

A Text Book on Ecology and Environmental Science

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and
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PREFACE

The need for sustainable development is a key to the future of mankind. Continuing problems of pollution, loss of forest, solid waste disposal, degradation of environment and Ecological balance, issues like economic productivity and national security, global warming, the depletion of ozone layer and loss of biodiversity have made everyone aware of environmental and ecological issues. No citizen of world can afford to be ignored of environmental issues. Environmental management has captured the attention of health care managers. Managing environmental hazard has become very important. Human beings have been interested in ecology since the beginning of civilization. Ancient scriptures have described the value of environmental conservation.

Present book is designed to meet the need of students who enrol ecology and environmental science. A vast literature on this subject is available but this book is a single volume discussion covering all the aspects of ecology and environments. This book is a current and comprehensive yet not encyclopaedic intended for an introductory audience. Much effort has been taken to provide all possible information and the subject is discussed in multiple angles to cater the diverse interests of the readers. The book will be highly useful to UG and PG students dealing with ecology and environment.

Authors

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Authors

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About the Book

This book is designed to meet the needs of students who enroll ecology and environmental science. A vast literature on this subject is available but this book is a single volume discussion covering all the aspects of ecology and environment. This book is a current and comprehensive, yet not encyclopedic, intended for an introductory audience. Much effort has taken to provide all possible information and the subject is discussed in multiple angles to cater the diverse interests of the reader. This book is divided into eleven chapters covering ecology, ecosystem, bio-diversity, spheres of earth, environmental pollution, wastes management, environmental laws, impact assessment, environmental agencies and environmental organization. Needless to say this book would be highly useful to the under graduate and post graduate students of science subject. University faculty dealing with ecology and environmental pollution would find this book as an invaluable reference book. In fact this book is not only meant for students and teachers but also for the people who are very much concerned with the well being of our environment.

The pictorial representations in this book are not just concerned with the related subject but provide extra information associated with particular subject, in providing supplementary knowledge and hence increasing the knowledge by leaps and bounds. Though it is not possible to include the pictures for each and every terms associated with ecology and environment but effort has been made to include the pictures, which are more relevant to the subject and will help in understanding the subject. The photos were carefully selected to add realism to the subject and to increase the interest of the reader. Since student use of the text was one of our primary concerns, we made a concentrated effort to write a book that is highly usable to understand the basic and fundamental concepts of ecology and environment. To achieve this goal the book is written concisely and well illustrated. Important terms are printed in boldface type within the body of the text and a glossary is included at the end of the text for easy reference.

About the Authors

Dr. M. Prasanthrajan, Assistant Professor (Environmental Sciences) has completed his under graduation (1994-1998), post graduation (1999-2001) and doctoral studies (2001-2004) at Tamil Nadu Agricultural University with an overall grade point average of 9.78 out of 10.00. He has won two awards during his M.Sc and Ph.D programme. He has cleared University Grants Commission Junior Research Fellowship and ARS-NET during the year 2001. He has been appointed as Assistant Professor (environmental sciences) on 1st December 2004 at TNAU and actively involving in the field of teaching, research and extension. He has handled 10 undergraduate courses and associated for two M.Sc and Ph.D courses. He has worked extensively on solid wastes management, composting, vermicomposting and presently working on the field of bioremediation and air quality monitoring. He has participated in many National and International seminars, symposia, conference and training programme on the niche area of his research work. He has published 15 research articles to his credit.

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Chapter – I

Introduction

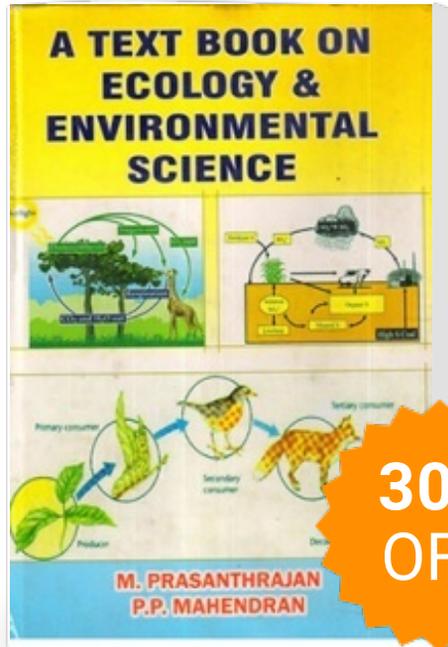
The word environment is derived from the French verb *environner*, which means to “encircle” or “surround.” Thus, our environment can be defined as the physical, chemical and biological world that surrounds us, as well as the complex of social and cultural conditions affecting an individual or community.

Environmental science

Environmental science is essentially the application of scientific methods and principles to the study of environmental issues, so it has probably been around in some form as long as science itself. Environmental science is often confused with other fields of related interest, especially ecology, environmental studies, environmental education, and environmental engineering. Environmental science is not constrained within any one discipline and it is a comprehensive field. A considerable amount of environmental research is accomplished in specific department such as chemistry, physics, civil engineering, or the various biology disciplines.

Environmental science is not ecology, though that discipline may be included. Ecologists are interested in the interactions between some kind of organism and its surroundings. Most ecological research and training does not focus on environmental problems except as those problems impact the organism of interest. Environmental scientists may or may not include organisms in their field of view. They mostly focus on the environmental problem, which

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