

1 Protected Areas Series

# Management and Status of Resources in Protected Areas of Peninsular Malaysia



Department of Wildlife and National Parks  
Ministry of Natural Resources and Environment

# Management and Status of Resources in Protected Areas of Peninsular Malaysia

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## **BIODIVERSITY AND MARINE BIOTECHNOLOGY: A NEW ERA FOR THE DEVELOPMENT OF BIOTECHNOLOGY INDUSTRY**

JALAL, K. C. A., KAMARUL, R. K., NOOR FAIZUL, H. N.,  
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### **ABSTRACT**

In the 21<sup>st</sup> century, people are coming to realize that biological resources have limits. However, humans are still exceeding those limits and thereby reducing biological diversity. Therefore, more resources especially from the marine environment need to be explored to bridge the gap. Nowadays, marine biotechnology rooted in the traditions of marine biology has emerged as one of the major components of the biotechnology revolution. It offers abundant resources for research, development and commercialisation. Wide biodiversity of species with significant potential in commercial application is available in marine environment. The potential of this domain as the basis for new biotechnologies remains largely unexplored. Indeed, a vast majority of marine-living organisms have not been identified and revised, taxonomically and functionally. As a result, there is insufficient

knowledge for intelligent management and application, even for known organisms. Currently, Malaysian investment in biotechnology is devoting to marine biotechnology from time to time. In addition, Government support in research areas of marine biotechnology has generated new fundamental knowledge and advanced technologies for producing new pharmaceutical, biomaterial and other products; developing and improving bioremediation and bioprocess; enhancing cultivation of aquatic species; and expanding understanding of biological processes in the oceans and their roles in global changes.

## INTRODUCTION

Marine biotechnology is developing to be one of the greatest frontiers of scientific exploration and commercial endeavors for the next century. Compared with the terrestrial environment, the oceans of the world remain largely unexplored and represent a major portion of the earth's genetic resources. This fact reflects the opportunities for humans to come out with new development of knowledge and advanced technologies in multiple areas. By using the biotechnology tools as additional approaches, this vast and diverse potential source of new food, pharmaceuticals, minerals and energy, could be applied to help meeting the needs of the world's expanding population and economy. In contrast to the highly sophisticated stage that has been reached by medical biotechnology, the history of marine biotechnology traces back only a decade. Needless to say, marine biotechnology does promise better benefits to the future world's economy, as well as to the subsequent research and development in the world of science.

In fact, marine biotechnology is still very much at the discovery stage, with much to be revealed about the evenness of natural populations, population structure and molecular genetics of most of the resources from the sea. This field is using the tools of integrated biotechnology science in order to provide a better understanding and novel solution to the existing and forthcoming problems in various disciplines. Significantly, biotechnology allows us to tap the potential of the oceans without depleting them as a resource. In the long run, scientists no longer need to overharvest marine organisms that produce valuable or scarce products, thus avoiding depletion and possibly threats to critical resources. In other words, the integration of marine biology and biotechnology may cater the increasing needs of modern society e.g. in medicine and economy worldwide, with proper management and sustainable utilization of the limited resources.

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Peninsular Malaysia has a total of 40 protected areas (PAs) distributed in all 11 states with total area of 751,413 ha. The protected areas in Peninsular Malaysia are in the form of wildlife reserves, national parks, state parks and Ramsar Sites. In addition, there are also natural forests within the Permanent Forest Estate protected as water catchments and other conservation areas. Taman Negara National Park is the largest of all PAs in Peninsular Malaysia with an area of 4,343 sq km and is located in three states i.e. Pahang, Kelantan and Terengganu. It was gazetted separately between 1930 and 1940 under separate but similar state enactments.

The roles of protected areas in Malaysia include, among others, conservation of biological diversity resources, ecology, research, education, recreation, and ecotourism. The benefits of protected areas to the country and local communities have yet to be fully explored since much of the nation's biological diversity has yet to be investigated and documented. Thus, the importance of improving the scientific knowledge base within protected areas is reiterated in the following Action Plan of Strategy I of the National Policy on Biological Diversity (NPBD) that was adapted in 1998:

“Undertake and intensify biological resources inventories and systematic studies to document species diversity”

Realizing the need of documenting species diversity, more field studies need to be conducted either by local and foreign researchers. The field data that are gathered from inventories and other systematic and biological studies conducted in PAs, however, also need to be shared among researchers through seminars and published scientific papers. To achieve this objective of sharing scientific data, the first National Seminar on Protected Areas was successfully organized by the Department of Wildlife and National Parks (DWNP), in collaboration with the Faculty of Science and Technology, Universiti Kebangsaan Malaysia, between 21 and 23 September 2004. This seminar is considered one of the steps in an effort to gather all the available information on flora, fauna, socio-economic and physical environment of all 40 protected areas managed by DWNP.

This book is a collection of scientific papers presented in the first National Seminar on Protected Areas. The papers are written by many distinguished local and foreign scientists representing universities, and government and non-government organizations who participated in the seminar. With the publication of this book, dissemination and sharing of scientific information can be made and finally, data can be used in designing and managing the PAs in Malaysia effectively.

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