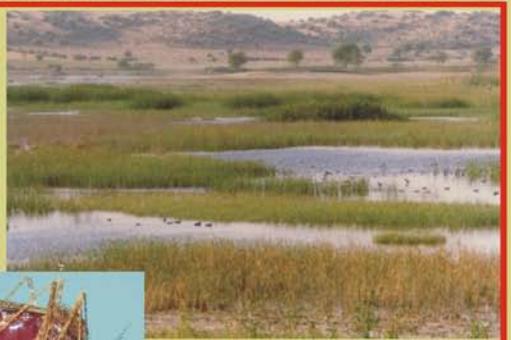
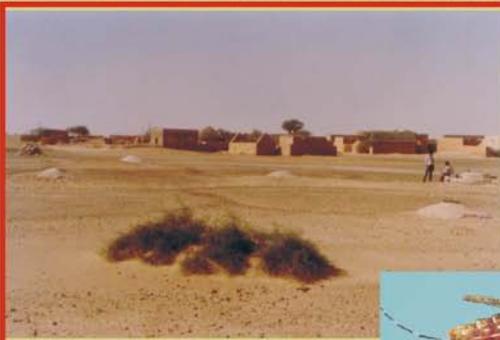


Changing Faunal Ecology in the Thar Desert



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CHANGING FAUNAL ECOLOGY IN THE THAR DESERT

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Dedicated to



Professor Dr. Ishwar Prakash

D.Sc., FNA, FNASc, FNAAS

The doyen of rodent sciences and The Father of Indian Rodentology

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FOREWORD

It is not always that one comes across books devoted to regional ecological impacts and the volume under review on the '*Changing Faunal Ecology of the Thar Desert*' is exceptional, and is of special significance for reasons more than one. Firstly, the Thar desert is a unique ecosystem which in recent years has been subjected to anthropogenic idiosyncracies resulting in considerable changes in the biota. Ecologists and environmentalists engaged in studies on biological diversity have necessarily to compare the past with the present scenarios. This volume is, therefore, of special significance and goes a long way in demonstrating how a change in environment can bring about diverse changes in animal and plant adaptations, not to mention of changes in ecological succession. The second aspect of significance relates to the dedication of this volume to the late Dr. Ishwar Prakash, an untiring crusader in the cause of studies on Indian Desert Fauna, notably on rodents. An acknowledged expert in this field, Dr. Ishwar Prakash was a very humane, humble, soft-spoken gentleman, noted for serious involvement in matters of research. I had the privilege of knowing him for well over three decades with intimate involvements as task force members of the DST and as Co-Fellows of the Indian National Science Academy.

The fifteen articles on diverse aspects of Thar desert faunal biodiversity are very significant contributions, from soil bio-resources to the impact of the Indira Gandhi Canal on climate change, followed by the changing faunal diversities of amphibia, reptiles, birds and mammals, besides that of several insect groups, notably coleoptera, lepidoptera and Diptera. The last article on the emergence of vector-borne diseases in the context of the changed climate appears very relevant.

It has been my pleasure to have known the authors (*i.e.*, Dr. Tyagi and Dr. Baqri) all through their professional career and am happy that they have collaborated to produce this exceptional volume which has great relevance to the impact of changing ecology on the faunal dynamics of the Thar desert.



10.2. 2005

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PREFACE

The Thar Desert region, whose geographic limits are generally understood to be between the irrigated lands of the Indus and Sutlej, and the western edge of the Aravalli Hills (*i.e.*, approximately between 24°-30° N and 68°-78° E), had been the abode for the once existing historic Harappa civilization in Kalibanga along the extinct holi river Saraswati, traversing across the Great Indian Desert, together with Yamuna and Ghaggar rivers. At present only the relic Ghaggar marks its presence during monsoon, while Yamuna has in course of time changed its direction, now flowing far away from Rajasthan's north-eastern border into the neighbouring State of Uttar Pradesh. The Thar Desert spreads over as many as four states along the north-western flank of the country, though its very major portion lies in Rajasthan. The entire Thar Desert region in Rajasthan is organized in 12 districts, spread over nearly 196,150 km² (62% of the total land of the State), and harbouring a population of 12.8 million people (39% of the population of the State). The seasonal Luni river divides the desert into two parts; in the north a vast stretch of sand dunes or levees and in the south an expansive basin rimmed by flat-topped hills of sandstone and limestone. For centuries, Thar Desert continued to exist as a vast mass of monotonous physiography dominated by sandy levees, though constantly subjected to imposing environmental and anthropogenic vicissitudes. Yet, the greatest change in the Thar's ecology became clearly discernible with the advent of extensive canalization brought about by the triad of Gang canal (1928), Sirhind-feeder canal (1955) and, probably one of the world's largest canal systems of its type in a desert ecosystem, the Indira Gandhi canal (1958). The more or less monotonous character of various different faunal groups, both invertebrates and vertebrates, was affected a great deal under their impact and soon species began to change in their composition, demography, population dynamics, product-outputs, and interaction with surrounding abiotic and biotic environments, including human health.

During past nearly 7-8 decades the Thar has consequently experienced profound changes in its complexion arising primarily from greatly intensified use of natural assets and an exploitative management,

both dictated by greatly increased human pressure. The traditional, conservative management has lost ground to the expediency of making a living. Though people are by large having a better living condition that have been made possible by improved means of transport and communication, drinking water and public health schemes, nevertheless, overexploitation of available resources and/or inadvertently ushered mismanagement of Thar's recent and most precious aquatic resource – the canal waters, caused about some devastating impacts on the life of its fauna.

This book is a result of keen observations generated from a *mélange* of animal groups, both as tiny as protozoans and as giant as mammals, in the xeric environmental settings of the Thar Desert, in principle. The underlying philosophy has been that the resultant cadence in animal life under the impact of constantly changing Thar Desert ecology should be highlighted for a better understanding. There are totally 15 contributions, each one by a specialist or a group of specialists in his/their respective field. In addition, an updated bibliography together with an authentic biographic note of Dr. Ishwar Prakash is also presented. Invariably all of these contributions deal with the life forms of a particular type, be it protozoans, termites, butterflies, rodents, frogs, reptiles or mammals, under the changing climatic stress.

It is hoped that the book will offer plenty of novelties on the subject of changing faunal ecology in as fast altering xeric ecosystem as the Thar Desert in north-western India that could well form a model for similar explorations elsewhere in the world. We feel obliged in dedicating this book to the fond memory of Prof. Dr. Ishwar Prakash - *the doyen of rodent sciences* and *the father of Indian rodentology*.

Finally, preparation of this commemorative volume in the everlasting memory of Dr. I. Prakash has brought us several pleasant experiences. This book as such is the first attempt of its type in offering dedication to a legend of zoological sciences in the Thar Desert region. In accomplishing this rare task we always continued to have God's blessings, for which we humbly offer our heartfelt gratitude to Him.

Dr. B.K. Tyagi
Dr. Q. H. Baqri

ACKNOWLEDGEMENT

In compiling this commemorative volume we have received enormous help and support from a large number of professional colleagues, particularly those who have associated with Prof. I. Prakash during his long scientific career, in various scientific organizations both in India and abroad and our heartfelt thanks are due to all of them, even though citation of individual benefactor's name might not be possible here.

Dr. Mohd. Idris, CAZRI, Jodhpur was particularly generous in helping with the compilation of Prof. I. Prakash's authentic and updated bio-bibliographical account, for which we extend our cordial gratitude.

We also wish to thank Mr. Muralidharan, V. Stenographer Gr.II, DRS/ZSI, Jodhpur for his assistance in assembling the manuscripts submitted for the commemorative volume.

Such a major and rare task would not have been possible without constant caring, support and encouragement of a few chosen near and dear ones, and to this effect we foremost remain grateful to our families.

Last, but not the least, we are thankful to Shri Pawan Kumar, Publisher, Scientific Publishers (India), for his unflinching confidence and support, and bringing out the book in time.

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