



Since the Lee Kong Chian Natural History Museum opened in 2015, its scientists have contributed to the discovery of more than 100 new species from Singapore and beyond, including *Metapone murphyi* (left), found in a preserved ant's nest by insect scientist Wendy Wang last year; a crab that crustacean curator Jose Mendoza (middle) named *Harryplax severus* after a Harry Potter character; and the Singapore swamp skink. PHOTOS: AIKI YAMADA, ST FILE, NICK BAKER/ECOLOGY ASIA

ScienceTalk

# Seeking answers to nature's mysteries in museum's vault of life

Lee Kong Chian Natural History Museum's collections have thrown up some surprises

Marcus Chua and Darren Yeo  
For The Straits Times

In the study of natural history, poking an ant's nest can sometimes pay off.

It was what Lee Kong Chian Natural History Museum insect scientist Wendy Wang was doing last year when she and her colleagues discovered in a preserved nest an ant species new to science.

*Metapone murphyi* was a discovery almost four decades in the making. Dr Wang had been studying a nest that was collected in Singapore in 1981 and stored over the years in the collections of the former Raffles Museum of Biodiversity Research.

In 2015, the museum was given a new building and a new name: the Lee Kong Chian Natural History Museum.

As it marks its fifth anniversary this year, such stories are reminders of the value of the museum's biological collections. They help us understand our natural heritage and can occasionally throw up surprises.

Covid-19 has highlighted the need to understand the distribution and movement of species associated with the trade in live animals that may be disease reservoirs. This may be key to managing the threat of zoonoses – infectious diseases that can be transmitted from animals to humans.

And as the pandemic rages on, threats to wildlife such as habitat loss still persist. Ironically, the ant *Metapone murphyi* may now be locally extinct as its original habitat is gone.

This shows the power of the collections in teaching us about what we have lost or never knew we had, and the importance of documenting the variety of life, so we can conserve what is under threat.

**A RECORD OF LIFE**

Visitors to the museum, located in the National University of Singapore (NUS), can find relics of extinct life, from dinosaurs to dodos.

But scientists at the museum also study the living, and over the past five years, the museum has contributed to the documentation of the diversity of life, with close to 500 scientific publications and the discovery of more than 100 new species from Singapore and beyond.

These include a pale crab named after Harry Potter character Severus Snape, rare "baby-killer" flies, a fighting fish with a marking that looks like the Greek letter omega on its throat, and the Singapore swamp skink.

In the name of science, museum researchers have gone deep into the jungles of Borneo, explored the coastlines of Christmas Island, and trawled the ocean depths in marine expeditions.

In 2018, for example, they joined other NUS scientists and researchers from Indonesia on the South Java Deep Sea Biodiversity Expedition that uncovered more than 12,000 creatures.

Such expeditions not only improve understanding of the natural environment but also foster friendships and diplomacy among participating nations.

In its fifth year, the museum now has greater capacity to support and encourage South-east Asian biodiversity research and work within its own collection through museum



Mr Marcus Chua (top) and Dr Darren Yeo say that for people to want to conserve biodiversity, they must first see and understand its value, and museums must reach out to them.



Exhibits at the Lee Kong Chian Natural History Museum include those of a sperm whale skeleton (top) and a trio of dinosaur skeletons. The museum is planning a digital database and management system of its more than one million specimens and artefacts for faster and more effective curation. ST FILE PHOTOS

fellowships, especially among early-career researchers and academics from the surrounding Asean region.

Fundamental, discovery-based biodiversity research that is driven by human curiosity and a thirst for knowledge will continue to be an important component of the museum's mission.

Having some "high-impact science", insofar as publication metrics are concerned, is good, but numbers must not be the sole focus, because biodiversity knowledge has long-lasting value that transcends short-term research statistics.

The museum has two other core missions: serving as a repository of knowledge on biodiversity and the environment; and communicating that knowledge through outreach and education.

**SPARKING IMAGINATION**

For people to want to conserve biodiversity, they must first see and understand its value.

And in the 21st century, natural history museums must find ways of reaching out amid the information overload from new media.

Digitalisation is an important part of the museum's outreach. It enables natural history collections to continue to inspire – even during a pandemic – and help science flourish.

For instance, there are ongoing efforts to implement more interactive elements in the galleries. With augmented-reality technology, visitors can soon see the museum's sperm whale skeleton exhibit "in the flesh", with its bones covered with flesh and skin.

This fifth anniversary will also mark a digital milestone for the museum: the launch of the Google Arts and Culture-Lee Kong Chian Natural History Museum partner page.

This partnership with Google aims to display various natural history exhibits online, making the museum the only natural history museum in South-east Asia to be on Google Arts and Culture, joining London's Natural History Museum and the United States' Smithsonian National Museum of Natural History, among others.

The first exhibition, available from 4pm today, is *Aseana Obscura*, a showcase of 135 of South-east Asia's less famous but no less spectacular animals and plants, such as the shocking pink dragon millipede. The exhibition provides a platform for the quietly cool biodiversity of Asean to shine.

The Covid-19 pandemic has highlighted the need for the museum to digitalise so that outreach efforts can continue even when face-to-face meetings cannot.

Also in the pipeline are a digital database and management system of the museum's collection of more than a million specimens and artefacts for faster, more effective curation.

Digitalisation will also enable the "virtual repatriation" of historically significant specimens originally collected here but now in natural history collections overseas.

This would greatly benefit scientific research, as it paves the way for the use of the collection in a wider range of research areas, including ecology and climate change.

**THE WAY FORWARD**

The next stage of the museum's development will depend on how it can maintain its link to the past, while being cognisant of present needs and embracing modern mindsets, technologies and approaches.

The museum has continued the bloodline and rich natural history heritage of the Raffles Library and Museum, begun in 1878, and its successor, the Raffles Museum of Biodiversity Research.

From its colonial and post-independence predecessors, it has evolved its own unique identity to occupy an important niche in modern society.

At home, the museum has welcomed more than 260,000 visitors

since 2015, and its lecturers, education officers, volunteers and outreach programmes have touched the lives of some 57,000 learners.

The museum will face substantial challenges in a rapidly changing world, including staying relevant and maintaining operations amid limitations in expertise, funding, and other resources.

But here, we take a lesson from nature – that a species with the ability to consolidate its strengths and adapt best to a harsh, changing environment will be able to succeed, and possibly even thrive.

Who knows?

The answer to another one of nature's riddles may be lying among the millions of specimens on the shelves of the museum's collections.

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• Dr Darren Yeo is deputy head of the museum and an associate professor at the NUS department of biological sciences. His research includes freshwater biodiversity and ecology.