

Book Reviews

Evolution and Ecology of Macaque Societies

J.E. Fa & D.G. Lindburg (Editors)

Cambridge University Press, Cambridge, UK. 1996.
xvii, 597 pp.
Price £70
ISBN 0-521-41680-9

This volume of 25 chapters by 52 authors sets out to summarize what is known of macaque evolutionary history and behavioural ecology. In principle, this is an excellent goal, since *Macaca* forms an interesting radiation, with one African species (the Barbary Ape, *M. sylvanus*) and one that penetrates higher latitudes than any other monkey (the well-known Japanese macaque, *M. fuscata*). Not surprisingly, quite a lot is known about these two species in what is left of their original habitat, simply because one lives in relatively open evergreen and deciduous woodland and the other inhabits a first-world country with a well-developed academic system. For the rest, macaques have made the 'mistake', by and large, of living in Asian forest, where habituation and data collection are very arduous. Unfortunately, this is reflected in the current volume, with over half the broadly behavioural-ecological chapters relying on data from provisioned or captive animals. While some chapters, notably those on evolutionary relationships (Melnick and Hoelzer) and vocal communication (Hauser), provide excellent syntheses and others (Van Schaik *et al.* on long-tailed macaques; Ménard and Vallet on Barbary macaques; Hill and Okayasu on Japanese macaques) give useful summaries of individual species, there are a few ('Branch shaking ... in wild Barbary macaques') whose relevance seems a little peripheral.

If your library needs a selection of reference books on the fauna of Asia, then you might consider ordering this one, despite the fact that it makes more of a case for further research rather than laying to rest the need for any.

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The Pollen Wasps. Ecology and Natural History of the Masarinae

Sarah H. Gess

Harvard University Press, Cambridge, Massachusetts, 1996
340 pages
Price £31.50
ISBN 0-674-68964-X

The author begins by introducing the reader to the taxonomic history of the Masarinae, terminating in the most recent think-

ing in this field which divides the subfamily into 11 genera. Biogeography on a world basis is treated briefly with more details given of distribution in southern Africa. The various vegetation types and the masarine species confined to them are enumerated and compared to the bees and aculeate wasps found there.

The pollen wasp-forage plant association is looked at first in a global context, then locally for each genus. Dr Gess has found that oligolecty is high and that remarkably few plant species are visited by pollen wasps.

A large portion of this book is devoted to nesting. The subject is treated on a world basis, non-southern African genera mainly from published work and local genera from the extensive research of the author. Details of nest situation, provisions, water collection and description of nest structure and nest building behaviour are given with comparisons made to other genera. From this research Dr Gess proposes seven basic types of nest structure.

Pollination biology of the masarine wasps is a fascinating aspect of the research undertaken by Dr Gess, who points out that for a flower visitor to be a pollinator it must receive pollen in such a way that when it enters a conspecific flower with a receptive stigma, some of the pollen is transferred to the stigma. For this to be achieved the visitor must follow a regular behaviour and be morphologically suitable. The most remarkable morphological modifications of the masarines are the lengthening of the tongue and body size to fit particular flowers, but the author considers the change in behaviour to be more important. Dr Gess has also shown that although the masarines are often one of a guild of visitors for specific flowers, in many cases they are the only or most abundant visitor and constitute the principal pollinators.

In the penultimate chapter the author reviews the effect of land use on pollen wasp populations and paints a rather depressing picture, pointing out, for example, that *Ceramius caffer*, which is endemic to southwestern Cape, is now known only from the eastern fringe of its distribution.

The book closes with an extensive summary followed by important and useful appendices giving details of flowers visited by the Masarinae in the arid and semi-arid areas of southern Africa, together with their aculeate wasp and bee visitors.

This a well-planned and highly informative treatise which adds greatly to our knowledge of a little known group, particularly in the area of habitat requirements, nest structure and relationship to host plants and the resultant adaptations of both wasp and flower.

The book has an attractive dust jacket, is well bound and mercifully is printed on non-glossy paper. The numerous black and white figures that illustrate the various aspects discussed make some of the more detailed descriptions easier to follow and the 25 colour plates add greatly to the attractiveness of the book. The strange use of 'a group was constituted of' and Americanized spelling, with both 'ploughing' and 'plowing' used, stopped me in my tracks occasionally, but this is certainly a worthwhile book to own.

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Biology of Turbellaria and some related flatworms

Proceedings of the 7th International Symposium on the Biology of the Turbellaria, Abo/Turku, Finland, 17–22 June 1993

L.R.G. Cannon (Editor)

Developments in Hydrobiology 108
Kluwer Academic Press, Dordrecht, 1995
316 pp.
Price: US\$ 250.00
ISBN 0-7923-3506-6

As should be expected from the proceedings of an international symposium, this volume updates many aspects of turbellarian biology, presenting different viewpoints as it does so. Turbellarians, like leeches, are often used for research because, as the editor points out in his preface, the animals' relative simplicity allows them to contribute to our understanding of the evolution of metazoan structure and function.

The book comprises 60 individual contributions in seven sections containing different numbers of papers: Taxonomy and Phylogeny (7); Biogeography and Genetics (7); Ecology and Behaviour (5); Anatomy and Ultrastructure (17); Development and Regeneration (14); Genes and Sequences (4); and Neurophysiology (6). The 'related flatworms' in the title refers to a few 'non-turbellarian' papers, on flatworms in general and tapeworms in particular. Following my own interests, I have selected examples from most sections.

The debate over the validity of the class Turbellaria, which started more than a decade ago, is continued in the first section of this volume. Widely accepted now as a collective noun for a group of mainly free-living flatworms, the *turbellarians* have been neglected in South Africa and little research has been done on them since the first few decades of this century. An interesting exception was the recent discovery of an exotic temnocephalan associated with introduced Australian freshwater crayfish in the Free State (see below).

At the phylogenetic level, Y.V. Mamakev proposes a modified evolutionary morphological classification for the Phylum Platyhelminthes, retaining the Turbellaria as the most basic of 10 classes. Alternative views of the phylogeny of the Platyhelminthes are presented by several other authors using molecular techniques.

Discussions on turbellarian diversity in areas as diverse as the Faroe Islands and the Far East are followed by an interesting account of their value in biogeographical and palaeogeographical studies. In this latter paper, R. Sluys presents evidence that land turbellarians show large-scale biogeographical patterns which reflect continental breakup but that some patterns can only be explained by invoking alternative palaeogeographic models, viz. the lost continent Pacifica, island integration, a reconstruction of eastern Gondwanaland and an expanding earth.

The propensity for triclade turbellarians to be introduced and become invasive is highlighted by Oki *et al.* These authors refer particularly to *Temnocephala minor*, an ectoparasite found on the West Australian crayfish *Cherax tenuimanus*

(marron) being cultured in Japan. In fact a congener, *T. chaeropsis*, was reported recently from marron being farmed in the Free State (Avenant-Oldewage 1993; Mitchell & Kok 1988). Oki *et al.* also survey the exotic turbellarians in Japan and draw attention to, amongst others, *Temnocephala iheringi* and *T. haswelli*, which are both ectoparasites on the South American prosobranch snail *Pomacea canaliculata* — a species being distributed by the aquarium trade in South Africa. Renewed studies on turbellarians in South Africa could produce some unwelcome surprises. P.J.S. Broad presents a useful review of current knowledge on the autecology and community ecology of marine turbellarians. He stresses the importance of this group as members of the meiofauna with a diversity rivalling that of the nematodes. Individual species can be extremely abundant, up to $2.7 \times 10^6 \text{ m}^{-2}$ and $>115\,000 \text{ m}^{-2}$ in two cases.

A useful review by R.E. Ogren deals with the predation behaviour of land planarians, an aspect not well documented in the literature. The predation of many species, including the striking *Bipalium kewense* which occurs in South Africa, for molluscs has led to their being proposed as agents for the biocontrol of pest slugs and snails including helicids and achatinids. The processes of accidental prey finding, orientation and capture described here are reminiscent of those used by the local carnivorous snail *Natalina*.

An impressive suite of papers on turbellarian anatomy and ultrastructure makes good use of scanning and transmission electron microscopy. The ultrastructure of the nervous system, epidermis, eyespots and ciliated pits is dealt with in detail. The SEM micrographs of the temnocephalan *Craspedella* sp. from the branchial chamber of the Australian crayfish *Cherax quadricarinatus* are excellent. This section also contains an interesting discussion by Chomicz *et al.* on the ultrastructure of the oncospherical envelope of hymenolepid tapeworms with aquatic (as opposed to terrestrial) life-cycles — generally parasites of the gut of waterfowl. These authors conclude that the structural and chemical composition of the envelopes of infective eggs determine their fate in the water body, that is, whether they attach to plants and remain close to the surface or fall to the bottom to await the invertebrate intermediate host.

Neuropeptides, as I. Fairweather & P.J. Skuce note in their well-written review of these hormone-like substances in flatworms, are important to these animals. This is because they lack both endocrine glands and a circulatory system, and the nervous system has taken over the endocrine role by producing peptidergic (neurosecretory) molecules, giving it a dual function. This review offers a fascinating update of knowledge of the unique platyhelminth peptidergic system which is responsible for controlling and co-ordinating many aspects of flatworm physiology, for example growth and development, which are under hormonal control in higher animals.

The book is, as is customary for the series, well produced and well illustrated but, for South African readers, expensive. It has however served to remind me of how little we know about these tiny LBJs of our aquatic invertebrate fauna which are usually ignored. Libraries, particularly those catering for invertebrate teaching and aquatic invertebrate research, should therefore find it a valuable compendium of state-of-

the-art knowledge for anyone interested in this group of animals which in this country is so under-researched.

References

AVENANT-OLDEWAGE, A. 1993. Occurrence of *Temnocephala chaeropsis* on *Cherax tenuimanus* imported into South Africa, and notes on its infestation of an indigenous freshwater crab. *S. Afr. J.*

Sci., 89: 427-428.

MITCHELL, S.A. & KOK, D.J. 1988. Alien symbionts introduced with imported marron from Australia may pose a threat to aquaculture. *S. Afr. J. Sci.*, 84: 877-878.

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