



Ecophysiology of Spiders

Edited by Wolfgang Nentwig

With Contributions by

C. W. Aitchison · J.-C. Bonaric · J. E. Carrel
J. L. Cloudsley-Thompson · K.-G. Collatz · R. E. Coville
J. E. Dalingwater · A. E. Decae · S. Heimer · A. Holl
W. F. Humphreys · R. R. Jackson · W. Kirchner · J. Kovoov
A. Lopez · A. M. Macnab · Z. Maretić · K. Nakamura
W. Nentwig · S. F. Perry · H. M. Peters · G. O. Poinar, Jr.
S. D. Pollard · R. Pulz · M. Schaefer · E. I. Schlinger
K.-A. Seitz · F. Strazny · E. K. Tillinghast · M. Townley
F. Vollrath

With 133 Figures

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Dr. WOLFGANG NENTWIG
Institut für Zoologie
Universität Regensburg
Universitätsstraße 31
D-8400 Regensburg, FRG

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Mastophora, a bola spider (Araneidae)

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Preface

Recently another book on insect physiology was published. It was restricted to a few focal points as are many of these new insect physiology books, but there was considerable depth in its specialized point of view. We were discussing the structure of this book and of insect physiology books, in general, when Prof. Remmert asked me "... and what about books on spider physiology?" Silence. Then I started to explain "oh yes, there is a congress proceedings volume on this topic and there is a group with excellent publications on another topic ...", but I felt that this answer was weak. One can no longer buy the proceedings volume in a bookshop and to read a series of publications on a given topic one must search in a library for a dozen journals.

Why is there not a single book on spider physiology comparable with the many books on insect physiology? Are spiders a scientific ivory tower, far from public interest and commercial importance? I do not think so, although spiders are one of the many "forgotten" animal groups which always grew in the shadow of the insects. There are research groups working on spider physiology, there are fascinating phenomena in this animal group and there are plenty of exciting results. Spiders may have been always underresearched, but research is progressing. In the last few years, new books have been published, e.g. field guides on spiders and books on behaviour and neurobiology of spiders. Moreover, a volume on spider ecology will soon appear.

Though spider taxonomy is still disastrous, physiological research has increased considerably in the last decade. Many spiders have proved to be "good laboratory animals" and investigations of the invertebrate silk composition or the haemocyanin structure are inseparably linked with some species of spiders. From an ecological point of view more and more attention is being paid to these ubiquitous predators and in the field of integrated insect pest control spiders are perhaps a key group. Therefore, I think that this is a good time to gather together our knowledge of the physiology of spiders.

A book on the physiology of spiders perhaps promises too much. Molecular biochemistry in spiders is just beginning and there is more "ocean" than "safe land". Ecophysiology, on the other hand, circumscribes a wide range of physiological facts which determine the ecology of the species. Therefore, this term provides more a framework for the contents of this book rather than an exact description. I prefer to use "ecophysiology" in a broad sense, which includes different factors such as thermal relations, gland physio-

logy, silk biology, feeding ecology, parasites or biorhythms. There are other topics which I would have gladly included in this book, but nothing is known about the immune system of spiders, special metabolic pathways, or the biochemistry of pheromones (to mention only some examples). There are, however, a few other gaps in the completeness of this book, mainly due to technical reasons.

When I decided to edit a book which covers such a wide range I realized soon that its success would depend mainly on the cooperation of the contributors. I want to thank the many co-workers who made this work possible. None of them really had the time to write a book chapter, but I could convince them all to do so. Most of them critically read other chapters of this book or gave general advice. Special thanks are due to Prof. Dr. H. Remmert for his initial impetus and Dr. D. Czeschlik and the Springer Verlag for their eager interest. Further thanks go to many people who helped me in various ways: H. Hallmer, J. Kien, M. Kredler, R. Loftus, R. Novack, B. Tschirner, C. Warcup. Special thanks go to my family who had to do without all that time I spent on this book.

Regensburg, Autumn 1986

Wolfgang Nentwig

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