



Science teacher Gordon Yong at the Lee Kong Chian Natural History Museum, with one of the ants he collected and mounted. He is on a mission to update the Republic's ant records, something last done almost 100 years ago, and believes there may be many yet-to-be-identified species in Singapore. PHOTO: DIOS VINCOY JR FOR THE STRAITS TIMES

ANT MAN

They're not all pests, says expert who found three species here that were not seen for 40 years

Jose Hong

While others cannot wait to get rid of ants, Mr Gordon Yong collects them – at least 30,000 to be precise, with around 3,000 pinned down and mounted on cards that carry a description of the species with their names.

Not names like Princess Bala or Barbatus (characters from the movie *Antz*) but *Myopopone castanea*, or vampire ants. Yes, they do suck blood (see other report).

He may be only 25 but Mr Yong is already an expert and has rediscovered three species in Singapore that were not seen for 40 years. And the science teacher is on a mission to update the Republic's ant records, something last done almost 100 years ago.

The mounted ants are now mostly stored at the Lee Kong Chian Natural History Museum, while the rest are at Hong Kong University, where he did a one-month internship studying ants.

On his fascination with the tiny insects, he said that ants have carved their own world around us with farmers and warriors, and those vampires.

"You can't really see the difference with your eyes, but once it's under the microscope, it's really a whole new world. I really like how they're so different."

And he can rattle off a list of interesting ant facts. For instance, some have no eyes and only the queen and male ants have wings.

He said the leaf-cutter ants in Brazil, which live in huge colonies of millions of individuals, can change the entire forest around them by cutting down huge amounts of greenery. The ants then use this greenery to cultivate underground gardens of fungi for food.

Singapore has giant ants – each about the size of a one-dollar coin – that are a common sight in the rainforest, though they can be seen only at night.

Mr Yong's interest is only about two years old, sparked by a field trip to Sri Lanka in the third year of his bachelor's degree course in life sciences at the National University of Singapore (NUS). Although the trip was to study ecology in general, after much field work, he realised how special ants were.

"Ants are kind of like mini-human civilisations. As a civilisation they act in certain ways – for example finding food, how they hunt and how they communicate with each other," he said.

An ant, he continued, would have to think about how it should let the nest know that it has found food, or call for help to transport the food, even dismembering it if it is a large insect or a carcass.

He already has three published academic papers to his name, with three more in the works.

His love for the six-legged creature becomes more pronounced when challenging people who view all ants as pests. Fewer than 10 species of ants can be considered pests in Singapore, he said. And at last count, Singapore had 235 species of ants.

But Mr Yong believes there may be many more species here.

He referenced his latest paper, published last month, which showed that in 9.5 man-hours, around 53 ant species were collected on Pulau Ubin.

Besides showing the diversity of ants on an island about 1.6 per cent the size of the mainland, it demonstrated that there are many more yet-to-be-identified species in Singapore.

"Because we found so many ant species in so few man-hours on a small island like Pulau Ubin, we can only imagine that a larger area in Singapore would yield many

more ant species," he said.

Mr Yong conservatively estimates the number may be between 300 and 350.

"A lot of people think that there are just red ants, black ants, big ants, small ants. That is the biggest misconception.

"The diversity of ants is really great, even in a small country like Singapore."

Mr Yong said that all the different ants play specific roles in the ecosystem, and that removing any one of them in a place with so little forest such as Singapore might have unknown and unintended consequences.

He said only five people in the past five years have researched the ants of Singapore. And he may be leaving the colony soon.

After graduating from NUS last month, the Ministry of Education scholar went straight into his new job as a science and mathematics teacher at Tanjong Katong Secondary School.

For now, he said he will continue as an independent researcher whenever he gets the free time. He may even integrate his passion for ants with his science lessons in the future, though he is not sure what form this would take.

Dr Wendy Wang, the entomological curator at the Lee Kong Chian Natural History Museum, praised Mr Yong's research.

"It's impressive that despite his youth and relative inexperience, he has put in extraordinary effort in unravelling a lesser-known component of insect fauna in Singapore, and sharing his discoveries with a wider audience.

"His work, in collaboration with other young ant enthusiasts, provides valuable insights into the ants, an otherwise nondescript group of insects commonly misunderstood to exist only as pests."

NOT ALL THE SAME

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MR GORDON YONG

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T. REX ANTS

Scientific name: *Tyrannomyrmex rex*

Where to find them: In forest environments

Special characteristics:

- Their mandibles – insect jaws – are tiny, similar to the stubby arms of the Tyrannosaurus rex dinosaurs they are named after.
- They are, unlike the fearsome dinosaurs, timid creatures that freeze up and roll into a ball when approached by others, moving away only once they leave.
- It is unknown what they eat.

VAMPIRE ANT

Scientific name: *Myopopone castanea*

Where to find them: In forest environments

Special characteristics:

- The ants feed on the blood, or the "hemolymph", of their own larvae.
- They will bite tiny wounds into the abdomen of the larvae with their mandibles, causing scarring, and then suck the blood out from the holes.

'EYELESS' ANT

Scientific name: *Liomyrmex gestroi*

Where to find them: In forest environments

Special characteristics:

- This species lacks a common name, and the worker ants are blind, though the queen ants are not.
- In the Philippines, these eyeless ants have been found living in entire termite colonies, though it is not known whether they rely on the termites for food or whether the relationship between the two insects is less predatory.

TRAP JAW ANT

Scientific name: *Odontomachus simillimus*

Where to find them: In urban environments

Special characteristics:

- The mandibles of these carnivorous ants extend straight from their head.
- The mandibles will snap shut on prey that come close, with enough force to crush or even kill them. One can even hear them snapping when there is nothing between them.
- That is how the ants earned their "trap jaw" reputation.

BIG-HEADED ANT

Scientific name: *Pheidole megacephala*

Where to find them: In urban environments

Special characteristics:

- The soldier ants of this species have disproportionately big heads, hence the name of the species.
- These ants are also extremely invasive, and have spread across much of the world, displacing native ant populations.
- They may not be native to Singapore, and the academic literature points to either an African or Asian origin.



The T. rex ant is a timid creature, unlike the fearsome dinosaur it is named after.



The vampire ant feeds on the blood of its own larvae. PHOTOS: GORDON YONG, INSECT DIVERSITY LAB/NUS