



Adaptations to Terrestrial Environments



Edited by N. S. Margaris,
M. Arianoutsou-Faraggitaki,
and R. J. Reiter

Adaptations to Terrestrial Environments

Edited by

N. S. Margaris

M. Arianoutsou-Faraggitaki

*University of Thessaloniki
Thessaloniki, Greece*

and

R. J. Reiter

*University of Texas
Health Science Center
San Antonio, Texas*

PLENUM PRESS • NEW YORK AND LONDON

Library of Congress Cataloging in Publication Data

International Symposium on Adaptations to Terrestrial Environment (1982:
Chalkidiké, Greece)

Adaptations to terrestrial environments.

Includes bibliographical references and indexes.

1. Adaptation (Biology)—Congresses. I. Margaris, N. S. II. Arianoutsou-Farag-
gitaki, M. III. Reiter, R. J. IV. Title.

QH546.I57 1982

574.5'222

83-13713

ISBN 0-306-41468-6

Proceedings of the International Symposium on Adaptations to Terrestrial Environment,
held September 26–October 2, 1982, in Khalkidiki, Greece

©1983 Plenum Press, New York
A Division of Plenum Publishing Corporation
233 Spring Street, New York, N.Y. 10013

All rights reserved.

No part of this book may be reproduced, stored in a retrieval system, or transmitted
in any form or by any means, electronic, mechanical, photocopying, microfilming,
recording, or otherwise, without written permission from the Publisher.

Printed in the United States of America.

PREFACE

The present volume contains selected papers of the International Symposium on Adaptations to Terrestrial Environment, held in Halkidiki, Greece from Sept 26th to Oct 2nd, 1982.

The meeting was designed to consider the means as well as the mechanisms whereby organisms adapt to their environment. The papers presented dealt with a large variety of species from insects up to and including mammals. What became apparent during the course of the meeting was the incredible variety of means that organisms use to survive in their particular environmental niche. The ploys utilized are almost as numerous as the number of species investigated. This will become clearly apparent in the accompanying manuscripts which are published in this book. The Editors allowed the authors of the accepted papers great leeway in terms of the thoroughness of their contributions. Some of the presentations contain exclusively new findings, whereas others extensively review the existing literature.

The Volume is divided into two parts: Invertebrates and Vertebrates. The first provides information on adaptations of invertebrates on environmental stresses (such as low or high temperatures and water deficits) from the physiological and/or biochemical points of view as well as behavioral responses resulting from their life strategies and interactions with other organisms. In the second part papers selected deal with vertebrates. Adaptations to special environmental factors such as light and temperature are discussed as well as behavioral, physiological and biochemical solutions to problems imposed.

The Editors would like to express their thankfulness to UNESCO

for sponsoring the Symposium in the frame of Man and Biosphere (MAB) Program; to all scientists who have contributed papers in this volume; and to Mrs A. Karamanli-Vlahopoulou for her patient and skillful typing of the manuscript.

N. S. Margaris

M. Arianoutsou-Faraggitaki

Division of Ecology
Department of Biology
University of Thessaloniki
GREECE

R. J. Reiter

Department of Anatomy
The University of Texas
Health Science Center at
San Antonio, Texas
U.S.A.

CONTENTS

PART 1 - INVERTEBRATES	1
- Limiting similarity in rove beetles (Col. Staphylinidae) of a habitat inland	
W. Topp	3
- Low temperature induced diapause still extant in a tropical parasitoid species	
Y. Carton	13
- Cold tolerance in Canadian arctic insects	
R. A. Ring	17
- Seasonal activity of soil fauna in a phryganic (East Mediterranean) ecosystem	
S. Sgardelis and N. S. Margaris	31
- Comparative studies of orthopteran species adapted to living on the ground and of some strong fliers from the same order	
G. Theophilidis	45
- Adaptation insect - plant in Cynipid galls	
R. Bronner	61
- Adaptation of gall mites (Acari, Eriophyoidea) to live in galls	
E. Westphal	69

- Diversity and unity by arthropod galls. An example: The bud galls	
F. Dreger-Jauffret	77
PART 2 - VERTEBRATES	89
- Altruism, inclusive fitness, and evolutionary game theory	
M. Treisman	91
- Antipredator adaptations of Salamanders: Evolution and Convergence among terrestrial species	
E. D. Brodie, Jr.	109
- The inter-nesting intervals of Zakynthos loggerheads	
D. Margaritoulis	135
- Reproduction strategies in birds of the tropics	
A. Chandola, M. Saklani, M. Bisht and D. Bhatt	145
- Nutritionally related metabolic adaptations of carnivores and ruminants	
J. G. Morris and Q. R. Rogers	165
- Superoxide dismutase activity in the rat exposed to extreme environmental conditions	
V. M. Petrović, M. Spasić, B. Milić, Z. Saičić and R. Radojičić	181
- Adaptations of the reproductive system of rodents to changing photoperiodic conditions	
R. J. Reiter	193
- Endocrine cycles and hibernation in the hedgehog: mechanisms of adaptation to natural variations in the environment	
M. Saboureau and J. Boissin	203
- Comparative mechanisms of physiological, metabolical and eco-ethological adaptation to the winter season in two wild European mammals: the European Badger (<i>Meles meles</i> L.) and the red Fox (<i>Vulpes vulpes</i> L.)	
D. Maurel and J. Boissin	219
AUTHOR INDEX	235
SYSTEMATIC INDEX	241
SUBJECT INDEX	245