

## EDITORIAL: NEW PERSPECTIVES AND DISCOVERIES FROM THE PANTI FOREST RESERVE SCIENTIFIC EXPEDITION

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### INTRODUCTION

This issue of *The Malaysian Forester* is a collection of scientific papers written by experts in the fields of forest management, biodiversity, and the environment. These papers attempt to showcase the treasures, richness of natural resources, and their potential as those found in the Panti Forest Reserve, Johor. These works are from the second expedition in Panti Forest Reserve, with the first being done in 2006, more than 18 years ago. Therefore, all findings from the most recent expedition constitute important, and very useful information for the management and conservation of Panti Forest Reserve. However, this collection of papers can only represent a small percentage of the actual natural resource treasures found in the area. The fieldwork period for the expedition was limited to five days; therefore, these findings should be considered preliminary.

Panti Forest Reserve is one of several protected forests in the state of Johor, which is well-known for its forest treasures. This forest was gazetted as a Permanent Forest Reserve through Gazette No. 727 on September 15, 1949. In terms of its location, it is the largest permanent forest reserve in southeastern Peninsular Malaysia. The extent of this area is certainly unable to support the full range of ecosystems found in the state of Johor; however, it does encompass lowland dipterocarp forests, riverine forests, and coastal hill forests. With the preservation of these ecosystems, a number of plant and animal species that live within them will be conserved for the purpose of biodiversity conservation in the state of Johor specifically, and our country generally.

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### **PANTI FOREST RESERVE SCIENTIFIC EXPEDITION 2022**

The Forestry Department of Peninsular Malaysia and the Johor State Forestry Department, in collaboration with Universiti Tun Hussein Onn Malaysia (UTHM) held a Scientific Expedition to Panti Forest Reserve from the 21st to the 25th of August 2022. More than 100 participants are involved in this expedition, consisting of officers from the Forestry Department of Peninsular Malaysia, the Johor State Forestry Department, the Department of Wildlife and National Parks (DWNP), as well as other State Forestry Departments. Other research and organization that are involved includes Universiti Teknologi Malaysia (UTM), Universiti Malaysia Kelantan (UMK), Universiti Malaysia Terengganu (UMT), University of Nottingham, Universiti Kebangsaan Malaysia (UKM), Forest Research Institute of Malaysia (FRIM), Minerals and Geoscience Department (JMG), Nature Sustainable Ecosystem Society (NEST), Malaysian Agricultural Research and Development Institute (MARDI), Universiti Malaya (UM), Universiti Putra Malaysia (UPM), Universiti Teknologi MARA (UiTM), Department of Chemistry, ALS Malaysia, EcoExplorers Malaysia and Malaysian Nature Society (MNS).

### **PANTI FOREST RESERVE SCIENTIFIC EXPEDITION SEMINAR**

More than nine months after the expedition concluded, the findings were discussed together in a seminar. From the 9<sup>th</sup> to the 11<sup>th</sup> of May 2023, more than 126 researchers from local universities and research institutes, as well as a number of participants from the Forestry Department of Peninsular Malaysia, the Johor State Forestry Department, other State Forestry Departments, and individuals representing all stakeholders, attended the aforementioned seminar in Johor Bahru. At the seminar, a total of 56 papers were presented and discussed. This Scientific Expedition Seminar was officiated by K. Raven Kumar, the Chairman of the Johor State Tourism, Environment, Heritage and Culture Committee, as the official representative of Chief Minister of Johor on 11<sup>th</sup> May 2023. Photographic output of the findings are now published in a coffee table book titled Biodiversity of Panti Forest Reserve: Hidden Treasure.

### **SPECIAL ISSUE IN THE MALAYSIAN FORESTER**

A total of 19 papers have been included in this volume of The Malaysian Forester. These papers represent a portion of the findings during the Panti Forest Reserve Scientific Expedition and were presented at the Seminar in Johor Bahru on the 9<sup>th</sup> to 11<sup>th</sup> May 2023. This part showcases the richness of fauna and flora found in the forest reserve, as well as the recommendations in forest management.

Within the theme of forest management, Ts. Dr. Nor Hanisah Mohd Hashim et al. analysed stakeholder perspectives to guide sustainable planning, identifying recreational tourism and water services as highly valued in Panti Forest Reserve. Dr. Loo Yen Yi et al. then highlights an innovative approach to wildlife conservation, using sound recorders and deep learning to monitor the forest. This method proved

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highly effective for detecting elephants, a key species in local human-wildlife conflict, while also revealing the reserve's rich avian diversity.

A botanical survey led by Professor Dr. Rusea Go and her team documented significant plant diversity. Their work recorded 27 species of orchids, including two *Vanilla* species, alongside 59 other species from 20 plant families identified as having potential medicinal properties. The findings were notable for including *Barringtonia corneri*, a species endemic to Peninsular Malaysia. The team also reported the rediscovery of *Magnolia singaporensis*, a Data Deficient species previously known only from a single, doubtful collection made 94 years ago. Furthermore, the expedition also established new state records for Johor with the findings of two rare species, *Actinodaphne malaccensis* and *Polyspora penangensis*, which are endemic to Peninsular Malaysia and Singapore. To add on this, Tan Ai Lee et al. also did a study documenting 106 species of medicinal plants. Crucially, the research confirmed the presence of nearly half the plant species utilized by the local Orang Kanaq community. The expedition's work also extended into the laboratory, providing scientific validation for traditional knowledge. Ts. Dr. Siti Fatimah Sabran and her team reported a study on five specific plants used by local communities for post-partum care, such as *Ampelocissus ascendiflora* and *Cinnamomum parthenoxylon*. The study confirmed they possess distinct chemical profiles and significant antioxidant properties, providing scientific basis behind their ethnomedicinal use.

The botanical value of the reserve was further demonstrated by a preliminary survey of its seed plants by Dr. Ahmad Fitri Zohari et al. which produced a remarkable checklist of 466 taxa. This inventory is particularly noteworthy for its inclusion of 16 taxa endemic to Peninsular Malaysia. Among these are species of exceptional conservation importance, such as the hyper-endemic *Dillenia albiflos*, which is known only from Johor, and *Madhuca tomentosa*, previously recorded only in Pahang and Johor. Furthermore, the expedition established four new species records for the state and confirmed the presence of the rare *Alphonsea johorensis*. The survey of ferns and lycophytes by Assoc. Prof. Dr. Haja Maideen et al. was also highly productive, yielding a checklist of 87 species and varieties from just a few days of sampling. Importantly, this collection includes two endemic and several rare species. Even the study of less-visible organisms yielded major results. A survey of epiphyllous liverworts by Elizabeth Pesiu et al. identified 35 species, with this single brief expedition adding an incredible 18 new species records to the official flora of Johor.

Complementing the remarkable botanical discoveries, the survey of the reserve's fauna yielded equally significant results. For example, the first-ever arachnid survey in the area was done by Irham Razak et al. The study established a baseline of 46 species and, most importantly, resulted in the first country record for the spider *Indosmodicinus bengalensis*, a discovery that immediately elevates the conservation importance of the Panti Forest Reserve. The focus on invertebrates continued with a study on pygmy grasshoppers, a group previously under-researched in southern Peninsular Malaysia. This effort by Amira Aqilah et al. produced the first

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preliminary checklist for the Panti Forest Reserve, successfully documenting 14 species and providing a crucial baseline for a little-known insect family. Dr. Noorhidayah Mamat et al. did a study of dragonflies and damselflies. Her team's survey yielded a checklist of 34 species and, most importantly, expanded the known fauna of Johor with three new species records.

Moving from invertebrates to vertebrates, a rapid assessment by the Malaysian Nature Society, Johor Branch, yielded impressive numbers across several groups. The team recorded 71 species of butterflies, 131 species of birds, and an initial list of eight reptiles and amphibians. The bird survey was particularly significant, accounting for 40% of all species ever known from the reserve and confirming the presence of six globally threatened species, highlighting the area's role as a critical avian habitat. Complementing the broad-scale assessments, a more focused study was led by Prof. Dr. Mohamed Zakaria et al., utilizing mist-netting and direct observation along specific trails. This detailed work documented 31 bird species, providing a valuable, close-up snapshot of the avifauna inhabiting the forest understory, including a high diversity of woodpeckers and bulbuls. Further strengthening the case for conservation, another avian survey by the Nature Sustainable Ecosystem Society (NEST) identified 88 species. This survey highlighted the presence of significant near-threatened species such as the Great Argus (*Argusianus argus*) and the Blue-rumped Parrot (*Psittinus cyanurus*). Additionally, it contributed two new species records for the reserve, the Sunda Pygmy Woodpecker and the Rock Pigeon, further enriching the area's official avian checklist.

The health of a forest is often reflected in its rivers and streams, and the ichthyofauna survey proved Panti's to be exceptional. This ichthyofauna survey was led by Assoc. Prof. Dr. Amirrudin Ahmad and his team. This single expedition dramatically expanded the known fish diversity of the reserve, adding 31 new species for a new total of 60. Among these were species of immense conservation importance, including the Endangered *Barbodes dunckeri* and the Critically Endangered *Clarias batu*, the latter being found on the mainland for the very first time. A deeper statistical analysis of the fish communities done by the same team revealed a fascinating story. While individual streams showed moderate diversity, the study found very low species overlap between them. This indicates that each waterway in the Panti Forest Reserve is a unique habitat supporting its own distinct fish assemblage, and that the area's true, high biodiversity lies in the sum of all these different parts. This finding powerfully argues for the conservation of the entire watershed, not just isolated streams.

Moving from the aquatic to the terrestrial realm, the survey of the forest's mammals also yielded exciting discoveries. A nocturnal study by Dr. Jayaraj et al. not only confirmed the presence of iconic species like the Sunda Slow Loris but also added three new mammal records to the reserve's inventory, directly contributing valuable information for both conservation and the potential development of wildlife-focused ecotourism. The survey of large mammals also yielded a truly groundbreaking result: a photographic record of the spotted morph of the leopard

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(*Panthera pardus*) in the forest reserve. This finding confirms the presence of this rare form at the southern tip of the Central Forest Spine and establishes Pantı as the southernmost known location for the leopard. Finally, a team led by Assoc. Prof. Dr. Abdul Latiff validated the presence of six primate species, with every single one is classified as threatened. This includes the Critically Endangered Banded Langur (*Presbytis femoralis*), the Vulnerable Greater Slow Loris, and four other Endangered species. This remarkable concentration of threatened primates confirms Pantı Forest Reserve is a stronghold of national and international importance.

Collectively, the papers presented in this special issue portrays Pantı Forest Reserve's immense biological wealth. It is crucial to remember, however, that these remarkable discoveries are results from five days of intensive fieldwork. They do not represent a complete inventory, but a glimpse into the ecological treasures that remain undocumented. We extend our deepest gratitude to every researcher, participant, and supporting institution whose dedication made this expedition and subsequent publication possible. The Guest Editors are immensely grateful to Professor Datin Dr. Faridah Hanum Ibrahim (Editor-in-Chief), Dr. Evelyn Lim Ai Lin (Managing Editor), Assoc. Prof. Dr. Puan Chong Leong (Managing Editor) and the Malaysian Forester production team for their contribution, assistance and advice in making this special issue a reality. It is our fervent hope that this special issue will inspire continued research, foster greater public appreciation, and solidify the commitment to the long-term protection of the Pantı Forest Reserve.