

## BOOK REVIEW

BARTH FRIEDRICH G.: A SPIDER'S WORLD: SENSES AND BEHAVIOUR. (Translated by M.A. Biederman-Thorson) Springer Verlag, Berlin, Heidelberg, New York, 2001, 394 pp., hard cover. ISBN 3-540-42046-0, price USD 69.95.

This monograph documents that no spider has been as extensively or as thoroughly studied as *Cupiennius salei*. Thanks to Professor Friedrich G. Barth, his numerous co-workers and students we have astonishing details about the sensorial world and behaviour of these large neotropical spiders, which are occasionally imported into Europe along with exotic fruits. The author and his research teams in Germany and Austria have studied *Cupiennius* for over three decades. The book reports their successes and failures in a most readable way, so that even a non-arachnologist will find the text easily understandable and instructive. It reveals that spiders are equipped with a formidable array of biosensors, which are often unique to this ancient group of arthropods. The evolutionary success of spiders proves that their highly developed sensory system and complex behaviour are excellently adapted to their environment. The fascinating technical perfection and complexity of the spiders' sensory organs evolved over a period of 400 million years. This book describes this technical perfection in the context of biology, in which the interaction between environment and sensory organs, and the selectivity of senses play a major role in the link between environment and behaviour. Every page of this intriguing book poses two crucial questions: How do the various sensory systems of spiders work, and what role do they play in behaviour? The answers to these questions not only improve our understanding of the many peculiarities of a spider's world, but also give us an insight into questions of more general biological interest. Functions of the unique sensory system of spiders are often compared with those of a more popular and better-understood arthropod group – the insects. The results were often

obtained with the aid of sophisticated research techniques and are not only the product of laboratory experiments. Field observations and a quantitative assessment of the stimuli these spiders encounter in their tropical habitat are relevant to an approach that can be termed sensory ecology.

The book is divided into 25 chapters. The first five chapters deal with the general biology of *Cupiennius*, namely its taxonomic position, habitat, activity rhythms and venomous apparatus. Next eight chapters are devoted to the anatomy and physiology of the sensory systems. The senses are classified not on the basis of sensations but according to the properties of the stimulus. Mechanical senses (strain, vibration, trichobothrial hearing, proprioception) are of special significance for these nocturnal spiders and most attention is devoted to them. Functional morphology of the slit organs and trichobothria has never been so well elucidated. In the 4 following chapters eyes, chemo-, hygro- and thermoreceptors are treated. The following section is devoted to the description of anatomy and functions of the central nervous system and its peripheral nerves. The last and most comprehensive part of the monograph (8 chapters) deals with the roles of senses in behaviour, namely hunting, courtship and other epigamic interactions, kinesthetic orientation, locomotion and dispersal. The monograph ends with a long list of references (688 items), a key to the identification of all seven *Cupiennius* species, and a subject index. The book is richly illustrated with numerous line drawings, diagrams and photographs and also contains 16 magnificent colour plates.

Professor Barth's monograph is a very useful book for all students of arthropod sensory physiology and behaviour. Not only arachnologists but also students of insect physiology and behaviour will be inspired by this book. For all readers it reveals how wonderful spiders are.

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