research Council, Congella

## The Living Deserts of Southern Africa

Barry G. Lovegrove

Fernwood Press, Vlaeberg (Cape Town), 1993

Price: R150,00

ISBN 0-9583154-7-7

This book is an outstanding account of life in the deserts of southern Africa. What impressed me particularly is the competent integration of zoological and botanical, anatomical, physiological and ecological themes. Where else would a zoologist easily find

information on the adaptations to pollination in vygies, the photosynthesis of Namib Desert lichens, the annual variation in the food of desert ants and the trek of the springbok, to name but a few topics, all in one volume? Throughout, the book is lavishly illustrated with colour photographs, many of superb quality, colour maps, graphs and drawings. A feature is the use of explanatory boxes to expand on important themes. Although these are convenient for readers in search of a succinct factual summary, they are perhaps too numerous; I found they tended to interrupt the flow of the main text.

The first of the nine chapters is introductory; it was difficult to get into, though vital, for it deals with climate and the definition and delimitation of the four desert biomes in southern Africa. These biomes are referred to throughout the book. I found it strange that the arid savanna biome is rather arbitrarily truncated in the East by the 26° longitude. Evidently the last word has not been written on the extent of deserts in the region. Chapter 2, 'Water: the currency of life', is a fascinating account which illustrates particularly well the close parallels in adaptation of desert plants and animals with their surface waxes for waterproofing and a variety of structures and mechanisms which allow gas exchange while restricting water loss. Chapter 3 continues these themes of physiological and morphological adaptation of plants and animals, this time with heat, cold and thermoregulation being dominant. The next two chapters deal with more ecological matters, in 'The struggle for food' and 'The armoury of desert conflicts'. These are well integrated with the previous chapters and there is continuous cross-referencing to information that has gone before. Chapter 6, 'Social contracts', deals with social structure and behaviour of animals as adaptations to desert life and Chapter 5, 'Time out' deals with the mechanisms of organisms for the avoidance of climatic extremes on a daily or annual basis. Linked to both of these is the eighth chapter on reproductive strategies — for me the best in the book. The last, and most important chapter, is on the future of the desert areas. In it, Dr Lovegrove surveys the conservation status of the four biomes, concluding that two — the Nama Karroo and Succulent Karroo — are inadequately provided for. A challenging section on desertification follows, highlighting the controversy over the eastward expansion of the Karroo. The spectre of impoverishment of biodiversity by man's activities — overgrazing by small stock, mining, nuclear waste disposal, off-road vehicle use and the spread of alien plants — is legitimately raised.

I found a few minor typographical errors — sequiterpene (p. 110), benzadrine (p. 178), strontium (p. 210), mutogenic (p. 211) and *annectans* (p. 154 & 215). *Bufo vertebralis* is a toad not a bullfrog, and there is the frequent (and to me, jarring) use of superlatives where none was really necessary. These are not really serious criticisms and this is a book that everyone interested in deserts or in the biology of southern Africa will want to own. For the sum of R150 you will be getting a well-produced and bound product, printed on good quality paper. The large format and colour plates may tempt some to dismiss it as yet another coffee-table production: in this they would be mistaken. This is a serious work and will be used for reference as well as for the enjoyment of the stimulating text and of the more than 350 colour plates and half-tones, and I can highly recommend it.

J.P. LOVERIDGE

Department of Zoology and Entomology, Rhodes University, Grahamstown 6140