

Features

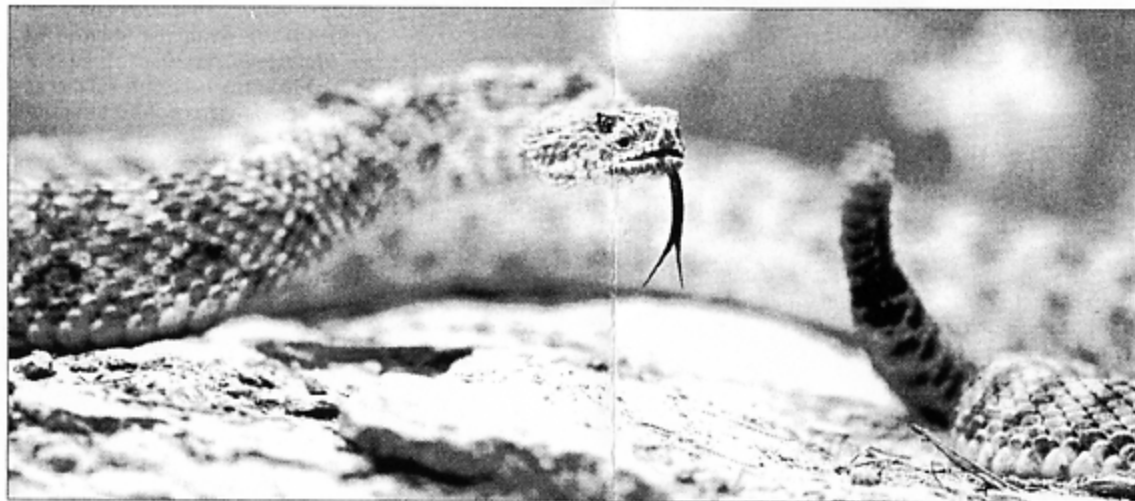
America in jaws of fear as snakes get more bite

Deaths rise as the venom of once harmless types of rattler becomes stronger, writes **Robin McKie**

It was meant to reveal the strength of the young minister's fundamental beliefs. But when the Alabama cleric picked up the timber rattlesnake in front of the congregation of his Baptist sect, the reptile promptly bit him. Within 10 minutes the man was dead.

The minister's death, in 1998, may not seem surprising, or particularly undeserved. Nevertheless the doctors were startled, for the timber rattlesnake does not normally kill. Despite its fearsome reputation, rattlesnakes — of which there are 70 subspecies in the United States — rarely deliver fatal bites: on average only one in 500 of their human victims has died. People have lost toes or fingers, but few perished, particularly after the development of anti-venom made from horse serum.

Now that comforting picture is changing — for something strange is happening to America's rattler population. The ability to deliver life-threatening bites, once restricted to a few subspecies like the deadly Mojave rattler, has been spreading rapidly. Like the opening scenes of a cheap horror movie, bizarre deaths and near-fatal encounters with rattlesnakes — which normally bite only when hunting rodents or in self-defence — have been occurring with increasing frequency. For example, in Hesperia, California, an 18-year-old



Some scientists say an arms race is escalating between more resistant prey and deadlier reptiles Photo: Corbis

collector was bitten last year as he tried to grab a local Southern Pacific rattler, another relatively harmless member of the species. Within minutes, he was paralysed, unable to breathe or swallow properly. It took 35 vials of anti-venom to save his life.

At around the same time, in Florida, an army ranger stopped breathing only 13 minutes after being bitten by a timber rattlesnake. He was resuscitated and survived, although it required 40 vials of anti-venom — four times the usual dose —

to save him. The rattler is behaving very strangely, in other words. Its bite is not what it used to be.

"Doctors must now use much more anti-venom to treat bites," states Steve Grenard, of Staten Island University Hospital, in the latest issue of *Natural History*. "Whereas five to 10 vials used to suffice, patients today don't seem to improve until they have been injected with between 30 and 70."

But why? Some scientists argue that America is simply witnessing the

rapid molecular evolution of the rattlesnake. Hybrids of two species are being created at the borders of their separate ranges, and the ability to deliver powerful neurotoxin bites is being passed from the more deadly species to the formerly less harmful one, like the spread of antibiotic resistance among bacteria. In this way, increased venom toxicity is spreading west from Arizona, and east to Texas and Florida.

Not every researcher agrees, how- ever. Scientists at the University of

California, Davis, point to a very different agent: the ground squirrel, one of the rattlesnake's traditional meals. Studies of this creature have shown that it has evolved an enzyme defence system that can break down rattler venom in its blood.

Studies of rattlers' other rodent prey have shown that they too have evolved anti-venom defences — thus triggering an arms race. To overcome their prey evolving more and more effective anti-venom defences, rattlers have simply developed more and more deadly venom.

But other scientists disagree. Squirrels and other rodents still get eaten in large numbers by rattlers, they say. Instead, this group of researchers point to a very different cause: human beings. Younger and smaller snakes are known to have more toxic bites than mature rattlers — because they cannot inject as much venom as their elders, and have to make less go further. At the same time, rattler round-ups, like those held every year in Sweetwater, Texas, are depleting populations of mature reptiles. Thousands of large, adult rattlesnakes are killed, leaving smaller, younger snakes — with the more toxic venom — to take over the wild, where they can then bite the hands of those that persecute them. *The Observer*