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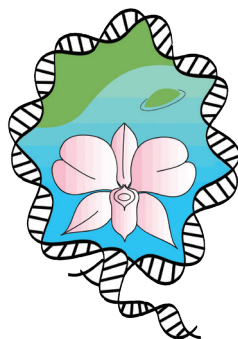
**Editors:** Julien Louys and Justyna Miskiewicz

Special thanks are extended to the referees who reviewed papers submitted  
for publication in this volume of the *Proceedings*.

2023

# The Royal Society of Queensland

*Queensland's first scientific society*  
*Established 1884*



The Royal Society of Queensland

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Governor of Queensland

## COVER ILLUSTRATION

Australian fruit bats fluoresce under ultraviolet light (Credit: Linda Reinhold). While it has been known for some time that certain animals are photoluminescent under ultraviolet light, it was not appreciated how widespread this phenomenon is in mammals until recently. Some impressive new observations have spurred renewed research seeking to document which mammals are fluorescent and under which lighting conditions. Observational data such as these are the critical first steps necessary to building biological hypotheses exploring why mammals should exhibit this characteristic. On pages 3–40, Linda Reinhold explores how widespread fluorescence is in the fur of mammals from the Queensland Wet Tropics, examining 44 species across monotremes, placentals and marsupials.

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## **The Royal Society of Queensland**

The Royal Society of Queensland has an honourable history as the senior scientific institution in the state. It was established in 1884, with royal patronage continuing unbroken from 1885. Her Excellency the Honourable Dr Jeannette Young PSM, Governor of Queensland, is the present Patron.

The Society seeks to increase respect for intellectual enquiry. It encourages original research and the application of evidence-based methods to policy development and decision making. The Society provides a forum for scientists and lay people to involve themselves in the progress of science in society, with 'science' defined broadly. As a non-partisan, secular, learned group, the Society is committed to the Enlightenment tradition of curiosity-led, knowledge-based enquiry that arguably was born with the Royal Society in London in 1660.

The centrepiece activity of the Society is the production of the annual scientific journal *Proceedings of The Royal Society of Queensland*, supplemented from time to time with Special Issues on specific themes.

## **Proceedings of The Royal Society of Queensland**

The *Proceedings* publishes original scholarship and investigation in natural history relevant to Queensland, including the biodiversity, conservation, use, management and economic significance of natural resources. All aspects of the natural sciences, including astronomy, geology, hydrology, botany and zoology, biomedicine, introduced species and dynamic land and water processes, are considered. The journal will also publish papers on general science, including science-related history, policy, education and philosophy. Papers written from within the social sciences, such as sociology, culture and heritage that deal with the use or management of a natural resource, are welcome.

Following initial appraisal by the Editor, all submitted papers are peer reviewed by a single-blind process. The following types of manuscript are considered:

Scientific Papers, Short Communications, Historical Reviews, Opinion Pieces, Dissertation Abstracts, Book Reviews.

Authors are required to follow the instructions given in the *Guide to Authors* which is available on the Society website or from the Honorary Editor. The timeline to allow print publication by the end of each year requires authors to submit papers to the Editor by 30 June.

From Volume 124, papers are being placed online free of charge as they emerge from the editorial and typesetting procedures. Print publication will follow when the volume is completed.

A complete archive of the *Proceedings* with full search capability back to 1884, and the preceding three volumes of the *Transactions of the Queensland Philosophical Society*, are available online.

## **Scholarly Debate Invited**

Articles accepted for the annual *Proceedings of The Royal Society of Queensland* and Special Issues have been published online with free public access. The advent of digital scientific publishing means that it also becomes practicable to publish scholarly debate over published articles. The Society welcomes critical responses to articles that have been published, if addressing matters of scientific substance and expressed in a scholarly manner. Please refer to the *Guide to Authors* for guidance as to style and submit all such responses to the Honorary Editor. All critical responses will be subject to the review process undertaken for other submissions.

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## EDITORIAL FOREWORD

We are living in a post-truth world. Driven largely by the rise of social media, where opinion is presented as fact and no mechanisms or imperatives exist to ensure the accuracy of statements, our information ecosystem is awash with falsehoods, half-truths, and wolf-whistles to factional groups. The explosion of AI and its growing influence in all facets of the digital age have only exacerbated the problem; for example, Google searches now provide false AI-generated content as leading search results. The fact that Google or social media companies are now the primary source of information for many people brings into question how much more we can move post truth – some would say there's further we can go, as terrifying as this seems.

Science has not been immune to these trends. Sharing manuscripts publicly as pre-prints, whereby manuscripts are posted online prior to peer review, was initially driven by mathematicians and physicists to ensure priority as well as field advancement, given how long it generally takes for mathematical proofs to be ratified. This has since expanded across the natural and social sciences, and the practice is growing in popularity even if many pre-prints do not subsequently end up in the peer-reviewed literature. Alongside pre-prints has been the astronomical growth of predatory publishers, characterised by large stables of journals promising rapid publication, but with minimal to no peer review and high article processing charges (pay-to-publish). Other, more reputable journals are experimenting with the scientific publication process. Journals such as *eLife* no longer have articles accepted or rejected, merely posted pre- and post-peer-review. Such experiments have not been without controversy, as seen in the strong backlash against the claims of burial and rock art by the hominin *Homo naledi* in the South African Rising Star cave system published in the aforementioned journal.

Where does that leave the traditional scientific publication model? Most, if not all academics acknowledge that the current peer-review system is not perfect. It can be subjective, take significant time, and is reliant on the free labour of volunteers who have other, immense professional obligations – few if any rewards are the lot of peer-reviewers. However, such a system serves as a measure of quality, providing reassurance that the claims made in a published scientific paper have been evaluated by experts. Meaningful evaluation cannot and should not be rushed: it ensures that some measure of quality and accuracy can be trusted, and that reputable science is being published. The editorial and copy processes are also, in their smaller way, indispensable. A journal is built on its reputation, which is in turn a form of a brand that can be judged based on its look and content.

It is with these thoughts in mind that we are pleased to present volume 132 of the *Proceedings of The Royal Society of Queensland*. This journal has a sterling reputation which is further supported by the quality of both its past papers and the papers presented herein. In this volume, Reinhold presents data on the fluorescence under ultraviolet light of mammals from the Wet Tropics of Queensland. These important observational data are contributing to a much wider appreciation of this phenomenon in mammals, data critical to developing hypotheses exploring why this might be the case. A pair of fruit bats fluorescing grace this year's cover. Rix explores the work of Benjamin Dunstan and delves into the history of why certain geological treasures left Queensland. Nielsen and Kumarasuriyar explore another facet of Queensland's scientific history with a description of the contributions of Walter Hill, Director of Brisbane's Botanic Gardens. These history of science papers are critical, for how can we understand where we are going unless we know where we have come from? Rounding out this volume is a book review and the annual presidential address. We appreciated the opportunity to edit *Proceedings* for the last three years, and although we are stepping down, we look forward to seeing what new Queensland wonders future volumes will bring, knowing we can trust in the science emerging from this august society and its *Proceedings*.

Julien Louys & Justyna Miskiewicz  
Editors, PRSQ Volume 132, 2023

The Royal Society of Queensland acknowledges the Iningai Nation, their long custodianship and inherent connection to country, its springs and waterways, plants and animals.

We pay respect to the knowledge and cultural values of First Peoples of Australia and acknowledge Elders past, present and future.



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