

115 new species of fungus gnats discovered in S'pore

They are some of the 120 species uncovered in study; 31 named after notable women

Letitia Chen

Fungus gnats, tiny insects measuring just millimetres long, may have previously flown under the radar – but gnat any more.

A new study published on Dec 30 has uncovered 120 species of these fungus-loving insects in Singapore.

This is the first time the fungus gnat diversity in Singapore has been mapped out, as no species of fungus gnats were officially recorded from here previously.

Of the 120 species identified in the study, 115 are new to science.

Thirty-one of them have been named after women inducted into the Singapore Women's Hall of Fame, in an effort by the researchers involved in the study to honour the contributions of these women and to right the "longstanding gender imbalances in scientific naming".

Some families of fungus gnats are considered by gardening enthusiasts to be pests as they are known to infest potted plants. But other groups of these forest-dwelling creatures very likely play important roles in maintaining the forest ecosystem; how they specifically contribute remains to be determined by further studies.

Insect researcher Ang Yuchen from the National University of Singapore (NUS) Lee Kong Chian Natural History Museum, who was involved in the latest study, said that as these insects feed on and move between fungal patches, they likely influence fungal community balance – the basic machinery that keeps forests running.

"The key point is that their tight association and the sheer diversity of species strongly suggest they're an important part of fungal-driven forest processes, even though the

precise roles of most tropical species still aren't fully quantified," said Dr Ang, who is the senior curator of insects at the museum.

Their role in the ecosystem warrants further investigation, he added, which is why building a baseline is important.

Dr Ang added that knowing what fungus gnats can be found in Singapore and where is vital for conservation planning. "If we find that a species is only found in a particular habitat, any planned development would need to consider the fate of the species," he said.

"Development for Singapore's continued well-being and survival must come foremost, but with this information, we can make better informed choices and mitigating actions to help conserve our natural heritage," he added.

The study began in 2012, when museum researchers collaborated with researchers from Brazil, Germany and Norway to attempt to identify fungus gnat species in Singapore. Collaborators included Professor Dalton de Souza Amorim of the University of Sao Paulo, a global expert on flies, particularly fungus gnats.

When asked why the research group chose to focus on this group of insects, Dr Ang noted that fungus gnats are poorly studied despite being an abundant and species-rich group due to their small size.

The conventional method of differentiating species required individual inspection of these tiny organisms, and expert knowledge of the subtle variations in organism characteristics, he added. But the advent of new, scalable scientific methods, such as DNA barcoding which allows specimens to be sorted by their genetic material, helped speed things up, Dr Ang said.

For the study, insect traps were

set up in a range of habitats, including mangroves, swamp forests, primary and secondary forests, as well as urban green spaces. A total of 1,454 specimens of fungus gnats were analysed.

The team then sorted the specimens by identifying short pieces of DNA "barcodes" unique to each species, similar to scanning a product's barcode at the supermarket.

Such large-scale automated sorting puts the specimens into different species "piles".

Within each "pile", the specimens are then verified in the traditional way of identifying insects by examining key body features.

Dr Ang said the discovery of the new species suggests that Singapore is able to support a wider diversity of insect species than previously known.

"Singapore is located in a biodiversity-rich zone with one of the highest rates of endemism (species found only within a specific geographic area)," said Dr Ang. "So even in habitats that have suffered development and redevelopment, we are finding a lot of new species."

On naming some of the new species after notable women in Singapore, Prof Amorim said: "We wanted to tell a bit of Singapore's story through these names and to honour individuals whose contributions to modern Singaporean society the team felt deserved greater visibility." The *Mycetophila georgettechenae*, for instance, was named after renowned Singaporean painter Georgette Chen.

Dr Ang added: "Historically, many species tend to be named after men. This approach is intended as a modest step towards greater gender parity."

Dr Ang said he hopes to continue shedding light on the local biodiversity hidden in plain sight. "As I always like to say, 'Throw a stone in the wild and you'd likely hit an undescribed species.'"

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Critter discovery

A new study involving NUS researchers has identified 120 species of fungus gnats in Singapore, of which 115 are new to science. Some of these were named after notable women. **LETITIA CHEN** highlights some of them.

Integricypta shirinae

- Widespread in Singapore, but scientists discovered that it is based on a new genus of flies.

- Named after **Shirin Fozdar**

(right), a prominent advocate of women's rights in Singapore during the 1950s. She was pivotal to the founding of the Singapore Council of Women and the nation's Syariah Court.

- Singapore Women's Hall of Fame 2014 inductee.



Aspidionia janetjesudasonae

- Only one specimen was discovered in Sungei Buloh, suggesting the species may be rare or undersampled.

- Named after **Janet 'Speedy Gonzales' Jesudason**

(right), a pioneer athlete who represented Singapore in the 100m sprint at the 1956 Olympics.

- Singapore Women's Hall of Fame 2016 inductee.

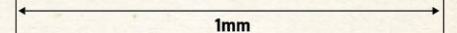


Mycetophila georgettechenae

- Only found in Nee Soon Swamp Forest.

- Named after **Georgette Chen** (right), a renowned pioneer of modern art in Singapore and the Nanyang style of painting in the region.

- Singapore Women's Hall of Fame 2014 inductee.



BY THE NUMBERS

1,454 specimens of fungus gnats analysed

120 species recorded

115 species new to science

31 species named after trailblazers from Singapore Women's Hall of Fame

Source: AMORIM ET AL. (2025) PHOTOS: YUCHEN ANG & TAN HUIFANG, MAIMON HUSSIN, LEE KONG CHIAN NATURAL HISTORY MUSEUM STRAITS TIMES GRAPHICS