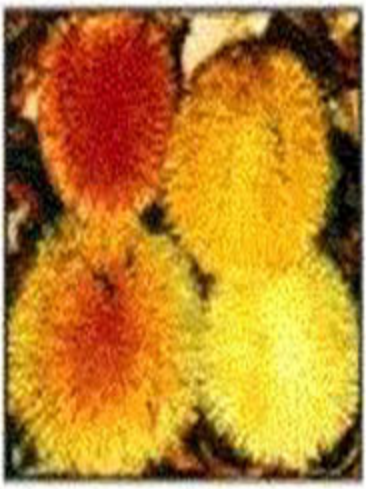

SYSTEMATICS AND BIODIVERSITY CONSERVATION

T. C. Narendran & M. Balakrishnan

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Systematics and Biodiversity Conservation

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AGROBIOS (INDIA)

Published by:
AGROBIOS (INDIA)
Agro House, Behind Nasrani Cinema
Chopasani Road, Jodhpur 342 002
Phone: 91-0291-2642319, Fax: 2643993
E. mail: agrobios@sify.com

AGROBIOS (INDIA)

ISBN No.(10): 81-7754-339-3
ISBN No.(13): 978-81-7754-339-1
***Price:* Rs. 695.00 / US$ 46.00**

Published by: Dr. Updesh Purohit for Agrobios (India), Jodhpur
Lasertypeset at: Shriya Computers and Printers, Jodhpur
Cover Design by: Reena
Printed at: Anmol Prints, Jodhpur

ACKNOWLEDGEMENTS

We are grateful to Dr. E. E. Grissell of Systematic Entomology Laboratory, U. S. National Museum of Natural History, Washington, D.C. for clearing some of our doubts on principles of Taxonomy. The training offered to TCN at the Commonwealth Institute of Entomology, London was extremely useful in developing the ideas in systematics and practices for which he is grateful to Dr.Z.Boucek. We are grateful to the Director of Zoological Survey of India, Kolkatta for permitting to include some of the passages from the book "An Introduction to Taxonomy" by Narendran (2006). Mr. S. Anil Kumar, Research Scholar, Department of Zoology, University of Kerala is thanked for some of his photographs used in this book. We thank Dr. K. Sudheer, Zamorin's Guruvayoorappan College, Calicut, Dr. P. Girish Kumar, Zoological Survey of India, Kolkatta and Mr. Abhilash Peter, Systematic Entomology Laboratory, Department of Zoology, University of Calicut for helping in the preparation of figures on the systematic part of this book. Dr. K. P. Rakesh, Department of Botany, University of Calicut is thanked for providing some of the literature on plant taxonomy and Mr. Yoseph Assefa, Research Scholar, Department of Biology, Addis Ababa University is thanked for his help in the taxonomy of some of the field samples. We are also thankful to the University of Calicut, University of Kerala and the Addis Ababa University for facilities. We have great pleasure to thank Dr. Updesh Purohit of Agrobios (India) for printing and publishing this work in excellent form.

T.C. Narendran
M. Balakrishnan

PREFACE

Conservation biology has developed as a recently evolved branch of biological sciences by drawing its principles from diverse specialties of biology such as genetics, ecology and evolution. However, the practices in human ecology have been instrumental in bringing up this discipline as an applied professional field in the recent past. Conservation Biologists are practitioners to look into the causes of biodiversity depletion and to suggest remedial measures to halt degradation of natural habitats and depletion of biological resources. Conservation can also be carried out in human ecosystems.

When it comes to a practicing field, the professionals in this area of study have to look into the population status of diverse organisms seen in their natural habitats. These organisms make the biodiversity of the area, which can be assessed in terms of ecosystem, species and genetic levels. The biological components present in an area depend upon the physical factors prevailing in the area in addition to the outcome of the interactions between co-inhabitants. Based on such interactions, a balanced diversity is maintained. This balance may be lost on occasions of extreme interactions of human beings with vested interest. For example, timber logging in a forest is not a natural process; on the other hand, it is a man-motivated activity with specific human interest. The area from where a species of timber is logged in large numbers would not only be drastically affected by the intensive exposure to sun light; there would be more effects as a result of the extraction as it would disrupt the natural interactions of several species of organisms in the area.

The levels of disruption of such biological activities can be revealed only if one has a basic idea on the diverse species present in the area and the diverse types of interactions between them, both direct and indirect. Unfortunately, today vast majority of the biologists is unable to identify even a few species of plants and animals around them. Larger plants such as trees and larger animals such as mammals may be identified to certain levels, but when it comes to the levels of family, genus and species, particularly in the case of lower organisms, 95% of the biologists have to depend upon others. Even there are cases of misidentified study specimens of doctoral thesis in biology in the recent past!

The mistake that we have committed during the past few decades is responsible for this negligence. When biological science has advanced and diversified, systematics was neglected and rather visualized as an old discipline with no application. Financial support was available for research proposals with more direct application rather than basic science such as taxonomy. Unfortunately, fancy proposals with fashionable titles were judged above proposals dealing with natural habitats and ecosystem concepts; ultimately leading to a situation by which even University Gold Medalists in Biology could not identify 5-10 common species of flowering plants, woody trees, fruiting trees, insects, birds and even mammals around them!

We have to overcome this problem. Our students should be able to identify common organisms around them. They should be able to understand the direct and indirect interactions among them and should be able to establish food chains and food web in the ecosystem. Ultimately, they should be able to practice biology by conserving rich biodiversity in natural and man-made habitats. They should also be able to establish means by which essential biological components are sustainably used for human welfare.

In this context, we reset our priorities and make an earnest effort to give due importance to research in systematics. We have already lost millions of organisms and we cannot afford to lose any further. We have lost valuable time and we should act now as a global effort on a larger scale for the development of systematics so that we can document our biodiversity and initiate steps to conserve it. The signatories of the Convention on Biological

Diversity – CBD (UNEP, 1992) have affirmed the existence of taxonomic impediments to sound management and conservation of biodiversity. Elimination of such impediments is a crucial step in the proper implementation of the objectives of CBD. There is an urgent need to train and support more taxonomic experts in order to discover and understand the global biodiversity. Taxonomic perspective should be developed by policy makers of the governments to achieve sustainable development and conservation of biodiversity.

Systematics and biodiversity conservation form core subjects of study for the master's degree students in biology. Only few books are now available for catering the needs of such students. All we have are either advanced level books, which are meant for researchers in these areas, or the ones, which are too complicated for the postgraduate or undergraduate students to comprehend. In this textbook we have attempted to strike a balance between fundamental details and recent developments in systematics and biodiversity conservation. Special attention has been given to simplify the whole text in an easily understandable form. It is hoped that the textbook "*Systematics and Biodiversity Conservation*" will be able to solve many of the basic doubts of students who really want to study systematics and biodiversity, and form a source of inspiration for taking the topic for future research. We hope this book will serve as a basic tool for university students and teachers to achieve this goal.

May 2007.

T.C. Narendran
M. Balakrishnan

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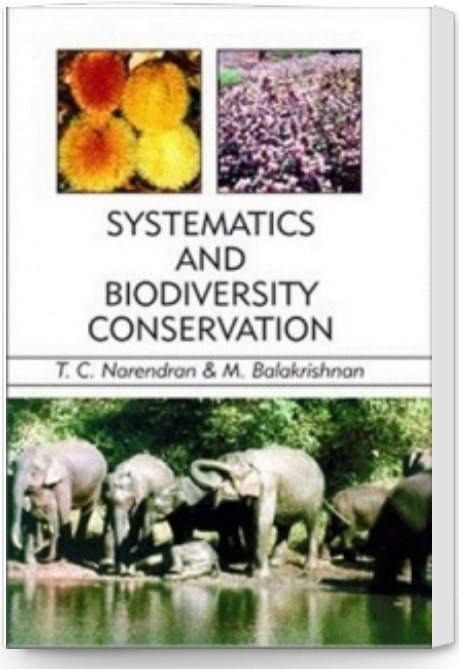

Publisher : Agrobios Publications

ISBN : 9788177543391

Author : Narendran TC, Balakrishnan M