

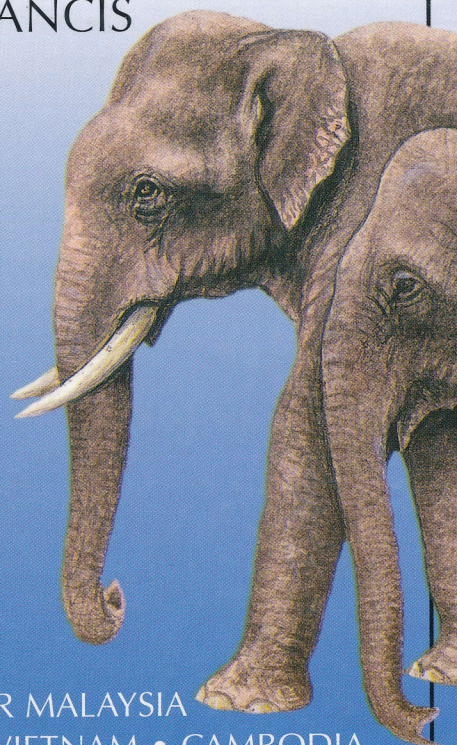
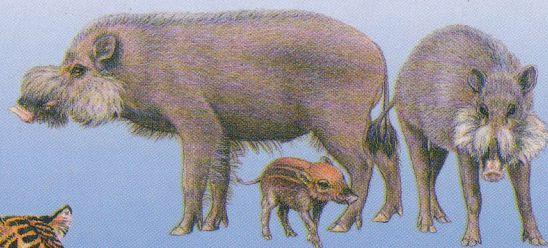


A FIELD GUIDE TO THE

# MAMMALS OF SOUTH-EAST ASIA



CHARLES M. FRANCIS



THAILAND • PENINSULAR MALAYSIA  
SINGAPORE • MYANMAR • LAOS • VIETNAM • CAMBODIA



A FIELD GUIDE TO THE  
**MAMMALS** OF  
**SOUTH-EAST**  
**ASIA**

CHARLES M. FRANCIS



Illustrated by Priscilla Barrett, Robin Budden,  
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## PREFACE AND ACKNOWLEDGEMENTS

This book is intended to help both general naturalists and scientists to identify wild mammals that may be encountered in South-East Asia, as well as to increase public understanding of the diversity of mammals that occur in the region, thus encouraging efforts to conserve them.

This is the first comprehensive field guide to mammals of this region, but it would not have been possible without the pioneering efforts of many previous mammalogists working in the region and publishing their work. I have drawn particularly heavily on *A Field Guide to the Mammals of Borneo* by Junaidi Payne and myself, with illustrations by Karen Phillipps. I am grateful to Junaidi, Karen and the Sabah Society for allowing me to use parts of that book as a starting point for this one. I also made extensive use of Corbet and Hill (1992) as a starting point for developing the species lists and basic taxonomic information, for checking distribution maps, for references and for tables of identification characters, although the species lists have since been updated to reflect Wilson and Reeder (2005) and other recent published scientific papers. Many other books on mammals of the world and of the region were also useful in preparing this book, as well as many original papers in the scientific literature. A list of some of the most important references is included in the bibliography.

I have been fortunate to have been able to work in the field in the region for many years, particularly on bats. Much of the information in this book on bats, as well as some other groups of mammals, is based on field data I collected myself, often with various colleagues. I am very grateful to all those who have supported my field work in South-East Asia. D.R. Wells and D. Melville provided my first introduction to the fascinating fauna of this region during a season of field work in Peninsular Malaysia and Sarawak in 1979. Ken Scriven has provided ongoing

support over the years. The Sabah Wildlife Department (originally part of the Sabah Forest Department), and the Canadian volunteer organization CUSO, supported me during several years of field work in Sabah, providing logistical support and funding. I am particularly grateful to Mahedi Andau, Director of the Sabah Wildlife Department, for allowing me to work on mammals as well as birds during my stay in Sabah, and to the many of his staff who accompanied and assisted me during field work there. I greatly appreciated working with Junaidi Payne and Karen Phillipps during field work while preparing *Mammals of Borneo*. The Malaysian Economic Planning Unit and the National Parks and Wildlife Department (PERHILITAN) allowed me to carry out field work from 1991 to 1996 in Peninsular Malaysia. The Wildlife Conservation Society (WCS) generously supported my research in Peninsular Malaysia, as well as subsequent field work in Laos from 1995 to 1998. I thank the WCS Lao staff for assistance during field work in Laos, particularly Bill Bleisch, William Robichaud, Rob Tizard, Will Duckworth, Chanthavy Vongkhamheng, Khamkhoun Khounboline and Khounmy. Nik Aspey and Antonio Guillén-Servent also assisted me on surveys there. More recently, Sara Bumrungsri has given me the opportunity to work with him in Thailand. The Senckenberg Museum, through Joerg Habersetzer, provided equipment for recording bat echolocation calls. Michael Bradstreet allowed me to take time off my duties at Bird Studies Canada to survey mammals in the region, while Trevor Swerdfager allowed me to use some in-kind support for this project from the Canadian Wildlife Service of Environment Canada.

I am grateful to the staff of several museums for allowing me to use their facilities and collections. These include Judith Eger at the Royal Ontario Museum; Paula Jenkins, Daphne Hills and the late John E. Hill at the

Natural History Museum, London (formerly known as the British Museum (Natural History)); Paul Bates at the Harrison Museum; the late Karl Koopman at the American Museum of Natural History; and Richard D. Thorington at the National Museum of Natural History at the Smithsonian. I am particularly grateful to John E. Hill for teaching me the basics of mammal taxonomy.

During preparation of this book, many people generously answered numerous questions about individual species, provided myself or the artists with reprints or manuscripts of their work, unpublished information and photographs, or helped in other ways. These include Alexei Abramov, Bruce Banwell, Paul Bates, Isabel Beasley, Bill Bleisch, Alex Borisenko, John Burton, Polly Campbell, Michael Carleton, Gabor Csorba, Jennifer Daltry, Yoan Dinata, Will Duckworth, K. Fletcher, Angela Frost, Neil Furey, Thomas Geissmann, Lon Grassman, Colin Groves, Antonio Guillén-Servent, Simon Hedges, Kristofer Helgen, Jeremy Holden, Tigga Kingston, Andrew Kitchener, Sergei Kruskop, Darrin Lunde, Tony Lynam, Debbie Martyr, Masaharu Motokawa, Susan Murray, Phil Myers, Tilo Nadler, W.F. Perrin, Le Khac Quyet, Alan Rabinowitz, Scott Robertson, Roland and Julia Seitre, Andrew T. Smith, Carly Starr, Ulrike Streicher, Steven Swann, Rob Timmins, Joe Walston, Roland Wirth, Fahong Yu and many others.

The distribution maps in this book, as well as some of the ecological information, were derived from the Southeast Asian Mammal Databank (SAMD), a project of the Instituto Ecologia Applicata in Italy with funding support from the World Conservation Union (IUCN) and many different partners. I thank them for permission to use the maps in this book. Laine Shaw and Andrew Couturier helped to prepare the maps in suitable format for publication.

I am also very grateful to the artists Brin Edwards, Sandra Doyle, John Cox, Guy Troughton, Robin Budden, Lyn Wells, Priscilla Barrett, William Oliver, Ray Hutchins and John Buerling for contributing their time

and skills towards producing the colour plates. Karen Phillipps, Alex Borisenko, Sergei Kruskop, and Nico van Strien kindly allowed me to use some of their line drawings in the text, while the American Museum of Natural History, the Sabah Society and the Mammalogical Society of Japan gave permission to reproduce a selection of line drawings from their publications. I am also grateful to the editorial staff at New Holland publishers for helping to see this book through to fruition, including Jo Hemmings, Sarah Whittley, James Parry, Krystyna Mayer, Charlotte Judet and Liz Dittner.

Finally, I would like to thank my wife, Cecilia Fung, and my daughter, Fiona Francis, for accompanying me in the field when possible, for tolerating my absences for field trips and museum work when they could not join me, and for putting up with my preoccupation during many weekends and evenings while completing this book.

**Disclaimer** Although this book contains much scientific information, it is not intended as a primary source of new scientific data on mammals in the region. In keeping with the usual format for field guides, the text does not include references to sources. Information in this guide has been drawn from a wide variety of sources, including primary and secondary publications, as well as unpublished data from my own field work and that of colleagues. Whenever possible, I have attempted to verify information from multiple sources, to minimize the risk of errors. Nevertheless, independent information was not always available, and I may inadvertently have replicated published mistakes or introduced new ones. As a result, readers interested in citing technical details should not consider this guide as a primary source, but instead should seek out original sources of information. This is particularly true for measurements, which are provided as guides to approximate sizes of animals, and are not necessarily indicative of actual specimens.



# INTRODUCTION

The primary aim of this field guide is to provide a convenient means for both the general public and professional scientists to identify all of the mammals currently known to occur in mainland Asia, including Myanmar (also known as Burma), Thailand, Lao People's Democratic Republic (generally referred to as Laos in this book), Vietnam, Cambodia, Peninsular Malaysia and Singapore. The hope is that people using this book will be able to identify any mammal that they observe well in this region by looking through the colour plates and reading the corresponding text descriptions. In most cases, it should be possible to identify animals to species, but for some mammals it may only be possible to narrow this down to a group of closely related species, unless the animal has been collected and prepared as a museum specimen. Some species are difficult to identify, even for experts, and users should not expect to identify every mammal they find, especially those that are only glimpsed in the field.

This book describes every species of wild mammal presently known to occur in the region, including smaller offshore islands. It describes approximately 470 species of land mammal from South-East Asia. Sea mammals, including the cetaceans (whales, dolphins and porpoises) and the Dugong, are also included. Because of the nomadic or migratory nature of many marine mammals, the book includes not only species that have been confirmed as occurring in the region, but also those that have been recorded nearby and are likely to show up in South-East Asian waters.

New knowledge is being gained every year on mammals in this region by researchers working both in the field and in the museum. Ongoing field surveys in new areas, or using new techniques such as camera traps for large mammals, harp traps and clap nets for bats, and various trapping methods for small mammals, are providing

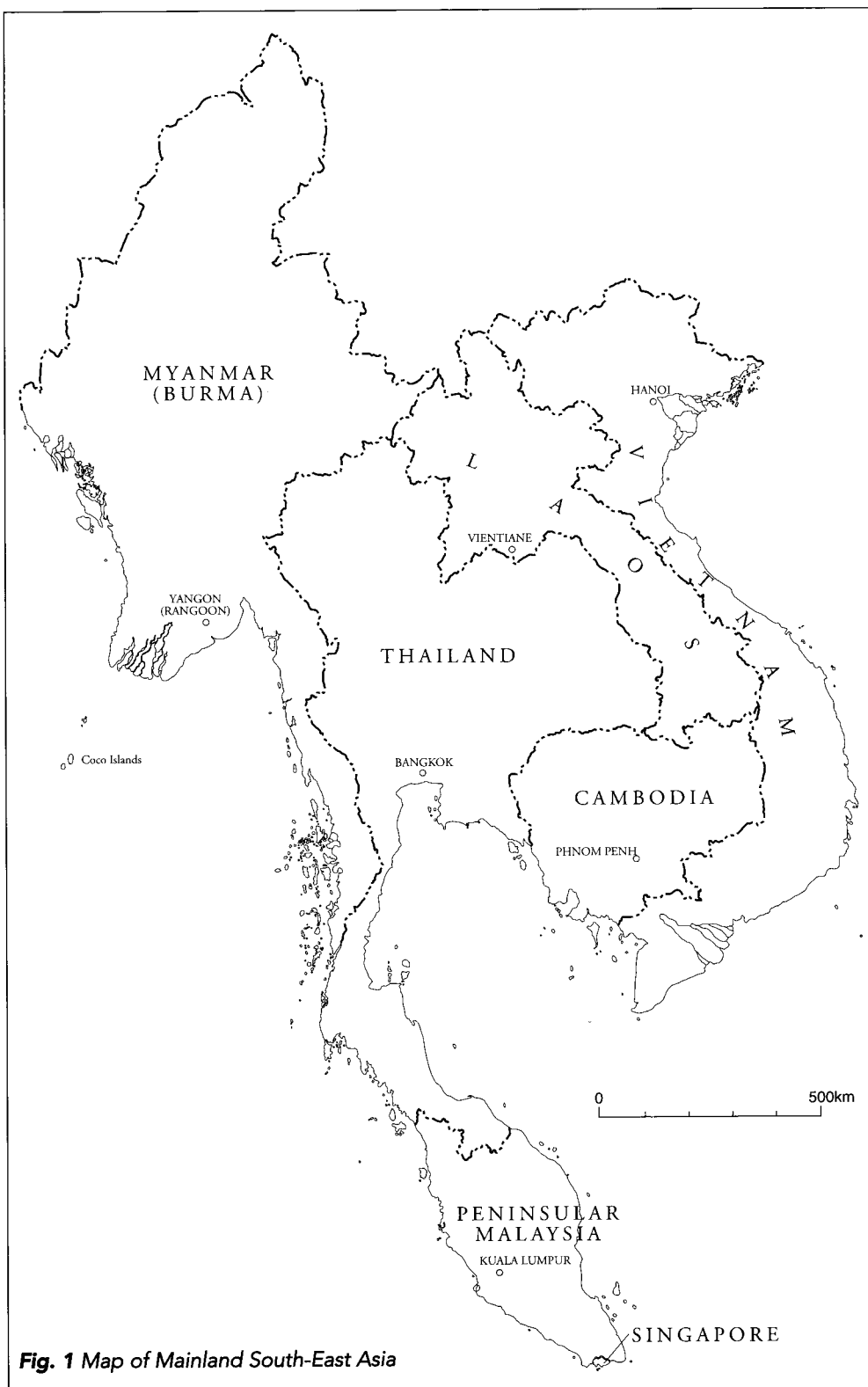
new information on the distribution and ecology of species, and even discovering new species. New study techniques, particularly those that incorporate genetic studies combined with re-examination of morphological characters, are leading to further new discoveries, as well as better understanding of species limits in many groups. Much uncertainty about species limits remains, not only in small mammals such as insectivores, rodents and bats, but also in some groups of large mammals such as muntjacs and some primates.

As a result, a book like this must be considered a work in progress. No doubt I have overlooked some published works with information on mammals in the region, created errors through my mistakes in interpreting the literature or perpetuated previously published errors. I would be most grateful to hear from anybody who finds errors in this book, or who has new information on mammals in the region, so that I can incorporate this information into future editions or reprints. I can be contacted at:

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## WHAT IS A MAMMAL?

Mammals are distinguished from other animals by several features. Nearly all species, except a few egg-laying mammals in Australia and New Guinea, give birth to live young, and all species feed their young on milk. Most mammals have fur or hair, although in some sea mammals, such as whales and dolphins, the hairs are scattered and inconspicuous. All species are warm-blooded and share many features of internal anatomy. Most have four limbs: two hind legs and two front legs, wings or arms. A few mammals somewhat resemble, and could be confused with, other types of animal. Bats



**Fig. 1** Map of Mainland South-East Asia