Life from Headwaters to the Coast

NIAH

Biodiversity That Survived Time

Edited by

Jayasilan Mohd-Azlan
Arianti Atong
Abang Arabi bin Abang Aimran
Indraneil Das

UNIMAS
UNIVERSITI MALAYSIA SARAWAK

SARAWAK
FORESTRY
CORPORATION
PARKS & WILD LIFE


NIAH
Biodiversity That Survived Time

Life from Headwaters to the Coast

NIAH

Biodiversity That Survived Time

Edited by

Jayasilan Mohd-Azlan
Arianti Atong, Abang Arabi bin Abang Aimran
and Indraneil Das

UNIMAS
UNIVERSITI MALAYSIA SARAWAK
UNIMAS PUBLISHER

in association with

SARAWAK FORESTRY CORPORATION
PARKS & WILD LIFE

Natural History Publications (Borneo)

2025

Published by

UNIMAS Publisher
Universiti Malaysia Sarawak
94300 Kota Samarahan
Sarawak, Malaysia.
Website: www.unimas.my

in association with

Sarawak Forestry Corporation
Lot 218, KCLD, Jalan Tapang
Kota Sentosa, 93250
Kuching, Sarawak, Malaysia
Website: www.sarawakforestry.com

Natural History Publications (Borneo) Sdn. Bhd. (216807-X)
A913, 9th Floor, Wisma Merdeka Phase 1
P.O. Box 15566, 88864 Kota Kinabalu,
Sabah, Malaysia.
Website: www.nhpborneo.com

Life from Headwaters to the Coast: Niah. Biodiversity that Survived Time
Edited by Jayasilan Mohd-Azlan, Arianti Atong, Abang Arabi bin Abang Aimran and Indraneil Das
Copy Editor: Genevieve V.A. Gee

ISBN 978-629-7783-09-3
First published 2025.

Front cover: Oriental Dwarf Kingfisher (*Ceyx rufidorsa*) with a crab (*Geosesarma* sp.). Photo: Chien C. Lee.
Half title: View of the tower karst features of Niah. Photo: Chien C. Lee.
Frontispiece: Niah Cave Gecko (*Cyrtodactylus cavernicolus*). Photo: Chien C. Lee.

Printed in Taiwan

Cataloguing-in-Publication Data

Perpustakaan Negara Malaysia

A catalogue record for this book is available from the National Library of Malaysia.

ISBN 978-629-7783-09-3

LARGE MAMMALS

Jayasilan Mohd-Azlan, Jeffrine J. Rovie-Ryan, Sally Soo Kaicheen **and** *Muhd Amsyari Morni*

Sarawak is well known for its vast network of protected areas, encompassing 67 totally protected areas (National Parks, Nature Reserves and Wild Life Sanctuaries) covering approximately 874,523 hectares as of 2025, making it one of the states with the highest number of such areas in Malaysia. These protected areas are strategically distributed across the State, providing pristine habitats for a diverse array of species, including many of conservation importance. Among these, large mammals stand out as key ecological components and cultural icons. Some of the finest examples of Bornean large mammals (e.g., carnivores and primates) are found within Sarawak's protected areas, including Niah National Park (NNP).

Large mammals fulfil critical roles within ecosystems, contributing to ecological balance, supporting biodiversity, and delivering valuable economic and cultural benefits. Their influence extends across multiple dimensions, from maintaining ecosystem health by regulating prey populations and facilitating seed dispersal to sustaining human livelihoods through ecotourism and traditional practices. Some species, as keystone species, play a vital role in shaping habitat dynamics, promoting genetic diversity, and enhancing resilience to environmental changes, making their conservation essential for the long-term stability of both natural and human systems.

Fig. 1. *Rusa unicolor.*

Niah National Park's excavations reveal diverse mammalian remains, including elephants, tigers and primates, offering insights into prehistoric biodiversity and human subsistence. Some of these species are extinct in Borneo (including the Tiger) while others are locally extinct in NNP (such as the Orangutan)

Fig. 2. *Trachypithecus cristatus.* Photo: Chien C. Lee.

Fig. 3. *Paradoxurus hermaphroditus.* Photo: Chien C. Lee.

Fig. 4. *Urva brachyura.* Photo: Chien C. Lee.

and Sarawak (including the Elephant). The caves provide rare evidence of continuous human presence since the late Pleistocene, supporting archaeological studies. A UNESCO World Heritage Site, the Park conserves key wildlife and is renowned for its edible bird's nests, adding cultural and ecological significance.

The diverse habitats of NNP, encompassing karst landscapes, riverine forests, and mixed dipterocarp forests, provide a variety of environments that support the presence and survival of medium to large mammals. These unique habitats offer exceptional opportunities to study and appreciate the ecological roles and significance of these species. However, the elusive nature of many large mammals in tropical rainforests has posed challenges to tourist to spot some of these species in the wild, especially during the day.

To address this, infrared-sensored camera traps have been used for documenting the occurrence and their distribution in NNP. This chapter presents the findings on the distribution and richness of medium to large mammals in NNP, based on data collected using camera traps. The study spans three sampling periods: October 2022 to January 2023, December 2023 to May 2024, and September 2024 to January 2025. Camera traps were

strategically placed near ground level along animal trails in mixed dipterocarp forests, riverine forests, and near karst environments to maximize detection and coverage. The results presented in this chapter provide crucial insights into the diversity and habitat use of mammals in NNP, contributing to ongoing conservation efforts and our understanding of these remarkable ecosystems. This has resulted in 4,668 camera trap days, capturing 18 species of medium-sized to large terrestrial mammals. Additionally, the Sunda Colugo (*Galeopterus variegatus*) were recorded during transect walks but predictably not from camera traps. In general, the large mammal fauna is typical of a fragmented dipterocarp forest in Borneo (Checklist). The species distribution appears to be dominated by species adapted to edge habitats, primarily represented by species such as Mousedeer (*Tragulus* spp.), Porcupines (*Hystrix* spp.), and the Long-tailed Macaque (*M. fascicularis*). The Long-tailed Macaque is also the most frequently recorded species, followed by the Thick-spined Porcupine (*Hystrix crassispinis*), a Bornean endemic. As expected, the Bornean Bearded Pig (*Sus barbatus*) was not recorded, likely due to the African Swine Fever outbreak that spread through Sarawak, possibly from Sabah, during the sampling period.

Fig. 5. *Manis javanica.* Photo: Chien C. Lee.

The species list is primarily composed of carnivores, with a total of seven species. This study also documented two individuals of the rare and elusive Flat-headed Cat (*Prionailurus planiceps*) in a single photograph. The Flat-headed Cat is difficult to detect due to its elusive and nocturnal nature, as it primarily hunts at night and actively avoids human presence. Its low population density, coupled with its preference for dense wetlands, mangroves and swamp forests, makes sightings extremely rare. Almost half of the medium to large mammals recorded in Niah National Park are considered Threatened (i.e., Vulnerable, Endangered or Critically Endangered) in the IUCN (2025) Red List, including the Critically Endangered Sunda Pangolin (*Manis javanica*). Two species are listed as Totally Protected, while another 12 species are considered Protected under the Sarawak Wild Life Protection Ordinance, 1998 (SWLPO, 1998). However, neither the Sambar Deer nor both the Mousedeer are listed in the Schedules of the SWLPO 1998, and therefore do not receive any protection outside the reserve if they were to be hunted for self-consumption by the local community.

Fig. 6. *Hystrix brachyura*.

Checklist

List of mid- to large-sized mammals with total independent photos according to surveyed year, their protection and conservation status in Sarawak and IUCN Red List 2025. Also included is the Sunda Colugo, a gliding mammal not captured on camera traps, has been recorded along forest trails. Abbreviations: SWLPO — Sarawak Wild Life Protection Ordinance, 1998; IUCN — International Union for Conservation of Nature's Red List, 2025; P — Protected, TP — Totally Protected, LC — Least Concerned, NT — Near Threatened VU — Vulnerable, EN — Endangered, CR — Critically Endangered.

Scientific Name	Common Name	Independent Events	SWLPO	IUCN
Porcupines				
Trichys fasciculata	Long-tailed Porcupine	21	-	LC
Hystrix brachyura	Common Porcupine	31	P	LC
Hystrix crassispinis	Thick-spined Porcupine	231	P	LC
Macaques & Langurs				
Macaca fascicularis	Long-tailed Macaque	238	P	EN
Macaca nemestrina	Pig-tailed Macaque	44	P	EN
Trachypithecus cristatus	Silvered Leaf Langur	1	TP	VU
Civets & Mongoose				
Viverra tangalunga	Malay Civet	16	P	LC
Arctictis binturong	Binturong	11	P	VU
Paradoxurus hermaphroditus	Common Palm Civet	2	P	LC
Urva brachyura	Short-tailed Mongoose	2	P	NT
Urva semitorquata	Collared Mongoose	1	P	NT
Otter				
Lutrogale perspicillata	Smooth-coated Otter	1	P	VU
Aonyx cinereus	Asian small-clawed otter	1	P	VU
Cat				
Prionailurus planiceps	Flat-headed Cat	2	TP	EN
Mousedeer & Deer				
Tragulus napu	Greater Mousedeer	20	-	LC
Tragulus kanchil	Lesser Mousedeer	3	-	LC
Rusa unicolor	Sambar Deer	31	-	VU
Pangolin				
Manis javanica	Sunda Pangolin	15	P	CR
Colugo or Flying Lemur				
Galeopterus variegatus	Sunda Colugo	NA	P	LC

CONTRIBUTOR AFFILIATIONS

Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak
Indraneil Das, Rory Dow, Jongkar Grinang, Hans Hazebroek, Sally Soo Kaicheen, Chien C. Lee, Jayasilan Mohd-Azlan, Muhd Amsyari Morni, Izneil Nashriq, Jeffrine J. Rovie-Ryan and Heira Vanessa.

Faculty of Resource Science and Technology, Universiti Malaysia Sarawak
Mohamad Hasnul Bolhassan, Meekiong Kalu, Mohd Effendi Wasli, Siti Nurlydia Sazali, Ratnawati Hazali, Chai Chia Yee, Nurfarida Anum Zainaddin, Tan Wei Lim, Chow Jia Yii, Marlina Bianah Soui, Chum Yit Seng, Nur Asya Aliah Mohd Baki, Nur Asha Irdina Mohd Najib, Ma Ming Hui and Mohamad Jalani Mortada, Jie Ying Lee, Mohd Effendi Marzuki, Camilia Yen Ak Richard, Mohd Zacaery Khalik, Nur Iylia Maisarah Baharom, Muhammad Danish Haqeem Mohd Khairi, Asfa Hanis Mohamad Azmi, Muhammad Amin Iman Azmi, Victor Lee Sien, Mohamad Fizl Sidq, Faisal Ali Anuar Ali Khan and Ramlah Zainudin.

Sarawak Forestry Corporation
Haidar Ali, Abang Arabi Abang Aimran, Arianti Atong, Shirley Lyn Michael Gias, Januarie Kulis, Nadia Ezzana Hashim and Taha bin Wahab.

Sarawak Museum
Mohammad Sherman Sauffi and Wong Siew Fui.

Swinburne University
Dominique Dodge-Wan.

Navin Officer Heritage Consultants and School of Biological, Earth and Environmental Sciences, University of New South Wales
Darren Curnoe.

Universiti Malaya
Lim Tze Tshen.

School of Archaeology & Anthropology, Australian National University
Philip Piper.

Institute for Tropical Biodiversity and Conservation, Universiti Malaysia Sabah
Jaya Seelan Sathiya Seelan.

McDonald Institute for Archaeological Research, University of Cambridge
Graeme Barker.

Griffith Centre for Social and Cultural Research, Griffith University
Paul S.C. Taçon.

University of the Ryukyus
Ichiro Miyagi and Takako Toma.

Kanazawa University
Takao Okazawa.

School of Geography and Ocean Science, Nanjing University, Nanjing, China
Xuefeng Sun

Private
S.G. Butler, Earl of Cranbrook, Lim Chan Koon, Katherine Pierce and Graham T. Reels.

ABOUT THE SERIES

'Life from Headwaters to the Coast' is a series of illustrated guides to the biological diversity of the State of Sarawak, published by the Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak (UNIMAS).

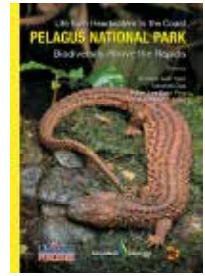
Starting in 2015 with Tanjung Datu National Park, with support from the Niche Research Grant Scheme of the Ministry of Higher Education, Government of Malaysia, the production of subsequent volumes in the series have been funded by governmental and non-governmental agencies.

The volumes cover geology, flora and fauna as well as sociological aspects of areas covered and are written by specialists, including staff, students and associates of the Institute, the Faculty of Resource Science and Technology in UNIMAS and other experts when relevant, with naturalists, students, conservationists, administrators and decision-makers in mind.

Volume 1
Tanjung Datu
National Park (2015)

Volume 2
Gunung
Penrissen (2017)

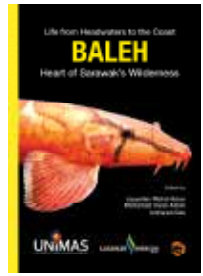
Volume 3
Gunung
Santubong (2019)



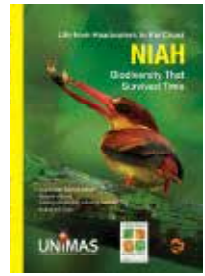
Volume 4
Pelagus
National Park (2021)

Volume 5
Samunsam
Wildlife Sanctuary
(2022)

Volume 6
Bako
National Park (2023)



Volume 7
Baleh (2024)



Volume 8
Niah (2025)