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A large photograph of a woman with dark hair, smiling, holding a large bat in her left hand and a small piglet in her right hand. The background is a blurred green forest. The text 'Animal tales' is written in a large, white, cursive font across the bottom left of the image. To the right of the woman, there is a block of text.

The presence – or  
lack of – of certain  
animals in the forest  
tells us how healthy  
the forest really is.  
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**Under observation:** A bat being measured by one of the participants of the Conservation of Biodiversity Project. Under this project, bats – which are among the fauna studied – are captured, measured and tagged before being released.

# *Clues to the forest*

**With the International Day for Biodiversity falling on Friday, it is timely to learn about a homegrown project that aims to create logging practices that preserve our forests' biodiversity.**

SHARMILLA GANESAN



**Beautiful beetles:** 'As dung beetles feed solely on the dung of mammals, their presence shows that there are mammals around,' says Elizabeth Butod.

**W**ALKING into the forest early in the morning on a humid day, it is difficult to get excited at the prospect of seeing ants, bats and dung beetles. After all, they are hardly the most glamorous denizens of our forests.

The young biodiversity scientists accompanying us, however, are bursting with enthusiasm; after all, as part of the Conservation of Biodiversity Project (CBioD), these researchers have been living and breathing these fauna since 2007, and they know that there is more than meets the eye to these forest critters.

As an integral part of our forests' ecosystem, these and other animals provide information on the general well-being of the forest itself. Dung beetles, for example, are good indicators of the presence of larger mammals in the area, while the presence of certain species of moth indicate whether the canopy cover of the forest has been adversely affected.

Implemented as a five-year project by Forest Research Institute Malaysia (FRIM), CBioD aims to come up with methods to integrate biodiversity concerns into forest planning, in order to reduce the loss of biodiversity when forests are logged. It is co-funded by the Global Environmental Facility (through the United Nations Development Programme) and the International Tropical Timber Organisation.

According to CBioD national project director Dr Shamsudin Ibrahim, the strength of the project lies in its team of young biodiversity scientists, who are all aged 33 and below.

"We want vibrant, outspoken scientists who are passionate about our mission," he says. "We are looking to the next generation for people who will push for environmental issues to the forefront."

Discovering the relationships between the

forest and its inhabitants is the key task of the scientists attached to FRIM. Their enthusiasm for the project is apparent from their willingness to endure difficult terrains, harsh living

conditions and unpredictable weather. While many people turn their noses up at trawling through the forest and scrabbling in the dirt for specimens (not to mention enduring insect bites!), it is all in a day's work for this intrepid team.

"We're always *belakang tabir* (behind the curtains)," says team co-ordinator Dr Christine Fletcher, 33. "But we do play an important role in feeding information to the Government on the best ways to preserve forests and biodiversity."

She adds that people are generally happy to look at the more "charismatic" animals.

"However, we're looking at the unseen characters that play important roles, both within the forest's ecosystem and in showing us how healthy the forest is."

To date, the team has completed pre-timber harvesting activities with the Perak ITC Concession in the Temenggor Forest Reserve, as well as the assessment of five virgin jungle reserves (VJRs) in Peninsular Malaysia. This forms the core of the CBioD project, as VJRs are created within production forests as a way for disturbed forests to regenerate themselves. The team's research will allow them to propose the optimum size a VJR in order to encourage regeneration and preserve the forest's biodiversity.

### Bio-indicators

The scientists have been studying eight species of flora and fauna in order to identify key bio-indicators that reflect the health of the forest and the speed at which it regener-

ates after logging. By doing so, they aim to provide foresters with simple and cost-effective ways of monitoring the health of forests. The selected species are: ants, aquatic macro invertebrates, bats, birds, dung beetles, moths, stingless bees; and plants or trees.

The wealth of information available from them is amazing. Take moths, for example. Anthony Gonzaga, 32, explains that moths serve two purposes in the forest: to pollinate flowers and defoliate leaves (in their caterpillar form). "So, there is an exchange between moths and plants in the forest. They depend on each other for survival," he says.

Moths, Gonzaga further explains, provide insight into preserving the vertical structure of a production forest. "A certain level of canopy cover is removed when logging is carried out. As some moths prefer a dense canopy cover, there will be effects on the moth population if there is too much disturbance. For example, we might see a decrease in the number of moths that require dense coverage and an increase in those that prefer more light. Therefore, moths can be one of the indicators of the forest's vertical structure,

which can be a big part of forest planning."

Another method of assessing disturbances to the forest is by studying moths' antennae. Gonzaga says observation has shown that moths in the thicker, inner parts of the forest possess more complex antennae to assist in navigation. When the forest is thinned due to logging, however, the population of moths with simpler antennae would increase.

### Tales from bats

The well-known but often misunderstood bat is no less useful. Joann Christina Luruthusamy, 25, stands beside what looks like a very big harp. Aptly enough, it is called the harp trap, and is used to capture bats for measuring and tagging. The bats fly into the taut strings of the trap and are unable to fly through, thereby falling into a bag at the bottom.

Bats, particularly the insectivorous ones, provide a unique way to study the forest due to their use of sonar to establish location.

"Different bats have different kinds of sonar, so they live in different parts of the

forest," says Joann.

"Some roost under leaves while others, inside big caves."

Therefore, when very dense foliage is opened up by logging, the bat species that is used to navigating there will not be able to survive. Fruit bats, on the other hand, feed on nectar from flowers at the canopy level; so, when the canopy cover is removed extensively, their numbers will drop, too.

While not the most appealing member of the forest community, the dung beetle is an important bio-indicator nonetheless, providing a simple way to gauge the presence of larger mammals in the forest.

Elizabeth Butod, 25, says studying dung beetles is cheaper and easier than attempting to trap and study larger mammals.

"As dung beetles feed solely on the dung of mammals, their presence shows that there are mammals around," she says. "They are

also very easy to catch, all you need is a pitfall trap with dung as bait."

Christine emphasises that the project aims to get a complete picture of the biodiversity in forests. "We are interested in the richness and interactions of the plants

and fauna within the forest. This is more important than the specific number of species or populations," she says.

As the sampling portion of the project nears its end, Shamsudin says more effort will now be put into analysing the data, in order to come up with specific tools. "We want to be able to say, if you want to assess a forest's ecosystem, these are the species to use."

The aim, he adds, is to make biodiversity part of the decision-making process.

"We want to find out what is the best way to harvest timber and yet save our biodiversity. Ultimately, we want to impress on the Government that if we want to save the environment, we'd better change the way we manage our forests," he says.

