



From left: Tropical swallowtail moths spotted on a staircase in the Singapore American School in Woodlands and on a window at Pebble Bay condominium at Tanjung Rhu, and a caterpillar of the moth. The host tree, *Endospermum diadenum* – also known as Bulan Bulan in Malay – produces fewer toxins in drier months, making it conducive for the moths to lay their eggs, and the caterpillars to munch on the leaves without being poisoned. PHOTOS: PIP COLLEY, MIIA KOISTINEN, ANUJ JAIN

# First spike in tropical swallowtail moth sightings since 2014

## Drier-than-usual February this year allowed giant moth to lay more eggs

Shabana Begum

The palm-sized tropical swallowtail moth has made a comeback in urban Singapore with a surge in sightings, after seven years.

In 2014, there was a massive invasion of the giant moths, with at least 2,400 sightings of the normally forest-dwelling insect. Eighty-six per cent of the sightings were between April and July that year.

Many people may remember spotting Singapore's second largest moth during that time, along HDB corridors, against the transparent windows of the National Library, and even inside lifts in the Central Business District.

In May that year, *The Straits Times* reported that around 100 of the giant moths were flying above the Jalan Besar stadium during a Malaysian Super League football match.

Since 2014, there have been about 20 to 30 annual sightings reported by researchers or members of the public, until this year, when about 200 sightings islandwide were reported between May and this month, said ecologist Anuj Jain from the National University of Singapore (NUS) and Nature Society (Singapore), who has been tracking the species for a decade.

The moth's wingspan can grow up to 16cm, and in Singapore, only the atlas moth is bigger.

Dr Jain suspects that dry weather and the power play between the moth and the tree it lays eggs on contributed to the mass emergence in 2014 and the smaller spike this year.

February is usually the driest month in Singapore. But in 2014 it was the driest month since 1869, with just 0.2mm of rain.

And this year's was the second-driest February since 1869, with 1mm of rain.



A bare host tree for the tropical swallowtail moth in 2014. During rainy months and especially after the caterpillars have feasted on the host trees, the trees' toxin defences kick in, keeping the moth numbers in check. PHOTO: ANUJ JAIN

Every year, the tropical swallowtail moths tend to emerge between April and June because February and the following flowering season is a trigger for them to lay eggs on a tree, explained Dr Jain.

The host tree, *Endospermum di-*

*adenum* – also known as Bulan Bulan in Malay – can be mildly toxic. But it produces fewer toxins in drier months, making it conducive for the moths to lay their eggs, and the caterpillars to munch on the leaves without being poisoned.

The drier February in 2014 and this year allowed the moths to lay more eggs.

The rare tree is mainly found in the Bukit Timah and Central Catchment nature reserves, and is vulnerable to extinction, said Dr Jain.

In June 2014, when he visited the trees in Sime Forest within the Central Catchment Nature Reserve, he was surprised to see the trees stripped away of leaves and overtaken by numerous caterpillars.

He estimated 15,000 to 20,000 caterpillars on each host tree. That explained the 2014 mass emergence.

Mr N. Sivasothi, senior lecturer in biological sciences at NUS, who also studies citizens' reports of wildlife sightings, said: "Once the moths emerge in large numbers, they are drawn to urban areas which act like a giant light trap."

Dr Jain added: "The moths end up in urban areas in search of other host plants. But they can't find any. They eventually die without being able to lay eggs or reproduce."

In captivity, the moths can survive for 10 to 11 days, but their lifespan could be longer in the wild.

During the 2014 mid-year period, it was not uncommon to see dead giant moths on the ground or on window ledges.

During the rainy months and especially after the caterpillars have feasted on the host trees, the trees' toxin defences kick in, keeping the moth numbers in check.

There were small spikes in the moth sightings in 2005 and 2010 as well, following drier spells in February, said Dr Jain.

He tried to visit the same trees on July 3 to check if leaves were gone again, but he could not access the spot because of trail upgrading works nearby.

Nature Society (Singapore), which has a sightings project web page, and Mr Sivasothi, who manages the HabitatNews NUS website and a Facebook page on the moths, are calling for people to submit reports of moth sightings on these sites so that they can map out where the creatures have ventured to, and link that to their closest host plant locations.

On May 8, a tropical swallowtail moth fluttered into Ms Nguyen Thi Thu Trang's apartment in Pine Grove condominium.

On June 23, a moth was spotted on a staircase at the Singapore American School in Woodlands.

The school's director for the summer semester, Ms Pip Colley, said: "The moth drew interest from students and staff, and they were all very protective and concerned for its welfare. It was very beautiful and intricate."

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