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Documenting Endemic, Rare, and Red-Listed Species: Informing Conservation



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Editorial note

Warm greetings all readers

It is our pleasure to present the current edition of the Institute of Biodiversity and Environmental Conservation Bulletin, continuing the legacy established in previous volumes. The bulletin remains committed to serving as a platform for documenting biodiversity research, field observations, and conservation initiatives associated with the Institute and its research collaborators.

This edition introduces a renewed thematic focus, “Documenting Endemic, Rare, and Red-Listed Species - Informing Conservation”, reflecting our commitment to systematically documenting the Institute long-standing research contributions since the university’s establishment in the 1990s, particularly on species of significance conservation concern. Greater emphasis will be placed on endemic taxa, species listed under the International Union for Conservation of Nature (IUCN), and those protected under the Wild Life Protection Ordinance 1998, and species facing emerging ecological pressures. Each issue will present accounts of species ecology, distribution, conservation status, and prevailing threats, thereby strengthening both academic reference and conservation awareness.

Beginning this year, the publication schedule has been revised from four issues annually to two issues per year, to be published in June and November. This adjustment is intended to strengthen editorial focus, improve content depth, and enhance overall publication quality while maintaining continuity with past volumes. The bulletin is now presented in an interactive pdf flipbook format, offering readers a more engaging and visually accessible reading experience.



We would like to express our appreciation to the previous editorial team for their dedication, consistency, and commitment in shaping the bulletin into a valuable institutional record. Their efforts have laid a strong foundation upon which we now build. We are also grateful to Chien Lee for his generosity in sharing his photographs of Blyth's Hawk-Eagle and dragonflies for inclusion in this volume, which greatly enrich its visual appeal and educational value. We hope this renewed focus will strengthen the bulletin’s role as a scientific archive, an educational resource, and a platform for advancing biodiversity knowledge in Sarawak and beyond.

Message from the Deputy Vice Chancellor



It is a pleasure to extend my warmest greetings on the publication of the first issue of the IBEC Research Bulletin for 2026, themed "***Documenting Endemic, Rare, and Red-Listed Species: Informing Conservation***".

The Institute of Biodiversity and Environmental Conservation continues to play a pivotal role in advancing research excellence in biodiversity, environmental sustainability, and conservation science. The Research Bulletin stands as an important platform for showcasing the Institute's scholarly achievements, research innovations, and meaningful contributions to society.



I would like to commend the editorial leadership for their dedication in ensuring the quality and continuity of this publication. My appreciation also goes to all researchers, staff, and students whose work and commitment form the foundation of IBEC's growing impact.

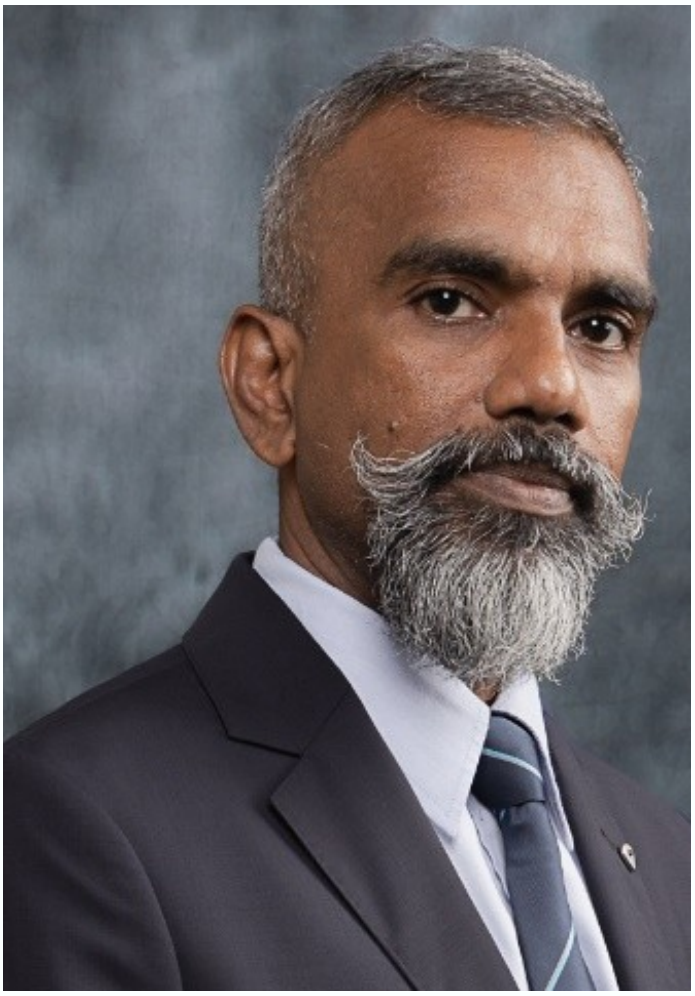
As UNIMAS advances under the Strategic Plan 2026–2030, the University remains committed to strengthening research visibility, enhancing interdisciplinary collaboration, and fostering impactful partnerships at national and international levels. IBEC's efforts strongly align with these aspirations, particularly in addressing global challenges related to biodiversity loss, environmental change, and sustainable development.

I am confident that IBEC will continue to expand its research footprint and contribute significantly to knowledge generation, policy development, and community engagement.

Congratulations on the publication of this issue, and I wish IBEC continued success in the years ahead.

Research & Innovation
Universiti Malaysia Sarawak

Foreword from the Director



It is my pleasure to introduce the first issue of the IBEC Research Bulletin for 2026, focusing on groups of species of high conservation value.

At the outset, I wish to record our sincere appreciation to Professor Dr. Wong Sin Yeng for her dedicated service as Editor of the IBEC Research Bulletin. Her commitment and stewardship have ensured the consistency and quality of this publication. Under her guidance, the Bulletin has continued to serve as an important platform for communicating IBEC's research achievements, academic engagements, and conservation initiatives. The Institute is deeply grateful for her valuable contributions.

I am equally pleased to welcome Dr. Jongkar Grinang and Ms Heira Vanessa as the new Editor and Assistant Editor. With their fresh perspectives and scholarly dedication, I am confident that the Bulletin will continue to grow in impact and relevance. I look forward to working closely with the editorial team to further enhance the visibility and reach of IBEC's work.



Temurang Cave, Padawan

As we move forward in 2026, our focus remains on strengthening research excellence, fostering interdisciplinary collaboration, increasing high-quality publications, and expanding partnerships at both national and international levels, in alignment with UNIMAS's Strategic Plan 2026–2030. This issue themed "Documenting Endemic, Rare, and Red-Listed Species: Informing Conservation" reflects these priorities. The Research Bulletin plays a vital role in documenting our collective progress and celebrating the accomplishments of our researchers, staff, and students.

I encourage all members to continue contributing actively to future issues so that the Bulletin reflects our passion, thirst for knowledge, and dedication that define our Institute

Institute of Biodiversity and environmental Conservation
Universiti Malaysia Sarawak

Revisiting the Conservation Status of the Giant Freshwater Crab, *Isolapotamon bauense* in Sarawak, Malaysian Borneo

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The conservation of freshwater crabs in Borneo is critical because the species play essential roles in rainforest ecosystems and serve as valuable indicators of habitat health. Borneo supports exceptionally high freshwater crab diversity, with all 106 currently known species being endemic to the island. Many of these species are rare and restricted to extremely small geographic ranges, making them particularly vulnerable to environmental disturbance and habitat loss.



This image shows the typical ambush behaviour of this giant freshwater crab, positioned at the entrance of its burrow while waiting for passing prey. The white numbering on the carapace represents individual codes used during a population estimation study employing the capture–mark–recapture technique.



This male crab, with a carapace width of 80 mm, was among the largest individuals recorded from Gunung Serambu, Bau.

Although taxonomic studies of freshwater crabs in Borneo are ongoing, anthropogenic threats to these animals are of great concern, particularly due to accelerating habitat destruction and pollution. Global conservation assessments have shown that freshwater crabs are among the most threatened aquatic invertebrates. Despite this, biodiversity conservation initiatives in the region have not sufficiently focused on freshwater crabs, partly because of limited baseline data needed to support effective conservation policy.

Several Bornean freshwater crab species are currently listed as Endangered or Vulnerable on the IUCN Red List. However, these assessments may not accurately reflect the actual conservation status of many species due to the lack of critical ecological and population data. This article presents a case study that revisits the conservation assessment of the giant freshwater crab *Isolapotamon bauense* Ng, 1987 in the family Potamidae. The species was first recorded from limestone habitats in Bau in 1903 but was formally described only more than 80 years later. Previous collections indicated that the species has a relatively small population and a very restricted geographic range. Consequently, the first conservation assessment in 2008 categorized the species as Vulnerable, as many of its known habitats were unprotected and threatened by land-use activities.

Continuous population monitoring has revealed that the distribution of *I. bauense* includes several protected areas. These studies have also generated new ecological information, including data on sex ratio, growth patterns, population size, and population density. Local communities occasionally harvest the crab for consumption, although this activity is not managed. To evaluate the viability of this practice, a nutritional analysis of the crab meat was also conducted. The results suggest that harvesting wild *I. bauense* as a protein source is not practical because of its low population size and the potential negative impacts on forest ecosystem health.



This image illustrates colour variation across different life stages of the crab.



The crab also inhabits limestone caves and is restricted to the Bau and Padawan limestone formations in southwestern Sarawak.

Experimental studies on fecundity and reproduction further indicate that the species has limited reproductive capacity. Captive breeding trials showed low reproductive success, with females producing only 26–81 eggs per brood and relatively low hatching rates. The gestation period is also comparatively long for an invertebrate, ranging from 36 to 45 days. Together, these ecological and biological findings suggest that the current conservation status of I. bauense on the IUCN Red List should be reassessed. We also propose that biodiversity conservation efforts in Sarawak under the Wild Life Protection Ordinance 1998 should incorporate the IUCN Red List framework, particularly for threatened freshwater crab species.



Night search for the crab in a sandstone rock shelter.

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