



*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*





# PROBOSCIS MONKEYS

*Ahmad Fitri Aziz, Lisa Lok Choy Hong and Jayasilan Mohd-Azlan*

Samunsam Wildlife Sanctuary is a locality in Sarawak State that is known to harbour a population of the Proboscis Monkey (*Nasalis larvatus*). The species is unique among primates in showing a red, enlarged, protruding nose (Bennett and Gombek, 1993). Within the subfamily Colobinae, the Proboscis Monkey is categorised into the unique odd-nosed monkey group (Bennett and Gombek, 1993). Furthermore, it is the largest colobine monkey and the sole member from the genus *Nasalis* (Napier and Napier, 1967; Medway, 1977; Wolfheim, 1983). The enormous stomach of the Proboscis Monkey comprises several compartments that facilitates the digestion of cellulose, the leaves, which are the primary diet of the species (Bauchop and Martucci, 1968; Hladik, 1977; Bauchop, 1978; Bennett and Gombek, 1993). It has been reported that the species regurgitates partially digested plants, before chewing and swallowing them again, a process referred to as ‘merycism’ (Matsuda *et al.*, 2011).

The distribution of the Proboscis Monkey in Sarawak is wide and largely fragmented, showing concentrations to the western parts of the State (Salter and MacKenzie, 1985). In Sarawak, a series of state-wide survey have been conducted to estimate the population size of this primate. The first estimation of the species in Sarawak was in 1977 by the Sarawak Forest Department, and showed 6,400 individuals. A subsequent survey (Salter and MacKenzie, 1985) estimated the population to be under 2,000 individuals, while a parallel and near contemporaneous estimate by Bennett *et al.* (1987) reported less than 1,000 individuals. Closer to present, a more comprehensive survey extrapolated the population of the species as 838 individuals (Laman and Aziz, 2019).

Independent researchers have attempted to estimate the population of the Proboscis Monkey at Samunsam (Table 1). In the present survey, the population density of Proboscis Monkey in Samunsam Wildlife Sanctuary was estimated to be at 2.64 individuals/km<sup>2</sup>, consistent with those from previous surveys—Salter and MacKenzie (1985)— 2.2–3.1 inds/km<sup>2</sup>; Bennett and Sebastian (1988)— 2.63–5.93 inds/km<sup>2</sup>; Aziz (2019)— 2.23–4.42 inds/km<sup>2</sup>, with the exception of the study by Tuen and Pandong (2007)— 0.48–1.34 inds/km (based solely on observation of Proboscis Monkey along the river bank).

During the five-day survey, three rivers (Sungei Samunsam, Sungei

## PROBOSCIS MONKEYS

**Table 1:** Population density of the Proboscis Monkey along surveyed rivers at Samunsam Wildlife Sanctuary.

Rivers Surveyed	Length of river surveyed (km)	Maximum number of groups sighted	Maximum number of individuals sighted	Population Density	
				Groups/km <sup>2</sup>	Individuals/km <sup>2</sup>
Sungei Samunsam	11.62	7	64	0.40	3.67
Sungei Bedaun	3.38	-	-	-	-
Sungei Belinsah	1.19	-	-	-	-
<b>Overall</b>	<b>16.19</b>	<b>7</b>	<b>64</b>	<b>0.29</b>	<b>2.64</b>

Bedaun and Sungei Belinsah) were surveyed by boat, which entailed a maximum surveyed distance of 14.9 km, 3.38 km and 1.19 km, respectively. The cumulative distance surveyed for the three rivers was 104.63 km. Proboscis Monkeys were present only along Sungei Samunsam but were not observed in Sungei Bedaun and Sungei Belinsah. The highest density (64 individuals from seven groups) was encountered along a 11.62 km stretch at Sungei Samunsam. The population density of Proboscis Monkeys along Sungei Samunsam was estimated to be 3.67 individuals/km<sup>2</sup> or 0.40 groups/km<sup>2</sup>. The methods of analysis of the population density in this study followed those of Aziz and Laman (2018) and Laman and Aziz (2019). This resulted in the estimated overall population density of Proboscis Monkey in Samunsam Wildlife Sanctuary to be 0.29 groups/km<sup>2</sup> or 2.64 individuals/km<sup>2</sup> (Table 1).

Proboscis Monkeys along Sungei Samunsam was found concentrated around the 3.9 km stretch upriver, and was scattered after 6.1 km from the Samunsam Wildlife Sanctuary river boundary (Fig. 1). None were sighted beyond the 11.6 km mark. The largest group recorded consisted of 24 individuals at 5.5 km of the river survey. Two solitary individuals were recorded at 4.1 km and 9.9 km, respectively. Approximately 51.7% of the groups sighted were recorded in tropical heath-Nipa forest; the balance (3.4%, 38% and 6.9%) were recorded in mangroves, tropical heath and Nipa forests, respectively.

Although the estimation presented here is within the range given in most



**Fig. 1.** Map showing the distribution of Proboscis Monkey groups in Sungei Samunsam.



**Fig. 2.** Close up of a male, showing its enlarged nose, which sometimes exceed 10 cm. Photo: Frances Hii.

previous studies, these data need to be utilized with caution. The differences in terms of time-lag, methodologies and sampling effort should to be taken into consideration when comparing estimation from different studies (Sha *et al.*, 2008). Consecutively, it should not be concluded that the population of Proboscis Monkeys in Samunsam Wildlife Sanctuary has been stable for the last 30 years.

Relative comparisons between these estimations lack consistency in terms of survey effort (Sha *et al.*, 2008; Laman and Aziz, 2019). In addition, the population trends for the species across its range show a decline by over 50% in the last 40

## PROBOSCIS MONKEYS



**Fig. 3.** Proboscis Monkey observing oncoming boat along a strip of mangroves. Photo: Zahran Mansor.



**Fig. 4.** Proboscis Monkey feeding on a tree near a Rhizophora strand. Photo: Zahran Mansor.

years to the year 2008 (Meijaard *et al.*, 2020).

This study recommends establishing more coordinated enforcement, and increasing the frequency of patrols along the main river and borders adjacent to the villages, as signs of encroachment were observed. These include illegal fishing, logging and agriculture plantations activities. It is plausible to suggest that some recreational anglers outside of the protected area boundaries may turn into poachers (Aziz and Laman, 2018). The natural behaviour of Proboscis Monkeys that spend most of its time at the riverbank during dusk and dawn, may increase its vulnerability of being hunted (Bennett, 1987). The core conservation area for the Proboscis Monkey should focus at 8 km inwards of Sungei Samunsam (from the outer boundary).

This project was funded by the Sarawak Forestry Corporation (GL/F07/SAMUNSAM/2019). We are especially thankful to Taha Wahab for his assistance in the project. We also extend our gratitude to the staff of Samunsam Wildlife Sanctuary, namely Khalid Mohamad Zakeria, Mr. Japri and Mr. Shukor for their help. We would also like to thank RIEC, IBEC and the Faculty of Resource Science and Technology, UNIMAS for logistical and administrative support.

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