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Come into my parlour...

Charles Hippisley-Cox MCIAT, Chartered Architectural Technologist, was a runner up in the CIOB article competition with his article *Bio predators as a means of addressing woodworm infestation*.

Most professionals working with the built environment are now committed to using fewer potentially dangerous chemicals whenever possible. A recent trial has shown that there may be scope for using spiders rather than sprays to control woodworm populations. A five year trial followed the informal observations of *Pholcus phalangioides* devouring a variety of prey during repairs to a property in Northern France where it is a legal requirement for buildings to be chemically treated as part of the formal property transaction process. The property had been comprehensively treated in 2005 with permethrin in a standard commercial water-based product applied as a spray.

All signs of life were eradicated, or so it seemed at the start of the project, but the following year it was clear that the woodworm (*Anobium punctatum*) had survived with plenty of fresh dust from beetles emerging in large numbers during the spring. After spraying there was also a conspicuous absence of any spiders with the exception of one or two ghostly *Pholcus* apparently missed by the killer-spray.

Pholcus phalangioides misleadingly shares the common name 'Daddy Long Legs' with the crane fly and the harvestman neither of which are actually true spiders. There is a slightly better vernacular name; 'Cellar Spider', but *Pholcus* is by no means restricted to cellar-living. Their webs do not normally act as effective traps with *Pholcus* preferring to actively seek out their prey. Their webs are essentially a base from which to

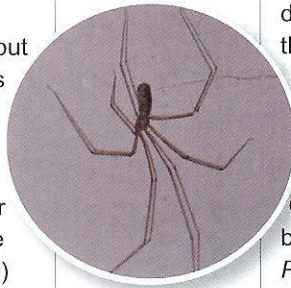
hunt and a place for the eggs to hatch into juveniles.

Despite their tantalisingly slow and graceful movements, these spiders are actually a very efficient venomous carnivores but fortunately harmless to humans as their fangs are much too small to penetrate our skin. Their effective hunting method can even be used against other species of spiders including the large house spiders (*Tenegetia*) which can be up to ten times their weight. A population of these spiders can grow very rapidly depending on the abundance of potential prey.

At the property in France four unoccupied rooms were monitored over a five year period. In 2006 the main prey of the small population of *Pholcus* was the large number of emerging woodworm beetles that had been untouched by the chemical treatment of 2005. In response to this abundant food source, the few spiders generated huge numbers of spiderlings that survived into adulthood with an estimated 75 adults in the spring of 2007.

The life cycle of the *Anobium punctatum* can involve a long spell in the wood as the larvae derive energy for pupation before emerging as adult beetles. A healthy population of hungry spiders at the time of beetles leaving the timber is crucial to form a significant break in the *Anobium punctatum* life-cycle; ideally before the mature beetles mate and lay eggs.

The estimated 75 adults in the spring of 2007 completely



There may be scope for using spiders rather than sprays to control woodworm

decimated the woodworm population with approximately 400 examples of beetles caught and wrapped in silk bundles. The subsequent decline in woodworm during 2008 and 2009 confirmed that they were being eaten if not before mating, but certainly before they were laying their eggs.

Once the rich food supply of beetles started to wane, the *Pholcus* population began to decline despite the reappearance of house spiders as an alternative prey. By 2011 the population had declined to approximately 10 adults across the four rooms and most spiderlings were being ingested by their mothers.

A further research project could establish methods of producing spider colonies on a commercial basis to home-owners wishing to explore an alternative strategy to spraying. There may also be scope for creating nesting places by pest control companies as a 'green' alternative to chemical methods.

There may be some perception-related obstacles that would need to be overcome as spiders are often wrongly associated with untidy or even unclean domestic environments. Arachnophobia is another potential disadvantage for spiders as bio-predators, but their slow, graceful movements are actually not as threatening as the rapid movements of the 'big hairy ones' ...and they may even help remove the latter.

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