



Life in the Dark

by Peter Smithers

Have you ever stepped into a cave and turned off your torch, plunging yourself into a darkness so still and quiet that all you can hear is the distant drip of water and the beating of your own heart?

This is a strange and uncomfortable place for us, but it is home to one of Britain's largest spiders. This is the cave spider *Meta menardi*. Entering a cave that contains a population of this spider can be a challenge to anyone with even a slight fear of spiders! They can have a leg span of as much as four centimetres across, and be present in large numbers. I have been into some underground chambers where there were as many as 100 spiders hanging from the roof. So, being faced with the sight of so many large spiders hanging from the ceiling of a cave, even hardened spider hunters have been known to think twice before going in!

But, once you are in the cave with them, they are fascinating; they are curiously still, with none of them moving: they are just waiting for lunch to arrive. My first question when I began to study these spiders was: what exactly is lunch for a cave spider?

I spent two years visiting a cave to see what they were eating. Each time I visited I would steal the lunch of any

spider that was eating. This would then be taken back to my lab, and I would identify it under a microscope. To my surprise, they ate woodlice and millipedes, but mostly slugs. They also occasionally ate another spider, but not the moths and flies that spent the winter in the cave escaping the cold and the wet. We then realised that they only catch invertebrates that walk on the walls of the cave. So how do they do this?



The cave spider *Meta menardi*



They make an orb web, just like the spiders in the garden, but when examined closely they look wrong. There are only a few of the spiral catching threads, and they are widely spaced; there can be almost a centimetre gap between them. We were curious to find out how they can catch anything to eat with such large gaps in their web. Most insects would fall between these catching treads and escape.

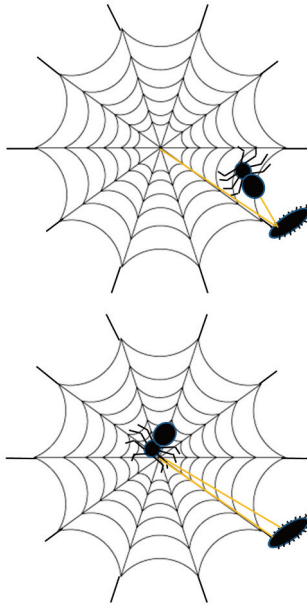
It took me some time to work out what was going on – and the answer was surprising. After my students and I had spent many hours watching them, we realised that the radial threads of the web act as trip wires. When something bumps into one of these, the spider rushes down to the end of the thread and sticks a silken line onto the creature it finds there. The prey then flattens itself against the cave wall and holds on firmly. The spider returns to the middle of the web with the silken thread and fixes it to the centre. It then returns to the prey and fixes another thread to it, and then it goes back to the centre and attaches the other end. Each time it does this, the spider increases the tension on the thread (probably as a result of the silk lines contracting as they mature) so that eventually the helpless prey can hold on no longer and is pulled off the cave wall and left hanging on a bungee cord of spider silk. The spider can then eat lunch at its leisure.

So, the next time you are in a cave, check out the spiders and see what they are eating.

Peter

Peter Smithers works at the University of Plymouth and is a member of the British Arachnological Society

The cave spider attaches a silken thread to its prey and fixes it to the centre of the web. Eventually the prey lets go of the wall and dangles on the thread - and the spider's lunch is served!



**A cave spider
having its
lunch**