

# ECOLOGY AND BIOGEOGRAPHY IN INDIA

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# ECOLOGY AND BIOGEOGRAPHY IN INDIA

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Agra



DR. W. JUNK b.v. PUBLISHERS THE HAGUE 1974

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## PREFACE

This book describes the outstanding features of the ecology and biogeography of the Indian region, comprising former British India, Nepal, Bhutan, Ceylon and Burma. It summarizes the results of nearly four decades' studies and field explorations and discussions with students on the distribution of plants and animals, practically throughout this vast area and on the underlying factors. A number of specialists in geology, meteorology, botany, zoology, ecology and anthropology have also actively collaborated with me and have contributed valuable chapters in their respective fields.

India has an exceptionally rich and highly diversified flora and fauna, exhibiting complex composition, character and affinities. Although the fauna of the Indian region as a whole is less completely known than its flora, we are nevertheless fairly well acquainted with at least the salient features of its faunal characters to enable us to present a meaningful discussion on some of the outstanding peculiarities of the biogeography of India. A general synthesis of the available, though much scattered, information should prove useful to future students of biogeography throughout the world. Such a review, to be really useful, must include not only summaries of the broad trends in the general ecology of plants and animals, but also cover an analysis of the present-day physical features of the region, the stratigraphy and tectonics, the orogeny of the Himalaya, climate, limiting factors in distribution, the routes and barriers to dispersal, composition, ecological characters, affinities and distributional patterns of important groups of plants and animals, the ecology, character flora and fauna of various natural regions and a comprehensive synthesis of the evidence from geology, meteorology, botany, zoology and anthropology.

The central concept throughout this book is that biogeographical and geomorphological evolution of India constitutes an integral whole and the flora and fauna and distributional peculiarities that we observe today represent a dynamic phase of this complex evolution. From the standpoint of biogeography, the flora and fauna of a large region behave as if they were a single organism. Just as we study the evolution of any given organism, we may also study the evolution of the fauna of a region and often be able to correlate it to the underlying factors. Biogeographical interpretations must, therefore as far as possible, deal with the whole complex of flora and fauna and must not be restricted to isolated and specialized groups, however peculiar their distribution may appear to us, when studied separately.

This is the first attempt at a comprehensive monograph on ecology and biogeography in India and to this fact must be attributed most of its shortcomings. In writing this book, my aim has largely been to bring together the basic facts and indicate the broad trends, in the hope that it will stimulate further research in a most interesting field of study.

I take this opportunity of expressing my cordial thanks to my numerous pupils for fruitful discussions and the various specialists who have collaborated with me and placed at my disposal their valuable advice and criticism, and contributed the chapters on geology, meteorology, botany and other topics. I am particularly indebted to my research collaborators Messrs. O. P. DUBEY, B. K. KAUL and G. G. SARASWAT for invaluable assistance in the preparation of the manuscript for press. My thanks are also due to MR. P. SAHADEVAN, Artist, for his willing help in redrawing and preparing figures from rough sketches furnished by different contributors. I must also thank my wife for her constant encouragement and suggestions.

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