

ANNA NEKARIS

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# Bite for survival

Driven to the edge of extinction by the pet trade due to their teddy-bear looks, the Javan slow loris has a deadly bite.

**Anna Nekaris** uncovers the plight of the poisonous primate.

Until three years ago, many people would not have known what a slow loris was. A Dr Seuss character, perhaps? Or maybe a cocktail? But then a YouTube video of a pet loris being tickled turned a small, obscure nocturnal primate into a global celebrity. That clip has now been viewed millions of times. If you search online for 'slow loris', it is one of the top results.

Since then, a series of loris videos have gone viral, attracting an army of online fans. Most aren't conservationists, though. They just want lorises as pets. But these cuddly creatures harbour a deadly secret. The five known species of slow loris are the planet's only poisonous primates, with a bite so dangerous it can kill. And there's no anti-venom.

When I first saw the video, I thought back to my many experiences of lorises in the field. There was the time my tough, machete-wielding Cambodian guide Mr Hao was nipped by a pygmy slow loris. The erstwhile fearless forester dropped the killer fluffball in panic and started sucking the poison from his wound, blood dripping to the ground. Maybe, I thought, if I found out more about loris venom I could use the information to deter would-be pet owners.

Last year, I travelled to Java to begin a three-year study into why slow lorises have venom. We already knew that they are able to produce it themselves, and last summer found that they supplement it with toxins absorbed from their food. But why do they even need venom?

The venom delivery system of lorises is wholly peculiar. Their upper arms each have a brachial gland that produces thick, brown, vile-smelling oil. This gloop appears harmless but, when mixed with the loris's saliva, it can be lethal to small animals. Even humans have died from anaphylactic shock when bitten.

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Venomous mammals are only slightly more common than hens with teeth. Just six other species are known – the European mole and water shrew, the short-tailed shrew, the Cuban and Haitian solenodons and the duck-billed platypus. (A seventh species, the European hedgehog, is thought to possess venomous saliva.) Ali use their venom to subdue prey, except for the platypus, which exudes its poison from defensive spurs on its hind legs.

Since lorises tackle relatively large prey such as lizards, frogs and bats, venom could



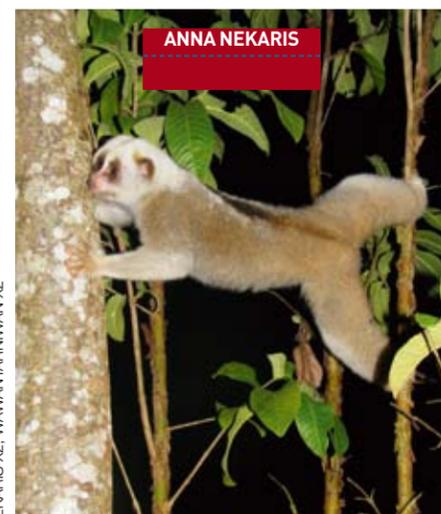
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be an advantage. But observing them hunting at night would be difficult. So I headed to the Ciapus Primate Centre in western Java, the only sanctuary in Asia specialising in the care of slow lorises rescued from the pet trade.

I wanted to know if a loris bites to kill instantly – and my findings were startling. The Javan lorises I observed almost always decapitated their victims, ripping the heads off with gusto. I wasn't convinced venom is necessary for an animal that possesses such powerful teeth and jaws.

A change of tack was needed. Local people often have unique insight into the behaviour of animals on their patch, especially dangerous ones, so I decided to ask them about loris venom. I visited the Kasipuhan, a tribe that lives within Gunung Halimun Salak National

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▷ Park, one of Java's last remaining pristine forested areas. Mr Kokan, a self-proclaimed 'protector of the forest', seemed a likely source of information. But when I asked him about the muka geni, or 'little fireface', the room fell silent.

Mr Kokan explained that the loris is more dangerous than the leopard – it stops and stares, whereas the big cat runs away. It is more feared than any snake because there is no cure for its venom, and any grass touched by its toxic urine withers and dies. "But there is nothing more deadly than loris blood," Mr Kokan told me. If a dog kills a loris and brings it to the village, the corpse could poison the entire water supply.

As I left the village my mind was buzzing, and I started musing about a

problem facing the staff of the Ciapus Primate Centre. Many lorises taken into captivity suffer from severe head wounds that, if they heal, leave terrible scars. Ciapus vets report that a loris injured by a branch or wire heals quickly, but a loris bitten by another loris often develops festering necrosis. Could lorises perhaps, like platypuses, have evolved venom for use against their own kind? It was an intriguing hypothesis.

Slow lorises have a complex system of overlapping home ranges. Though the norm is for an adult male and female to live together, their territory will be visited by lower-status males, and offspring of various ages may also be present. Lorises vigorously defend territorial boundaries – I've seen vicious same-sex fights among

males and females.

Conflict usually breaks out during the mating season, when numerous males – sometimes as many as 10 – may compete for a single female. Rival suitors hurl each other out of trees; they bite, gouge, grapple and utter a wide variety of chittering and whistling calls. The combatants are invariably left with nasty scars.

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I needed to catch some lorises to examine their scars and fit them with radio transmitters, but I soon discovered that it wasn't going to be easy. Lorises have a knack of avoiding traps. I met an ex-hunter called Mr Ade who described how he used to collect lorises to sell on the black market. He would wake before dawn and watch as the sunlight filtered through stands of bamboo, picking out the furry forms of sleeping lorises. He often found several individuals dozing together. For each loris he supplied, traders paid him less than the price of a pack of cigarettes.

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## A FEW MORE ANIMALS WITH AN UNEXPECTED STING IN THE TAIL



#### ▲ Hooded Pitohui

Native to Indonesia and Papua New Guinea, the Hooded Pitohui (*Pitohui dichrous*) was the first bird discovered to be poisonous. It is believed to acquire its poison, the neurotoxin homobatrachotoxin, by feasting on the Choresine beetles of the *Melyridae* family – a likely source of the lethal toxins found in Colombia's poison dart frogs. The bird's feathers and skin contain the toxin, which causes numbness and a tingling sensation in those who touch it.



#### ▲ Centipede

There are thought to be around 8000 species of centipede around the world, living in any number of environments. They use forcipules, which are pincer-like modified front legs found just behind the head, to catch prey and inject a venomous 'bite'. The largest-known species is the Amazonian giant centipede (*Scolopendra gigantea*), at over 30cm (12in) long. It is found in parts of South America and some Caribbean islands and feeds on lizards, frogs, birds, mice, and even bats, which it has been observed to catch in mid-flight.



#### ▲ Duck-Billed Platypus

Found in the freshwater rivers and lakes of eastern Australia, the platypus (*Ornithorhynchus anatinus*) is not only one of the few mammals to lay eggs but is also one of the only venomous mammals. The male has hollow spurs, about 15mm (0.59in) long on the inside of each hind leg. These spurs are connected to venom glands, which can deliver enough venom to kill a small dog. As it is only the males who have these venomous spurs, it is thought that they are used in aggressive encounters between male platypuses.



#### ▲ Cone snail

There are hundreds of species of cone snails living in warm, tropical waters around the globe and all of them are venomous. They fire a radula – essentially a type of modified tooth – from a sac in their throat, which acts as a harpoon, stunning or killing their prey, which they then collect by retracting the radula and swallowing their prey. Although the sting of some cone snails is no more powerful than, say, a bee sting, some stings are powerful enough to kill a human. Scientists are currently exploring the possibility of using cone snail



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Mr Ade had stopped catching lorises because of the suffering he could see in their faces when the middlemen ripped their teeth out with wire cutters. This horrific – but, sadly, widespread – practice prevents lorises destined for the pet trade from delivering their toxic bite.

Mr Ade took me to farmland where he used to find his lorises. I didn't understand how he could locate them so easily. The Javan slow loris is one of the 25 most endangered primates in the world – since 2006 I had seen fewer than 30 of them in the wild. When we arrived, I observed neat lines of carrots and chillies, and a sea of cabbages intersected by row after row of tea plants. Hardly prime loris habitat, you might think.

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But scattered through the fields were trees bearing fruits the lorises relish and flowers that they love – though to reach them, the primates would need to crawl over the ground or scale the pruned tea plants. Surely there couldn't be many here? How wrong I was! In the next week I saw more than 50 Javan lorises. In two decades of studying the species I'd never found anywhere so magical, where one looked at you seemingly at every turn.

But if the lorises are so easy for me to find, then they also offer easy pickings for hunters. The trade in them is still rife. During my stay in Java the YouTube video never left my mind. When I visited animal markets, I expected that – due to changes in international law – I would see few lorises, or at least that they would

be hidden away 'under the counter'. Unfortunately not. I found dozens of them, from Borneo and Sumatra as well as Java, openly for sale.

I even came across lorises for sale next to police cars and in front of coffee shops at upmarket malls in the cities of Jakarta and Bandung. Most of the animals were priced at around £25 – a far cry from the 40p that the original captor of each poor animal received for this prize.

I don't yet know why lorises are venomous, but I do know that if the illegal pet trade continues unchecked, I won't have long to find out. My dream is that my research will help to convince people around the world that these gremlin-like primates – all species of which are sadly endangered – are better off in the forest

[A version of this article first appeared in *BBC Wildlife Magazine*]



Anna Nekaris reader in anthropology, course tutor MSc in Primate Conservation at Oxford Brookes University and Director of the Little Fireface Project in Java.

#### FIND OUT MORE

► <http://nocturama.org>

Anna Nekaris's Java-based Little Fireface Project, which is working to conserve lorises.

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# FACTSHEET



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**LATIN NAME:** *Nycticebus javanicus*/

**COMMON NAME:** Javan slow loris

**LENGTH:** 27-31cm (10.6-12.2in)

**WEIGHT:** 750g-1.15kg (26.5-40.5oz)

**DIET:** Mostly flowers and gum; also lizards, frogs, bats, snails, insects and fruit.

**LIFE-CYCLE:** Female gives birth to one or two babies after a gestation of six months.

**HABITAT:** Originally lowland primary rainforest; also cultivated land around villages.

**IDENTIFYING FEATURES:** Dark eye rings, with a white diamond between; dark stripe down back. Fur can be short or very fluffy – two forms considered by some to be separate species.

**STATUS:** Endangered. Threats include deforestation and hunting for the pet and traditional medicine trades.

