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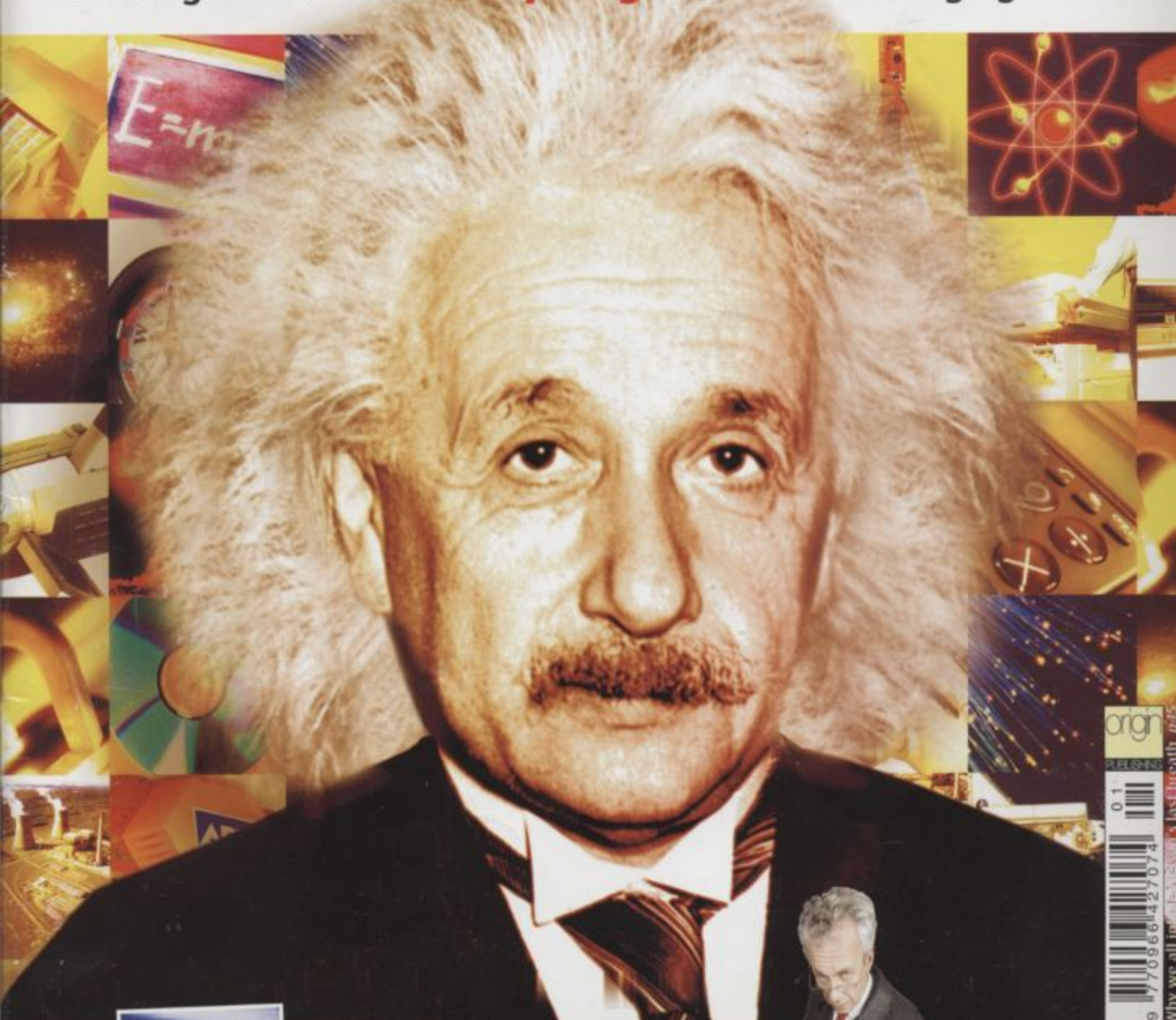
# FOCUS

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## Deadly reptiles



# The Snake catchers



## WHERE IS BADLAPUR?

Badlapur is located in Maharashtra in western India, 60km south of the state capital of Mumbai. Twenty five years ago the population was 75,000. Today, it's closer to 500,000 and it is the state's fastest-growing city. Badlapur has a small industrial base producing medical instruments and metal castings, and the vast majority of its citizens commute to work in Mumbai. On Badlapur's fringes are 51 villages, which rely on agriculture and livestock to eke out a living

In the Indian city of Badlapur, conflicts between snakes and humans are frequent and deadly – for both. To resolve the crisis, conservationists are relocating the lethal reptiles. **Clive Grylls** reports

BY THE TIME THE PACKED MORNING commuter train arrives at Badlapur, in Maharashtra, the temperature has soared to 34°C with 84 per cent humidity. Finally managing to extricate myself from the frenzied crush of people boarding the train, I stand sweating on the platform and gulp the last tepid mouthfuls from my bottle of water.

I am here in the Thane region of India to meet 23-year-old Nangini Gangul, one of the world's few female snake-catchers. Gangul and her small team of volunteers have the unenviable task of rescuing India's four most deadly snakes from the homes and gardens of Badlapur's residents, and taking them out of the town, where they can safely be released.

Known as the 'Big Four', the venomous bites of the spectacled cobra, saw-scaled viper, Russell's viper and Indian krait kill between 6,000 and 20,000 Indians each year. So notorious is their reputation for aggression and adapting to live within human settlements that they occupy three of the top five places in London Zoo's list of the world's most dangerous snakes.

An hour later I am in Gangul's garden, in the shade of a mango tree. Sitting opposite is 21-year-old Rituraj Joshi, senior partner in Gangul's

organisation. Skinny and intense, he talks about snakes as if they are the sole reason for his existence.

"The Big Four are all common throughout India, but it's extremely unusual for them all to be found locally in one area," he says. "Badlapur is an exception because its environment is so diverse. There are rivers and lakes for the kraits, open grassy plains for the Russell's viper and cobras, and sandy shrub-jungle for the saw-scaled vipers."

## Who's on whose patch?

Gangul points over the garden wall. "Twenty five years ago, that was just jungle and fields," she explains. "However, the rush here to accommodate Mumbai residents seeking a quieter life in the suburbs has meant that Badlapur has grown twentyfold. It's not that the snakes have taken over our houses and gardens. Rather, it's us who have invaded their territories. For the town's residents, conflict with snakes has become part of their daily life."

It was this conflict that drove Gangul and Joshi to set up their own organisation, the Nature Conservation and Social Awareness Group, to rescue the snakes and other wildlife found

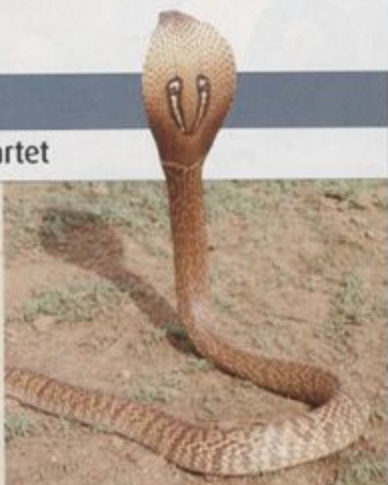
# Deadly reptiles

## THE BIG FOUR

### India's deadliest serpent quartet

#### SPECTACLED COBRA *Naja naja*

Found throughout peninsular India, the spectacled cobra is named for the patterns on its head. It also has a distinctive hood. It reaches between 1.3 and 1.6m, and is India's most common venomous snake. It is found in jungle, cultivated land and urban habitats, where it mainly eats rats. Mating occurs in January, with the female laying between 12 and 22 eggs. The poison glands are active from birth



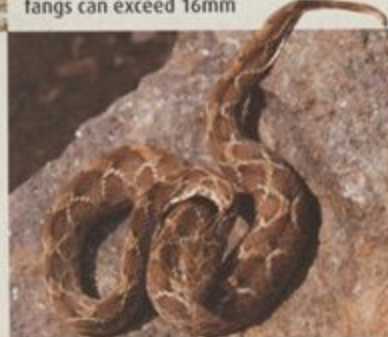
#### RUSSELL'S VIPER *Russelli viper*

The range of the Russell's viper extends from India into southeast Asia and the Indo-Australasian archipelago. It prefers open country, but readily adapts to urban habitats where its prey - small mammals - is abundant. Powerful and weighing up to 3kg, it can reach 1.5m. If disturbed, it coils into a circle with its head in the centre and to one side. Its hinged fangs can exceed 16mm



#### SAW-SCALED VIPER *Echis carinata*

Common throughout India in desert, semi-arid and broken shrub country, it is also abundant in the Middle East and West Africa. It rarely exceeds 45cm and feeds on scorpions, larger insects, geckos and frogs. Alert, nervous and fast-moving, it strikes fast with little provocation. Its hinged fangs are remarkably long for its size: up to 5mm. It kills more victims worldwide than any other snake



#### INDIAN OR COMMON KRAIT *Bungarus caeruleus*

*Bungarus caeruleus*

Found locally throughout India in fields and low shrub jungles close to water, it readily adapts to urban habitats. Slender with shiny, bright bluish-black scales, it has white stripes along its middle body to its tail. It seldom exceeds 1.2m and is nocturnal, feeding on other snakes, kraits included. It has short fixed fangs and the most virulent venom of the 'Big Four'



## HOW TO CATCH A COBRA

### SNAKE SURPRISE

This cobra has been discovered by a cable company engineer who's been working on a roof in Badlapur. Snake-catcher Nandini Gangul allows the cobra to run and shepherds it towards her colleague Rituraj Joshi so he can start to entice it into the bag he is holding



### HANDLE WITH CARE

The disturbed cobra is ready to strike out and so, naturally, needs to be handled respectfully. But Joshi is not worried because Gangul is waiting behind the serpent, ready to use her snake-hook to guide the deadly cobra safely into the bag





**Left:** While using snake-hooks is common, Rituraj has captured this cobra by hand; something only for the highly skilled - and brave

**Right:** Held on snake-hooks, this Russell's viper is now unable to strike and can be safely helped into a bag



### DID YOU KNOW?

The effects of snake-bite on humans depends on many factors: health, weight and age, location of the bite and toxicity and volume of venom injected. In 50 per cent of snake-bites, little venom is actually injected. If you're bitten by one of the Big Four, apply a pressure bandage above the bite and raise the affected limb. Stay calm and still until you can be taken to hospital, where anti-venoms (produced from the antibodies of horses) are virtually 100 per cent successful

**"It's not that the snakes have taken over our houses and gardens. Rather, it's us who have invaded their territories"** Nangini Gangul Snake-catcher

in the town. "Five years ago, most residents thought: 'Why should we save snakes? They're not at all useful and only want to bite us,'" says Gangul. "But they increased their chances of being bitten by trying to kill the snakes."

#### Pest control

Gangul and Joshi studied the snakes in the wild and taught themselves the skills needed to handle and capture them. Soon, everyone in town knew them as the 'snake-rescuers' and started calling them whenever a snake was found in their garden. They now deal with 70 per cent of snake-human conflict in the area, and have even been able to educate the locals about the benefits of having snakes around. "Badlapur has no organised refuse collection. We tell the people that learning to live with snakes is the only way to keep the rat population down," says Gangul. Suddenly her mobile rings. It's a call-out. An engineer on a rooftop has turned around to find a 1.5m cobra up there with him and ready to strike.

When we arrive, the cobra sees us immediately and hisses menacingly from the roof. We move away to reassure it and it slides gracefully to the ground, looking for an escape route. Gangul holds open a cotton bag in front of the snake, while Joshi helps to guide it in (see 'How to catch a cobra', below). Within minutes they have guided it into the bag. Every snake they capture is released at least 20km out of town, where it can safely establish a new territory.

The cobra always gives the clearest possible warnings before it strikes. First, it raises its hood and lifts a third of its body off the ground. Then it emits a low-pitched, explosive hiss. If you don't move away, it arches its neck and swings its body slightly backwards to gain maximum momentum, before striking with its sharp, fixed fangs.

"The cobra has absolute control over the venom it injects, and never uses more than 20 per cent of its yield," says Joshi. "In many cases, it may inject no venom at all, using its bite as a final

#### SAFETY IN DARKNESS

Gangul carefully holds the dark green bag with her snake-hook and the excited cobra decides the darkness of the bag is a safe place into which to retreat. Once the cobra's inside the bag, Joshi will secure it by carefully tying it up



#### CAPTURE COMPLETE

Now the job's almost done. The cobra coils itself up in the bag - although the danger's not over yet, as a cobra is capable of striking through a bag. The bagged snake will now be put in the shade to cool down and released later that day at least 20km out of town



## Deadly reptiles

→ warning to retreat. This is known as a 'dry bite'. Snakes' venom has evolved for the purpose of immobilising prey, and they do not want to waste it on humans, although when a snake is cornered or accidentally touched, that's another matter. A cricket ball landing in a bush or a housewife spring-cleaning can lead to a deadly confrontation."

I'd not been there long when there's another call. Mrs Sonavale, who lives nearby and whose yard is cluttered with rubbish, has opened an old cupboard and disturbed a Russell's viper. Gangul says it's their fourth call-out there in six months and that if Mrs Sonavale cleared her yard, she'd find fewer snakes.

The Russell's viper kills more people in Asia than any other snake. It can strike over a distance equivalent to its body length, either forwards, backwards or sideways, using mobile 16mm fangs to bite from the front, side or through its lower mouth. Fortunately, it announces itself with the loudest hiss of any snake.

The viper peers out of the cupboard and Joshi balances its upper body with a snake-hook. As it creeps forward, Gangul attaches another hook until it is completely balanced off the ground and unable to strike. By now, a large crowd has gathered to watch them expertly entice it into a snake-bag. Joshi tells the crowd about the characteristics of each snake. "The local hospital has anti-serums that neutralise the Big Four's venom," he explains.

### Deadly distance

If that's the case, I wonder, why are there so many snake-bite fatalities? "India's tragedy is that most human-snake conflicts occur in rural communities where hospitals are hours away," says Joshi. "So victims go to their local temple and expect the gods to save them, or visit quack practitioners that administer useless potions based on superstition."

In any case, most people cannot afford hospital treatment. A private hospital charges up-front for treatment, and even though in government hospitals treatment is advertised as free, most rural people are illiterate. Furthermore, many rural hospitals do not have access to respirators or blood transfusion units that can be vital before and after anti-serum is administered.

Two days later, we trundle in a rickshaw toward the nearby town of Dombivli, where another organisation,

**The bare fangs of a Russell's viper. The deadly hinged prongs are 1.9cm long and inject a venom causing irreparable tissue loss and massive internal and external bleeding**



the Nature Save Society (NSS), has recently rescued a saw-scaled viper and an Indian krait. Before releasing the snakes, they have allowed me to photograph them. These are India's deadliest snakes – only a quarter to a third of the venom injected by each bite is needed to kill a healthy adult human.

Gangul empties the snake-bag containing the saw-scaled viper onto some rocks and I approach warily with my camera. Immediately, the small, aggressive viper coils into a figure-of-eight, rubbing the scales of its tail against its body to emit the saw-like sound that gives it its name. "Don't go any closer, or it will strike," says Gangul. Two-thirds of the snake-bites in India are attributed to this well-camouflaged, short-tempered viper.

By comparison, when we release the Indian krait it is calm and well-mannered. Gangul calls it the 'quiet assassin' and tells me not to be fooled. "When it strikes in the darkness, very few people realise they've been bitten. Hours later, when they suddenly develop symptoms, death comes quickly through respiratory failure and even if anti-serum is applied it can be difficult to save them."

Gangul and Joshi drop me back at the station, and I commend them for their courage, but Joshi says that catching snakes has nothing to do with bravery. "It's all about knowing what you are doing. There's a fashion nowadays for youths to collect snakes as trophies, poking them with sticks and showing off with them in front of their friends. These are the cowards who end up getting bitten." Having watched their gentle handling of the frightened, aggressive snakes over the past 10 days, I can only respectfully agree. ●

### DID YOU KNOW...

Not only does snake venom immobilise and kill prey, it also acts as an aid in the digestive process. Snakes cannot chew. Instead, they swallow their prey whole, using their many rows of teeth to literally 'walk' it down into their bodies. The venom injected acts as a fast-acting digestive 'aperitif' to help to dissolve the prey into readily absorbed pieces

### HOW VENOM WORKS

Snake venom is a potent cocktail of neurotoxins



Snake venom is highly evolved and modified saliva made in the snake's venom gland. It is a complex mix of tens of proteins and enzymes that attack the nervous system, blood and muscles. Every venomous snake has a different combination of poisonous elements, and even in the same species they may vary depending on the region the snake inhabits and the prey it consumes.

In the bite of an Indian krait or a spectacled cobra, the venom is rapidly absorbed through your body and acts as a powerful neurotoxin, and blood-cell destroyer. A spectacled cobra bite is immediately painful, but many who are bitten by an Indian krait often don't immediately know they have been bitten. Death occurs, through respiratory failure, between five and 15 hours later.

If it's a saw-scaled viper or Russell's viper that gets you, the venom is absorbed through the body and breaks down the components of your blood. Symptoms include swelling and irreversible tissue damage, at and beyond the bite. Death can occur within 48 hours due to internal haemorrhaging, respiratory failure or organ damage.

### » FIND OUT MORE

**Snakes in India: A Source Book**, Budh Dev Sharma (Asiatic Publishing House, 1998) £50

**The Book of Indian Reptiles and Amphibians** JC Daniel (OUP, 1992) £15.99