



*Life from Headwaters to the Coast*

# **SAMUNSAM**

Wilderness Rediscovered

*Edited by*

Jayasilan Mohd-Azlan,  
Abang Arabi Abang Aimran and Indraneil Das



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# FOREWORD

Malaysia's largest State, Sarawak, on the island of Borneo, is home to some of the world's richest biodiversity, including endemics, economically valuable species, as well as species of conservation importance. Some of the best examples of such plants and animals can be found in Sarawak's extensive network of protected areas. Many of us here in Universiti Malaysia Sarawak continue to explore Sarawak's biodiversity, with the hopes of generating critical knowledge at these sites. This book represents but a subset of work done by our academics in the realm of biodiversity research. I would like to commend the efforts by Sarawak Forestry Corporation Sdn. Bhd. who supported us in this task, by providing a research grant. The work is expected to be important for local communities, to aid them better understand, appreciate and perhaps use their resources sustainably, such as an interpretation tool to guide ecotourists and naturalists in Samunsam.



As will be evident to the readership, a variety of approaches have been taken by the authors of this volume. J. Mohd-Azlan, Lisa Lok and Indraneil Das provide the backdrop to the project, including introductory information on Samunsam. Siali and Tisen from SFC provides a brief account of the development of the site as a Wildlife Sanctuary. Subsequent chapters deal with the zoological components of the Sanctuary's biodiversity, including crabs (Jongkar Grinang), termites (Wan Nurainie Wan Ismail and colleagues), dragonflies and damselflies (Rory Dow), fishes (Fazimah Aziz and colleagues), amphibians and reptiles (Indraneil Das and his team), a separate chapter on the Painted Terrapin (James Bali), investigations on the bird diversity (Mohamad Fizl Sidq Ramji and colleagues); small mammal community (Faisal Ali and colleagues); a separate chapter focussed on the Proboscis Monkey (Ahmad Fitri Aziz and colleagues) and the larger mammals (Mohd-Azlan Jayasilan and his team). The book wraps up with chapters on related social elements, such as use of natural resources (Mohamad Suhaidi and his team), and finally, the ecotourism and entrepreneurial potential of Samunsam (Dayang Affizah).

It is my hope that this book will contribute in at least a small way of encouraging more people to work in the field, publish more articles of this

## FOREWORD

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kind and new sponsors would emerge to provide support. I anticipate that this volume will be useful to stakeholders to whom we remain connected through our common views on biodiversity conservation for future generations.

*Prof. Datuk Dr. Mohamad Kadim Suaidi*  
*Vice Chancellor*  
*Universiti Malaysia Sarawak*



# MESSAGE

The State of Sarawak boasts one of the most extensive networks of protected areas in Malaysia. The western tip of Sarawak is an important area for biodiversity conservation where iconic protected areas, such as Tanjung Datu National Park and Samunsam Wildlife Sanctuary are located.

Biodiversity is one of the top State agendas, whereby the State of Sarawak, with the establishment of Sarawak Forestry Corporation (Park and Wildlife) is determined to conserve and protect its wildlife and natural landscapes. This project sits in line with the University's niche area of biodiversity and environmental conservation and sustainable community transformation. This book, based on research collections by the staff of our two institutes, brings together information on species, their habitats and other aspects of natural history, and the perceptions of the human community on conservation and sustainable use.

Identifying the distribution, densities and habitat use of animals in tropical rainforest are essential for understanding their ecology, and in facilitating management of our biodiversity-rich protected areas. This book attempts to enumerate these species, many of which remain undetected in the dense tropical rainforest. The faunal studies include inventories of crabs, termites, dragonflies and damselflies, fishes, frogs, reptiles, birds and mammals of the area, a critical first step towards understanding our natural heritage. The work also highlights how the local communities interact with biodiversity, and their deep dependence with such natural resources in Samunsam.

This book is written for local stakeholders, management authorities, naturalists, researchers and for the general public. An understanding of our biodiversity may influence the support of the complex needs of conservation in this ever-challenging environment. It is hoped that nature enthusiasts and those who are interested in tropical biodiversity will find this book beneficial.





## MESSAGE

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Acknowledgement is here made to the authors who have gathered these data, substantially increasing our knowledge and awareness of an important part of our national heritage.

***Prof. Dr. Wan Hashim Wan Ibrahim***  
*Deputy Vice Chancellor (Research & Innovation)*  
*Universiti Malaysia Sarawak*

***Mr. Oswald Braken Tisen***  
*Deputy CEO*  
*Sarawak Forestry Corporation (Park and Wildlife)*



# PREFACE

The Expedition to Samunsam Wildlife Sanctuary, located near the western tip of Sarawak State, approximately 100 km from Kuching city, was held over the years 2019–2020. It was undertaken by the staff and students of Universiti Malaysia Sarawak, in collaboration with the Sarawak Forestry Corporation, the latter agency providing funding and on-the-ground support, besides joining forces in some of the field data collection.

The diversity of forest types (necessitating different sampling protocols) and eventually, the arrival of the Covid-19 pandemic, were major challenges on the ground, leading to reduced resources available for sampling. Despite these shortcomings, the multidisciplinary team from our two agencies could satisfactorily conduct what is essentially a rapid biodiversity survey, and bring the results out for our stakeholders in time.

Promotion of protected areas as tourist attraction and for research activities has been high on the State's agenda, being seen as an important driver of socioeconomic growth. It can also help governmental agencies such as ours remain engaged with the public for conservation, network with researchers locally and globally and incorporate new knowledge into conservation management plans.

The project was funded by Sarawak Forestry Corporation (GL/F07/SAMUNSAM/2019). We are especially thankful to Paschal Dagang and Taha Wahap for their assistance in the project. We also extend our gratitude to the staff of Samunsam Wildlife Sanctuary, namely, Mohamad Khalid B. Mohamad Zakeria, Mr. Japri and Mr. Shukur for their help. We would also like to thank Research, Innovation and Enterprise Centre, the Faculty of Social Sciences, the Faculty of Economics and Business, the Institute of Biodiversity and Environmental Conservation and the Faculty of Resource Science and Technology, UNIMAS for logistical and administrative support.

The following colleagues helped with reviews of manuscripts: Aaron M. Bauer, Henry Bernard, Kelvin Egay, Melvin Gumal, Jason Hon, David T. Jones, Kelvin K.P. Lim, Lo May Chiun, Suhaili bin Mokhtar, Peter K.L. Ng, Andrew Alek Tuen, Chan Kin Onn, Albert Orr, Pang Sing Tyan, Mustapha Abdul Rahman, Tan Heok Hui and Darren Yeo. We owe a special debt of gratitude to our friends and colleagues, Chien C. Lee, Research Associates of the Institute of Biodiversity and Environmental Conservation, UNIMAS, for providing images of species that we have used in this work.

## PREFACE

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Finally, we thank Chan Hin Ching for designing the page layout and Datuk Chan Chew Lun, Natural History Publications (Borneo) Sdn Bhd, and Sarawak Forestry Corporation and UNIMAS Publisher for arranging its publication.

If this guide contributes to the enhancement of knowledge and compel readers to think anew about conservation of this important protected area, and inspire local stakeholders to take pride in their biodiversity, we would consider the project a success.

*Jayasilan Mohd-Azlan  
Abang Arabi Abang Aimran  
Indraneil Das*





# INTRODUCTION

*Jayasilan Mohd-Azlan, Lisa Lok Choy Hong and Indraneil Das*

The State of Sarawak has one of the most established networks of protected areas within Malaysia, covering some of the most megadiverse rainforests of the world. Among the protected areas are a total of five wildlife sanctuaries that have been established since 1979, totalling 225,791.4 ha, or 1.8% of land area of the State. Wildlife Sanctuaries in Sarawak have been mainly gazetted to protect Endangered, Rare or Threatened Species (ERTs). Samunsam Wildlife Sanctuary (Fig. 1), located near the western tip of Sarawak, was established to conserve the populations of the Proboscis Monkey (*Nasalis larvatus*). Gazetted in 1979, Samunsam Wildlife Sanctuary covers an area of 61 km<sup>2</sup> and is located in Sematan District, approximately 100 km from Kuching city.

Unlike National Parks, Wildlife Sanctuaries in Sarawak are entirely off-limits to the public and entrance is only permitted by the Chief Wildlife Warden. Such measures are to reduce anthropogenic activities that have potential for adverse ecological effects, while enhancing protection to species of conservation importance.

Despite the sizeable coverage of this protected area, Samunsam faces fragmentation and isolation due to road construction, which may affect the persistence of species, especially those that are not tolerant to edge effects and other disturbance. Thus, understanding how species occur and where they are distributed within the protected area is essential for thwarting potential threats and specify conservation strategies that will assist in decision making process for the management of Samunsam.

Samunsam Wildlife Sanctuary boasts a variety of forest types- mangroves, nipah, kerangas, riverine and mixed dipterocarp forests (Fig. 2). The mangrove forests line the lower reaches of the Samunsam River, where it forms a broad band near the mouth of the river, and gradually tapers out upstream, terminates around six kilometres upriver. Mangrove plant species, such as *Avicennia* and *Sonneratia* are located near the river mouth, while *Rhizophora* extend 1–3 km from the river mouth, and *Bruguiera* spp and Nipah palms (*Nypa fruticans*) form strands further upriver. The Nipah forest extends at about 4–6 km from the river mouth. Along the upper and middle reaches of the Samunsam River and its tributaries, belts of riverine forest are formed, averaging under 1 km wide. The riverine forest is dominated by trees of the genera *Hopea*, *Knemam*,

# INTRODUCTION

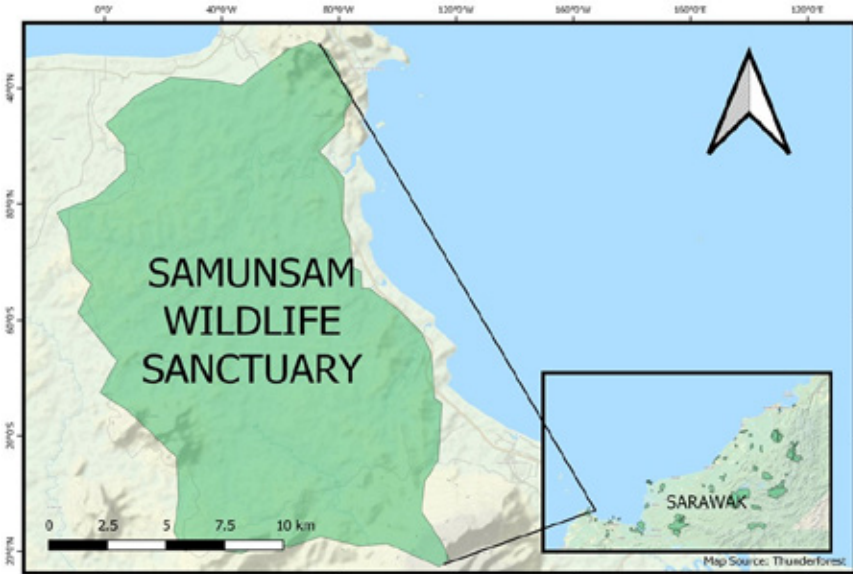


Fig. 1. Map of Samunsam Wildlife Sanctuary. Inset, map of Sarawak, showing location of Samunsam.



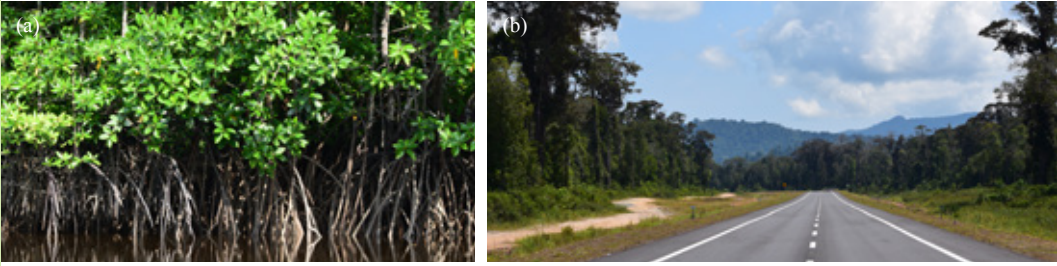
Fig. 2. Map showing the five major vegetation types recorded in SWS (source: Aziz, 2019).



## INTRODUCTION



**Fig. 3.** (a) Aerial view of Sungei Samunsam, showing pristine mangrove habitats; (b) Some of the best examples of Bornean tree flora can be found in protected areas of Sarawak, such as the mangroves of Samunsam.



**Fig. 4.** (a) Mangrove habitats in Samunsam offer breeding habitats for many species; (b) Recent road access has the potential to improve socioeconomic growth, as well as promote ecotourism.

*Sterculia*, *Shorea* and *Syzygium*. The forest features a dense undergrowth and abundant with rattans. The Kerangas forest is the most common forest type in Samunsam and is dominated by genera such as *Gymnostoma*, *Whiteodendron*, *Tristaniopis*, *Vatica* and *Shorea*. Rattan and a dense undergrowth are also common in this forest type, while pitcher plants can be observed in the more open areas. Mixed dipterocarp forests are largely confined to the hills in the north-eastern part of the Sanctuary and on patches of elevated, well-drained terrain elsewhere. Mixed dipterocarp forests have rich flora with tall trees, such as members from *Dipterocarpus*, *Shorea*, *Alstonia*, *Artocarpus*, *Gluta* and *Xanthophyllum*. The understory has climbing and non-climbing palm genera such as *Licuala*, *Caryota* and *Calamus* (Hazebroek and Abang, 2000).

Promoting protected areas as tourist attraction can improve socioeconomic growth as well as engage the public for conservation and maintenance. Local communities can play an essential role in assisting the authorities in detecting changes in the environment and managing the natural resources through traditional ecological knowledge. Therefore the synergy between empirical research and traditional knowledge should be regarded as a cornerstone for biodiversity conservation in the Samunsam area. This modest compilation provides new information on wildlife and species of conservation importance, evidence of ecotourism potential and the response of local communities for future management decisions in the Samunsam area.

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- Hazebroek, H.P. & A. bin Kashim. 2000. National Parks of Sarawak. Natural History Publications (Borneo) Sdn Bhd, Kota Kinabalu. xii + 503 pp.



# HISTORY

## *Siali Aban and Oswald Braken Tisen*

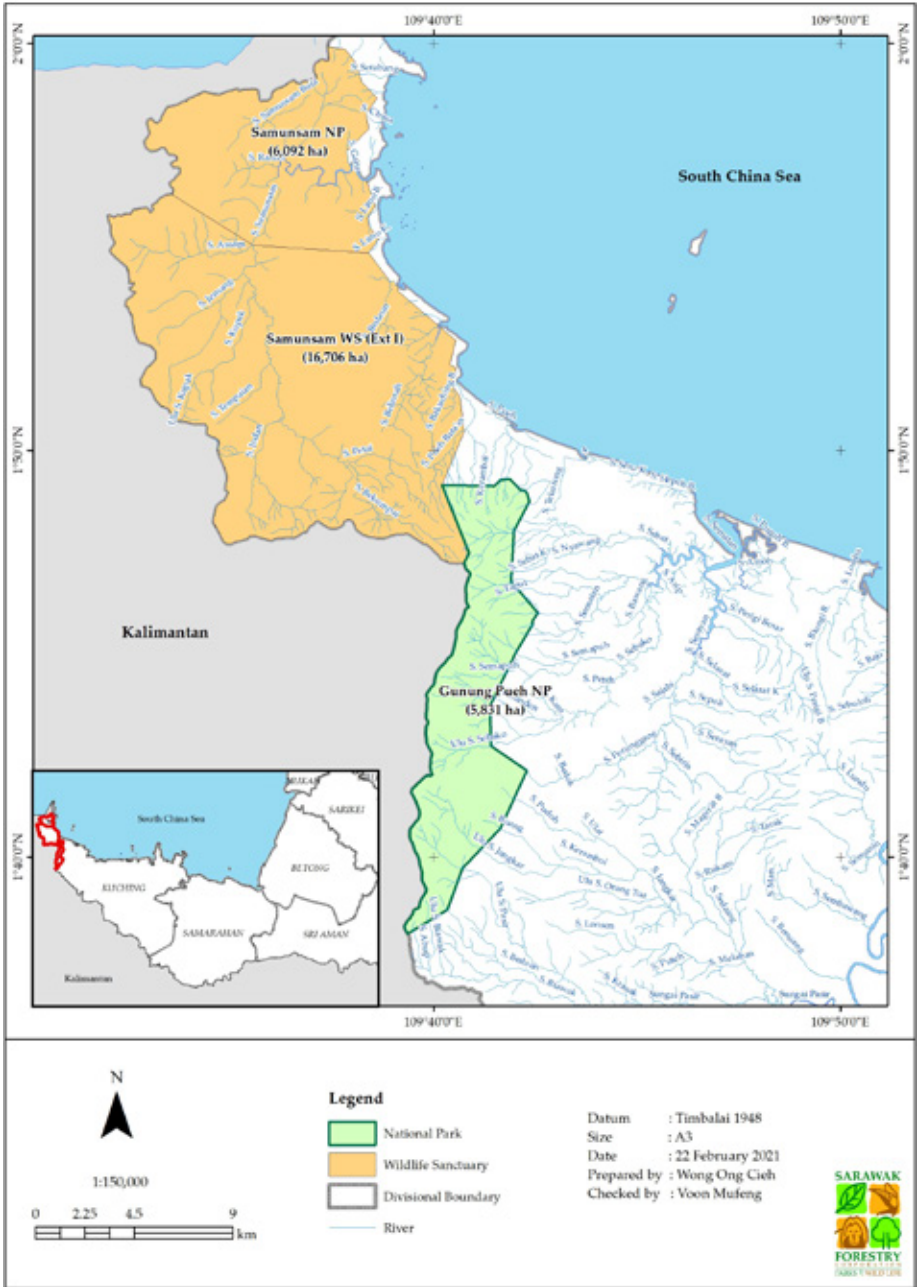
Samunsam (Fig. 1) was gazetted as a Wildlife Sanctuary on 1 July 1978. Initially, the Sanctuary comprised the northernmost regions of the Gunung Pueh Forest Reserve, and cover an area ca. 6,092 hectares on both sides of Sungei Samunsam, the western boundary meeting the international border with Kalimantan, Indonesia and extended eastward towards around two kilometres from the sea coast. Over two decades later, on 29 May 2000, the Sanctuary was officially extended as Samunsam Wild Life Sanctuary Extension I, with an additional area of around 16,706 hectares. This covers the entire watershed of the Gunung Pueh Forest Reserve that adjoins Gunung Pueh National Park, and was gazetted on 15 January 2015, covering a total of 5,831 hectares. With a total area of 22,798 hectares and inclusive of Gunung Pueh National Park, the Protected Area is currently about 23,629 hectares, following the Pueh Range, to ensures the effective conservation of the watershed of Sungei Samunsam. This initiative is to support the survival of the Proboscis monkeys (*Nasalis larvatus*) in the State, the primary reason for the establishment of Samunsam. Other totally protected species that have benefitted include the Black banded langur (*Presbytis melalophos chrysomelas*), Silvered langur (*Presbytis cristata*) and the Bornean gibbon (*Hylobates abbotti*). The area also provides an excellent habitat for many of Borneo's hornbill species, including the Rhinoceros hornbill (*Buceros rhinoceros*), Sarawak's state bird, and other avian species, such as the Black-napped tern (*Sterna sumatrana*), the White-bellied sea eagle (*Haliaeetus leucogaster*) and the Argus pheasant (*Argusianus argus*).

The coastal area of Samunsam is a favoured landing zone for the Painted terrapin (*Batagur borneoensis*) and Hawksbill turtle (*Eretmochelys imbricata*), and Sungei Samunsam provides habitat for the Saltwater crocodile (*Crocodylus porosus*).

The extended area of Samunsam has undergone several commercial logging activities that have led to the development of secondary forest gaps. These are recovering slowly after being gazetted as a protected area, and are now attracting species such as the Bearded Pig (*Sus barbatus*) and Barking deer (*Muntiacus* spp.).

Originally, the forest immediately adjacent to the coast, the upper region of Samunsam River, its tributaries and water catchment area were not included in

# HISTORY



**Fig. 1.** Locality map of Samunsam and Extension I, with Gunung Pueh.



the Sanctuary. Comprehensive protection of these areas and their biodiversity is incomplete unless the entire watershed, including the rest of Gunung Pueh Forest Reserve, is protected. The logged-over extension area protects the watershed and reduces pollution and siltation, which would otherwise threaten the rest of the area downstream and the surrounding beaches of Tanjung Datu, Telok Melano, Telok Serabang, as far as the town of Sematan. It is also vital to the future of Samunsam as a Wildlife Sanctuary that fulfils a fundamental role of sustaining the protection of the biodiversity as a whole. Part of the extended area serves as a buffer to regulate and administer the rights and privileges of local communities to collect minor forest produce within prescribed areas at Telok Melano, Telok Serabang, Kampung Pueh and Kampung Bedaun. These people are currently given such rights and the entry of others and generally all other rights would be prohibited in the buffer zone.

Current demands under rural development initiatives, in connecting the coastal villages with road network throughout the State, resulted in Samunsam Wild Life Sanctuary being fragmented by the construction of the new Pan-Borneo Highway at the coastal part, ending up at Kampung Telok Melano, being the last fishing village situated at the western-tip of Sarawak. The Highway was officially opened to the public on 26 January 2019.

This new rural development project has triggered a new approach to manage the Sanctuary, so as to balance efforts in protecting and conserving the habitats in tandem with the fast growing rural transformation needs by initiating and promoting local communities engagement. The setting of this Sanctuary, with the tranquillity of sea beaches and majestic mountains and forests offers a tourism attraction like few others. Samunsam, being sandwiched by two national parks, Tanjung Datu and Gunung Pueh, is now ready to support the tourism industry of the State. It is being proposed that parts of the Sanctuary be converted into a National Park, so as to provide opportunities that can be tapped by tourism players in creating spin-off economic and tourism industry welfare and bring benefit to the local communities living within the Lundu and Sematan districts.



Mangrove vegetation at Samunsam intergrading with Nipah forests.  
Photo: Jayasilan Mohd-Azlan.



# CRABS

*Jongkar Grinang*

Crabs are a species rich group, with 6,793 species in 1,271 genera and 93 families globally (Ng *et al.*, 2008), many of them commercially valuable. There have been relatively few reports of marine crabs compared to their freshwater cousins, especially from the coastal waters of Sarawak (see Grinang, 2016). Historical records of marine crabs from Sarawak are mainly from Kuching (i.e., Pulau Satang, Pulau Kra, Santubong, Muara Tebas and Buntal), Bintulu (i.e., Kidurung) and Sri Aman (i.e., Lingga) as early between 1842 and 1910 (see Adams & White, 1848, 1849; Targioni Tozzetti, 1877; Nobili, 1900, 1901c, 1903; Leh, 1982). Voucher specimens of historical records have been unreviewed, and therefore, taxonomic status, along with type of locality of many species remain uncertain. After the end of World War II, in December 1948, Michael Wilmer Forbes Tweedie (then the Director of Raffles Museum in Singapore) made a collection from mangrove and nipah habitats in the area of Jalan Satok, Kuching. He recorded 13 species and described a new genus and three new species (Tweedie, 1950). Voucher specimens, including some holotypes, were deposited in the Raffles Museum (presently Lee Kong Chian Natural History Museum, Singapore). Over half a century later, Elizabeth C. Ashton conducted a study of the community ecology of the Sematan mangroves, focusing on invertebrates, amongst which were 31 species of crabs (Ashton *et al.*, 2003). Voucher specimens from the



**Fig. 1.** A sampling station, 2.7 km from the mouth of Sg. Samunsam during low tide.