

Preface

In commemoration of the International Year of Biodiversity 2010, this book is a tribute to the natural system that sustains us. The purpose of the book is to introduce the various aspects of biodiversity to the students of biology and to spread across the message of preventing widespread biodiversity loss. The work is simply the outcome of our passion for nature's element. This is the most comprehensive review of biodiversity in the Indian perspective, that provides an easy understanding of the subject.

The book, now in its **Second Edition**, comprises 12 chapters and updates information and the data given in the box.

The concept of biodiversity is relatively new in the scientific world. Chapter 1 introduces this concept explaining in detail the meaning of biodiversity. This is followed by the history and importance of the concept.

Species diversity is pivotal to biodiversity studies, and it could be traced by the use of systematics. Chapter 2 deals in detail with classification (phenetic, cladistics and phylogenetic), identification and nomenclature of species. Further, species concept and speciation are also discussed.

The assessment of species is the prerequisite for any scientific study that determines the status of bioresource. Chapter 3 is divided into two parts. The first part discusses the various methods of inventorying and monitoring of biota, while the second part deals with the selected groups of organisms and habitats that support rich or unique biodiversity.

Some habitats of the world support more organisms, but some are simply unsustainable. Any discussion on the status of species remains incomplete unless its distribution pattern is understood. In Chapter 4, we discuss the pattern of distribution of global species and the gradients at which the species composition change.

The world is full of diverse organisms, most of which remain to be explored. The study of biodiversity not only encompasses the richness and abundance of species but also includes genetic diversity and the ecosystem diversity. This concept has been elaborated in Chapter 5.

The diverse flora and fauna of the world work in a concerted manner for sustenance of the ecosystem. Some organisms are indispensable while others play only minor role. Whatever may be their role, all have an intrinsic value and contribute to the esthetic beauty of the environment. All plants and animals have some kind of ecological value while some are

extremely valuable commercially. Chapter 6 attempts to explore the value of all living beings outside their cost-benefit analysis.

Multiple anthropogenic pressures stress the world's ecosystems for which biodiversity is in a state of collapse. The causes of such consequences are manifold. Natural calamities play only a minor role, but anthropogenic disturbances are the major culprits. Chapter 7 attempts to discuss in depth the various drivers that lead to biodiversity loss with subsequent breakdown of the natural system.

The most important cause of biodiversity loss is the shift in global climate. Growth of industries and energy utilization have released certain harmful gases (greenhouse gases) that absorb infrared rays to warm up the earth's surface. Warming has several consequences that affect ecosystem as well as the biotic communities. Chapter 8 deals with the cause and consequences of global warming, with few remedial measures to overcome the stress.

Biopiracy is a worldwide practice and, over the years, the gene rich countries have been exploited by the industrialized nations. National and state level laws have been formulated, but conservation of biodiversity and stalling biopiracy first received legal backing after the Convention on Biological Diversity (CBD) at Rio De Janeiro (1992). Chapter 9 attempts to list the various laws and policies that have been framed for protection of biodiversity following the CBD.

The advent of science has delineated man from nature. Still few indigenous communities survive, who live close to the nature and understand their laws thoroughly. Chapter 10 speaks on the indigenous knowledge of these communities that provide clues for conservation and sustainable development.

Chapter 11 highlights the various uses of biodiversity in improving agriculture or waste management and possibly with the help of biotechnology. This arm of biology finds out new uses of biodiversity each day that helps in the welfare of man.

Conserving biodiversity and preserving nature's elements are the only sources of sustenance for human beings. We need to develop comprehensive strategies to protect the country's biodiversity, both inside and outside the range of Protected Areas. Conservation in habitat or outside the boundaries of the native ranges ensure the existence of the living beings, which keep the world going. Chapter 12 explores the different ways to conserve and utilize biodiversity in a sustainable manner.

The **Second Edition** of the book contains many sections that have been revised and updated with the latest information. Project Tiger and Project Elephant have now been described in detail in Chapter 12. Moreover, many new figures have been introduced for easy understanding while some have been replaced.

Each chapter ends with a summary and review questions that will largely help the readers in organizing the topics and rethinking of the problems.

We hope this book would have significance in evoking interest among students, scholars and other interested readers in the field of biodiversity. We will be grateful for any constructive criticism and suggestions for further improvements in the book.

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