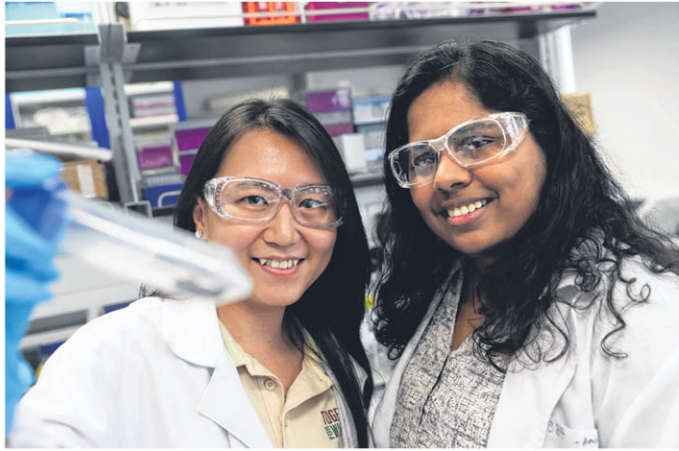


Dr Andie Ang, a Wildlife Reserves Singapore Conservation Fund research scientist, and Dr Amrita Srivathsan, a National University of Singapore research fellow, with a faecal sample from the Raffles' banded langur.
ST PHOTO: TIMOTHY DAVID



Critically endangered monkey that calls S'pore home

Only 61 Raffles' banded langurs left here, and study shows species may be threatened with extinction globally too

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Environment Correspondent

In the small cluster of forests left in the Central Catchment Nature Reserve, a black-and-white monkey lives on the brink of extinction.

With only 61 of them left here, the Raffles' banded langur is critically endangered in Singapore.

But new research co-led by primatologist Andie Ang has shown that the langur – the reclusive cousin to the common long-tailed macaque – may be threatened with extinction globally too.

Genetic data from faecal samples has indicated that the Singapore langur – which can also be found in southern Peninsular Malaysia – is distinct enough from two other langur species in the region to be considered a species of its own.

The study by Dr Ang and five other scientists from the National University of Singapore (NUS) and Andalas University in Indonesia was published as a pre-print pending peer review on scientific publi-

cation website bioRxiv earlier this month.

All three species of langurs were previously considered sub-species and grouped as one species. The other two are the Robinson's banded langur, found in northern Peninsular Malaysia to southern Thailand and Myanmar, and the East Sumatran banded langur, found only in eastern Sumatra.

Dr Ang, a Wildlife Reserves Singapore (WRS) Conservation Fund research scientist, said the initial taxonomic classification in which the langurs were considered one species could have come about because banded langurs have been relatively understudied compared with other primates, such as orang utans and macaques. It is also difficult to document them in the wild – meaning scientists had to rely on museum specimens to study them.

With genetic samples being hard to come by, it was likely that all three species had been considered sub-species because they looked similar. All three are black with white streaks on their belly and the

inside of their thighs.

But there are differences. For example, a Robinson's banded langur has white patches on its mouth and an East Sumatran banded langur has white fur on its chin and cheeks – features that the Raffles' banded langur does not have.

Dr Amrita Srivathsan, a research fellow at the NUS Evolutionary Biology Laboratory who was involved in the study, said: "We knew we had to resolve the confusion over how the langurs were classified."

With funding from the WRS Conservation Fund, the researchers collected four faecal samples from the East Sumatran banded langur and six from the Raffles' banded langur.

They compared those with the DNA of the Robinson's banded langur, which had already been uploaded on GenBank, a publicly accessible database.

Their findings showed the genetic difference in a key part of the mitochondrial DNA between the Raffles' banded langur and the Robinson's banded langur was 6.7 per cent. Between the Raffles' banded langur and the East Sumatran banded langur, the difference was 4.1 per cent – higher than for many other closely related primate species.

The genetic difference in this key section of the mitochondrial DNA between human and chimpanzee is about 10.7 per cent.

When all three species were grouped under one species, the International Union for Conservation of Nature (IUCN) had considered

them vulnerable to extinction.

Now, the Raffles' banded langur (*Presbytis femoralis*) and East Sumatran banded langur (*Presbytis percura*) would be "critically endangered", said Dr Ang, who also assesses the conservation status of Asian primate species for IUCN.

The Robinson's banded langur (*Presbytis robinsoni*) would be "near threatened". This is because some of their forest habitats in northern continental South-east Asia are still intact – at least when compared with ongoing deforestation farther south on the peninsula.

In Singapore, for example, development of the Cross Island MRT line would involve clearing two forest patches outside the Central Catchment Nature Reserve for ventilation structures. The patch on the eastern end is a stronghold for

the Raffles' banded langur.

Dr Amrita added that with the Raffles' banded langur now considered a species of its own, it means that Singapore is home to about 20 per cent of the global population, which is estimated to be between 300 and 350.

There are signs that the Raffles' banded langurs in Singapore are inbred, due to small population numbers and the fragmented forest landscape which has made it hard for them to meet and breed.

But it is still critical to conserve the species, said Dr Ang. "By continuing to protect the langurs here, we pave the way for the possibility of future 'genetic exchange programmes' with Malaysia so the long-term survival of this species in both countries can be safeguarded," she said.

Dr Sonja Luz, WRS' director of conservation, research and veterinary services, noted that the Raffles' banded langur was once commonly found in Singapore. "It is imperative to find an integrated approach to manage this threatened species over the long term so Singapore does not have a primate going extinct on our watch."

The "Raffles" connection in its name makes the langur even more iconic, and quite Singaporean, she added. Said Dr Luz: "The full species designation can also enhance the 'ownership' of the species, making it a truly local treasure – a national monkey of sorts."

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Genetic data from faecal samples has indicated that the Raffles' banded langur (above) is distinct enough from two other langur species in the region to be considered a species of its own. The other two are the Robinson's banded langur and the East Sumatran banded langur.
PHOTO: ANDIE ANG