



# Bukit Durang



HIDDEN JEWEL OF ULU SUAI, SARAWAK

BIODIVERSITY AT A GLANCE

EDITED BY:

Jayasilan Mohd-Azlan and Aida Shafreena Ahmad Puad



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2023

**Bukit Durang**  
**Hidden Jewel of Ulu Suai, Sarawak**  
**Biodiversity at a Glance**

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Sin Yeng.

**Bukit Durang**  
**High Conservation Value Forest**

This book aims to enlighten and educate stakeholders and to present some information on species distribution to the nature enthusiast. This volume draws its material from various scientists' research and experience in this area. The images illustrated on colour plates reveal the potential of this area as an interesting site for naturalists as well as for researchers.

The introductory chapter gave insight into the importance of the High Conservation Value forest and set the scene for this book. The plant component chapters showcased the complex and unique structure of the flora diversity in the Bukit Durang area. The wildlife aspects of this book covered species from an array of taxa that includes both invertebrates and vertebrates (amphibians, fish, birds & mammals). The High Conservation Value forest is also home to several endemic species, as well as species of conservation importance. The social element chapter contributes to the history of Bukit Durang while the final chapter wraps the way forward for biodiversity conservation.

The research in Bukit Durang was made possible by the generosity of Wilmar Plantations Sdn Bhd (formerly known as PPB Oil Palm Sdn Bhd), who provided funding to Universiti Malaysia Sarawak for said research. This project is aimed to assess the selected biotic diversity i.e plant, invertebrate and vertebrate groups.



Orange-bellied Flowerpecker (*Dicacum trigonostigma*).

This common species having a wide distribution have been reported up to Kelabit highlands. In Bukit Durang area, they have been mist-netted and spotted foraging in the understory. This omnivorous species has been reported to feed on seeds of 'Senduduk' *Melastoma malabathricum*, small insects as well as pollen and nectar.

© Photo: Badiozaman Sulaiman

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# Foreword

Sarawak retains some of the richest biodiversity in the world. It is home to many endemic species of conservation importance. Some of these examples can be found in Sarawak's High Conservation Value forest. From its inception, UNIMAS has put biodiversity and environmental conservation at the forefront of its research niche and agenda by setting up the Faculty of Resource Science and Technology (FRST) and the Institute of Biodiversity and Environmental Conservation (IBEC). With the establishment of these two hubs of knowledge, UNIMAS' commitment increased twofold: firstly, it mapped out the necessary measures to enhance the sustainable management of Sarawak's natural resources and secondly, being in Sarawak, with its vast biodiversity and multi-ethnic population, UNIMAS academics are also continuously collaborating with the local communities, government and non-government agencies as well as national and international researchers to study the conservation of tropical biodiversity and the global environment.

In the pursuit of research excellence, we are challenged by the need to identify

strategic partners. We continuously encourage our academics to explore external sources, especially in engaging private agencies to contribute to the various researches conducted at the University. One such effort has resulted in the signing of an MoA with WILMAR in 2014 with a project titled **"Identification and monitoring of Endangered, Rare and Threatened Species and their habitats in Wilmar's plantations in Sarawak"**. The synergy between WILMAR and UNIMAS is significant; not only that both agencies benefit through the conservation of biodiversity and environment, but it also highlights our rich expertise and skills in research, and at the same time motivates our young research minds who come to UNIMAS to learn about Biodiversity, in order to enhance their experience through industrial training at relevant agencies.

In line with the rapid developments in the oil palm industry and the increasing awareness in the need to conserve resources especially in Sarawak, this work is indeed substantial and considerably impactful in the current context of Malaysia's rich biodiversity and natural resources. The scope of work in this collaboration is an important milestone not



UNIMAS studies shows that many species of conservation importance are thriving in Bukit Durang Conservation Area.  
© Photo: Wilmar

only for UNIMAS-industry linkage but also significant for biodiversity conservation and sustainable development in Sarawak.

Given that this book represents but a small sample of the amount of work done by our academics in the realm of biodiversity. I would like to commend the efforts of Wilmar Plantations Sdn Bhd (formerly known as PPB Oil Palms Sdn Bhd) who supported us in collecting information on the biodiversity in some of these areas including Bukit Durang, which forms the material for the book. The work is also expected to be important for stakeholders, for better understanding and appreciation of local biodiversity.

It is my hope that this book will contribute and encourage more people to work in this area, publish more journal articles of this kind and more funders to support in this field. I anticipate that this volume will be useful to stakeholders and for the advancement of the best management practices in general.



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

# Message from Wilmar



Wilmar International Limited (Wilmar) was amongst the early adopters of the High Conservation Value (HCV) approach in the oil palm sector, and we carried out HCV assessments of our own operations from as early as 2007. Since then, our approach to conservation has expanded to include High Carbon Stock (HCS) areas, as enshrined in our No Deforestation, No Peat, No Exploitation (NDPE) Policy. Our conservation areas are sanctuaries for many threatened and endangered species, which we strive to protect.

The Bukit Durang Conservation Area (BDCA) which is located in our Saremas Group of estates, adjacent to Niah, is an important conservation site in our Sarawak operation. Since 2014, our research collaboration with the Universiti Malaysia Sarawak (UNIMAS) has provided us the necessary insights into the biodiversity of the area. The findings from the systemic monitoring done by the UNIMAS researchers alongside our team on the ground are discussed in this book. The findings from this book provide

some scientific evidence that the BDCA, although fragmented and surrounded by palm oil plantations, is a hidden biodiversity jewel.

While we remain guided by our biodiversity commitments, we are cognizant that we are limited by our knowledge and expertise in conservation efforts. Through collaborations with various strategic partners such as research institutes and universities like UNIMAS, we have been able to leverage scientific knowledge, and build capacity to help us strengthen the management of our conservation areas. Further cooperation with the local communities also helps us to ensure the survival of our conservation areas. For example, our partnership with the local longhouse communities in Saremas has enhanced the management of our conservation area. We recognize that local communities play an important role in the protection of our conservation areas and supporting conservation efforts on the ground.



Insectivore bird species plays an important role in regulating pest insects in oil palm plantations.  
© Photo: Wilmar

I would like to extend my heartfelt gratitude to UNIMAS for collaborating with us to gather the findings on the BDCA and making this book the first publication by a Malaysian university to document the biodiversity in a Wilmar conservation area. We believe that real and lasting change on the ground can only be achieved through

a multi-stakeholder effort, and we look forward to continued collaboration and partnership in the years ahead.



**Jeremy Goon**  
Chief Sustainability Officer  
Wilmar International Limited

# Preface

JAYASILAN MOHD-AZLAN  
& AIDA SHAFREENA AHMAD PUAD

Sarawak is located in one of the world's unique biodiversity regions, it boasts a variety of habitat types, including a mix of dipterocarp forests with distinctive inhabitants. These habitats are often transformed into agriculture including oil palm plantations. However, the expansion of plantations to meet the global demand for vegetable oils should not be at the expense of our biodiversity and rural communities. It is important that oil palm growers play a significant role in sustainable development by being environmentally responsible and promote the conservation of natural resources and biodiversity. Therefore, biodiversity is one of the top agenda for Sarawak, whereby the state is determined to conserve and protect its biodiversity. This project sits in line with the University's niche area of biodiversity and environmental conservation and Sustainable Community Transformation.

As more global companies are being committed to 100% RSPO-certified palm oil, growers in Malaysia particularly in Sarawak need to be proactive to

produce sustainable oil palm which in turn can result in significant returns and be economically transformative for this industry. As such, High Conservation Value (HCV) areas within oil palm plantation concessions should not be regarded as low value. In line with the rapid developments in the oil palm industry and the increasing awareness of the need to conserve resources, especially in Sarawak, biodiversity in remnant forests such as Bukit Durang should not be ignored and is indeed substantial and considerably impactful in the current context of Malaysia's rich biodiversity and natural resources.

We are especially thankful to the Wilmar team comprising Mr Jeremy Goon, Mr Simon Siburat, Mr Gurcharan Singh, Mr Kiaw Che Weng, Mr Asrif bin Mahmud, Mr Chang Sip Woon, Mdm Perpetua George, Ms Chin Sing Yun and Ms Ginny Ng for their support in the project. We also extend our gratitude to the staff of Wilmar Plantations Sdn. Bhd, namely, Mr James Wong, Mr Edward Enggu Anak Setu, Mr Joanes Anak John, the late Mr Golan Anak



▲  
Crested Fireback. © Photo: Jayasilan Mohd-Azlan

Mat, Ms Marcie Elene Marcus Jopony and Mr John Alit. The following colleagues helped with the reviews of manuscripts: Professor Cheksum Supiah Tawan, Professor Indraneil Das, Associate Professor Dr Ruhana binti Hassan, Associate Professor Dr Wong Sin Yeng, Associate Professor Dr Wong Swee Kiong, Dr Badrul Azhar Md. Sharif, Dr Jayaraj Vijaya Kumaran, Dr Mohamad Fizl Sidq bin Ramji, Mr Muhamad Ikhwan bin Idris and Ms Lisa Lok Choy Hong. We would also like to thank Research, Innovation and Enterprise Centre, Institute of Biodiversity and Environmental Conservation and the Faculty of Resource Science and Technology, UNIMAS, for logistical and administrative support. We owe a special debt of gratitude to Mr Badiozaman Sulaiman for providing images of species (Birds & Insects) that we have used in this work. Finally, we thank Wilmar for

the page layout and UNIMAS Publisher for arranging its publication. We would also like to thank Forest Department Sarawak and Sarawak Forestry Forestry Corporation for their research permits.

This book provides pictorial information on the selected species' distribution and richness in the Bukit Durang HCV area. The faunal studies include insects, fishes, amphibians, birds, bats, rodents and some larger mammals. This book intends to share the output of the research with local stakeholders, management authorities and the general public. It is hoped that nature enthusiasts and those who are interested in tropical biodiversity near this region will find this book beneficial. Finally, we hope that this book will contribute to increasing knowledge and awareness of our national pride and heritage.

**Bukit Durang forest fragment (994.6 Ha) is the largest forest patch near Saremas. It is a narrow forest (700 m wide) strip (14 km long) of steep forest (slope = 35°) with difficult access.**

© Photo: Wilmar

**BUKIT DURANG  
CONSERVATION AREA  
994.59 Ha**





# Introduction

JAYASILAN MOHD-AZLAN, CHIN SING YUN, JAMES WONG, LISA LOK CHOY HONG

The escalation of land use conversion to agriculture is one of the key drivers of the decline in critical ecosystem function and biodiversity. Vast areas of forest in the tropics have been cleared and planted for various agricultural crops including oil palm, which is one of the most important crops in many tropical countries especially Indonesia and Malaysia. The establishment of oil palm plantations is an incredibly intensive process, involving converting native vegetation, usually degraded land or logged over forest to a plantation, often leaving behind fragmented and isolated rainforest in an oil palm matrix.

**Sarawak is the last frontier in oil palm expansion in Malaysia, as Sabah and Peninsula Malaysia have been saturated with oil palm plantations. Sarawak currently (year 2021) has 1.58 million hectares of oil palm, representing 26.9% of the total oil palm plantation area in Malaysia (5.9 Million ha).** In northern Sarawak, the region of Miri has extensive oil palm plantations representing ~25% of the total area under oil palm in Sarawak. The palm oil industry is the state's third-largest foreign exchange earner after petroleum and liquefied natural gas, hence land is under tremendous pressure for palm development, especially on the NCR land.

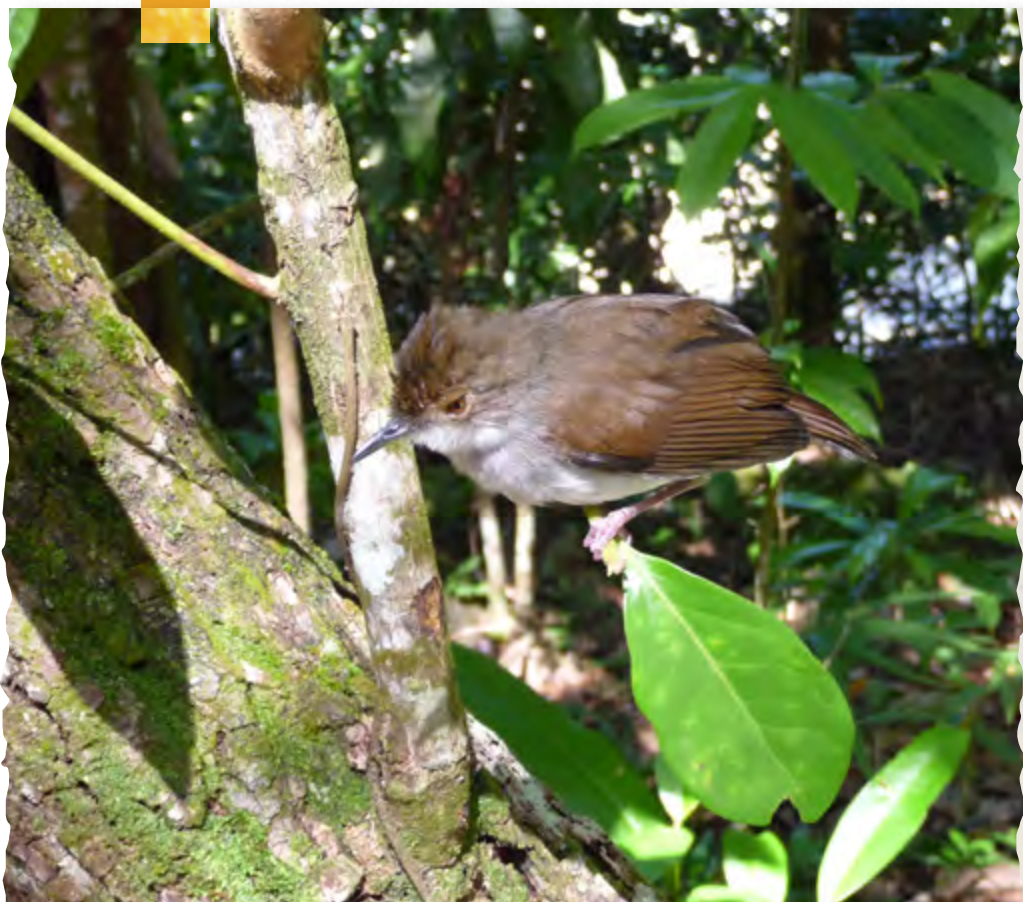
A substantial proportion of Sarawak's biodiversity is endemic to Borneo. However, how the expansion of oil palm estates across the landscape has affected these taxa is unknown. In recent years, best management practices for oil palm plantations on conservation emerged through certification standards such as the Roundtable on Sustainable Palm Oil (RSPO) and Malaysian Sustainable Palm Oil (MSPO) Certification Scheme to ensure sustainable oil palm and biodiversity-friendly plantations.

**Many large oil palm estates preserve and protect forest fragments and define them as high conservation**

**value (HCV) areas through the HCV assessment. Despite their small size and random distributions, these HCV habitat fragments may secure sufficient biodiversity to maintain essential ecosystem functions and services within the agricultural landscape.** The residual HCV habitat fragments in maintaining remnant biodiversity in an intensive agricultural area are essential for improving conservation outcomes in oil palm plantations. In view of this, a series of scientific studies have been carried out

in the HCV area of Wilmar Plantations Sdn Bhd, a subsidiary of Wilmar International Limited, to understand the richness of Sarawak's flora and fauna that lies within. These HCV areas are collectively called Bukit Durang Conservation Area (BDCA). There are limited long-term studies carried out in the HCVs within the oil palm landscape and the result of the studies in Bukit Durang were gathered from 2016 - 2019 which provided details on the biodiversity of conservation areas in Wilmar's estates.

Bukit Durang provides important ecosystem function in an oil palm dominated landscape.



Bukit Durang provides critical habitat and resources for many bird species including forest dependent species.

Bukit Durang is located within the estates of Saremas 2 and Segarmas, also commonly known as Saremas, of Wilmar Plantations. This area is in Ulu Suai which is within the administrative boundary of Sawai Land District, Miri Division, Sarawak. The concessions are bordered by various types of land use including oil palm plantations, smallholder oil palm blocks, secondary forests, orchards and teak plantations. This area lies approximately 149 km from Miri

town. BDCA is a fragmented forest with an area of 994.60 ha. It was developed in the 1980s and HCV are mainly the remnant of the logged-over forest.

This secondary forest is dominated by species from the Family Euphorbiaceae, Leguminosae, Dipterocarpaceae and Moraceae. This includes some essential economic trees such as *Eusideroxylon zwageri*, *Dipterocarpus* spp., *Shorea* spp.,



Wilmar Plantations complex is located approximately 149 km from Miri, the largest city in the northern region of Sarawak.



Bukit Durang Conservation Area.



*Dryobalanops* spp., *Artocarpus* spp., and *Anisoptera* spp. This thin strip of forest patch also provides crucial habitats to various species of conservation importance. Samplings for mammals, birds, amphibians, fish, insects and plants were carried out from 2014 to 2015.

The studies recorded 39 species of small mammals, 58 species of birds, 24 species of amphibians, 41 species of fish, crayfish and prawns. The presence of various species of conservation importance in the area shows that Bukit Durang is a critical biodiversity refuge that may improve species diversity in an oil palm dominated landscape for conservation and maintenance of ecosystem function.

Bukit Durang is the only remaining forest landscape within the Ulu Suai district surrounded by oil palm plantations. **Therefore, the synergy between empirical research and plantation management should be regarded as a cornerstone for biodiversity conservation in the Wilmar Plantations area in Sarawak.** This modest compilation provides information on the flora and fauna in the Bukit Durang area. This book consists of the findings from eight projects in order to shed some light on the relevant details for biodiversity management in the HCV area of Bukit Durang and provide a biodiversity snapshot of Bukit Durang Conservation Area.

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This secondary forest of Bukit Durang is dominated by species from the Family Euphorbiaceae, Leguminosae, Dipterocarpaceae and Moraceae. This thin strip of forest patch provides crucial habitats to various species of conservation importance.

The studies recorded **39 species of small mammals, 58 species of birds, 24 species of amphibians, 41 species of fish, crayfish and prawns.** The presence of various species of conservation importance in the area shows that Bukit Durang is a critical biodiversity refuge that may improve species diversity in an oil palm dominated landscape for conservation and maintenance of ecosystem function.



▲ Bukit Durang harbours many ecological and economically important flora and fauna.  
© Photo: Wilmar

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**Bukit Durang Conservation Area provides opportunities for research and education for better understanding the ecology and to create awareness among stakeholders in Sarawak.**

© Photo: Wilmar

## Author Information



**Jayasilan Mohd-Azlan** received his PhD from Charles Darwin University for his work on bird community ecology. He is currently Director of Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak. His main research interest centred around the interactions between wildlife and their habitats in relation to coexisting populations and their conservation.



**Aida Shafreena Ahmad Puad** received her PhD degree from Western Michigan University. She is currently with the Faculty of Resource Science and Technology, University Malaysia Sarawak. Her passion is in plant systematics and focusing on taxonomy and molecular phylogenetic studies of selected plant groups. She is also affiliated with the Faculty of Agriculture & Applied Sciences, i-CATS University College.

