

INSIDE JEB

How arrowhead spiders reel in tasty prey



An arrowhead spider (*Verrucosa arenata*) consuming a fly. Photo credit: Dinesh Rao.

Landing a big fish is a fine art. According to anglers, the trick to avoid snapping the line is to pull up the rod, bringing the fish closer before reeling it in. However, human anglers aren't the only species that reel in a catch: 'Reeling is mostly associated with spiders of the families Theridiidae and Phocidae', says Dinesh Rao, from the Universidad Veracruzana, Mexico. Perched on their webs, the spiders wait for an unsuspecting fly to blunder into the trap before tugging on the radial thread nearest the victim as they haul it in. But Rao points out that the paradoxical behaviour damages the web, jeopardising the spider's chances of future success. That was pretty much all that was known about spider angling techniques until Rao and a team of helpers took to stalking arrowhead spiders

(*Verrucosa arenata*) in the parks around Xalapa, Mexico, ready to catch the arachnids in the act.

Instead of waiting for a fly to find the webs by chance, Rao provided each lucky spider with a free lunch. Patiently attaching a tasty Mexican fruit fly (*Anastrepha ludens*) to the lowest portion of a web, Rao filmed each spider as it initially approached the hapless snack before tugging on the radial thread closest to it, snapping the attached spiral threads as it dragged the fruit fly to its perch. But how would the spiders react when presented with a more hefty meal?

This time, Rao attached a tiny plastic pellet to each fly to double its weight

before filming the spider's approach. However, when Rao, Horacio Tapia-McClung (also from the Universidad Veracruzana) and Ajay Narendra from Macquarie University, Australia, compared the arachnids' tactics, they realised that the spiders were more cautious as they advanced on the larger flies. 'Spiders that approached heavier prey paused more as they made their way down the web', says Rao. In addition, the inbound predators plucked the web's threads more when the prey was larger, possibly to gauge the detainee's size, while also stopping farther from the weightier captives, choosing instead to haul them over longer distances.

But why do arrowhead spiders go to such destructive lengths to ensnare an entrapped fly when they could just as easily scamper the whole way? 'The time insects spend caught in the web is an important component of web function', says Rao, who also suspects that the spiders reel in their victims to ensure that unruly detainees are properly ensnared, reducing the risks to themselves. And, even though webs are often in a shocking state after a fly has been dragged through them, Rao suspects that the damage doesn't bother the spider too much: they just build a new one the following day.

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