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Spiders Love Woodworm

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Spiders love W000dW0rm!

Despite the recent shift towards safer chemical treatments for woodworm it is clear that they still have an environmental impact. A recent study has demonstrated that spiders may offer the ultimate green alternative 'potential' as bio-predators in reducing or eliminating woodworm infestation says Charles Hippisley-Cox ...



Background

There are many precedents for being inspired by our eight legged friends. The slow and graceful movements of the cellar spider, Pholcus phalangioides, are particularly tantalising and this study, run over the last five years, involved a considerable amount of spider-gazing. These observations took place not in the quiet dampness of a considerable number of suitors. Robert Bruce's cave but in a small agricultural building undergoing repairs in Northern France.

It is a legal requirement in France for buildings to be chemically treated as part of the formal property transaction process and the aforementioned building had been comprehensively sprayed prior to purchase in 2005. All signs of life had been eradicated, or so it seemed at the start of the project, but in the following year it was clear that the woodworm (common furniture beetle, Anobium punctatum) had survived with plenty of fresh frass and beetles emerging in large numbers from mid-May onwards and there was a marked absence of any spiders, with the exception of one or two ghostly spiders, thankfully missed by the killer-spray.

Pholcus phalangioides

Sometimes called Daddy long-legs, this spider is believed to have originated in warmer climes but has happily moved into Northern Europe and parts of the UK where it can survive in buildings if the average temperature stays above 10 degrees centigrade. Disliking cold drafts, they seem particularly happy in cellars, hence their being commonly referred to as cellar spiders. They are not restricted to cellars and their untidy webs often occupy top corners of rooms, cupboards or underneath furniture. They have relatively small bodies, with the female body length about At the property in France four unoccupied rooms were



9mm with males slightly smaller. However, the legs are about 5 or 6 times the length of the body (reaching up to 7cm of leg span in females). Pholcus phalangioides must not be confused with the Harvestman (which is not a true spider) or the crane fly, both of which are also sometimes referred to as 'daddy long-legs'.

Another vernacular name for Pholcus is the 'vibrating' spider as they seem to oscillate when startled. vibrating also forms part of their mating rituals after which the males usually die. Males rarely live for more than a year, but females can live for three years and usually have

Despite the somewhat lethargic demeanour, the spider is actually a very efficient, venomous carnivore with an extraordinary ability to rapidly draw silk from their spinnerets and flick it at potential prey. It can subdue quite large insects and even tackles *Tegenaria* (large hairy house spiders, much loathed by 'arachnophobes'). Fortunately, Pholcus is harmless to humans with their fangs being much too small to penetrate human skin.

The availability of prey encourages egg production and mating which can take place at any time of year. The female initially holds as many as 30 eggs in a silk net between her chelicerae (jaws) and when hatched the young transparent spiderlings share the web. Their growth depends on the availability of food and if it is in short supply, the mother will re-ingest the young. Sometimes spiderlings eat each other with the slightly smaller males being particularly vulnerable. The web is really a place to stay rather than a means of catching prey, and foraging trips are the preferred way of obtaining fresh catches, which are bundled in silk and dropped after being sucked dry. This pattern of behaviour is how they can regulate insect populations and even the populations of other spiders.

The study



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monitored over a five year period. In 2006 the main prey of the small 'surviving' 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 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.

Conclusion

Although this study is essentially an informal one, it would be in the interest of the producers of the chemical treatments to consider funding more formal trials. Such a research project could explore methods of breeding and supplying colonies of spiders to homeowners. The banks and building societies, along with those responsible for domestic condition surveys, may also have a potential role

in funding further research and ultimately recommending such a radically alternative strategy for woodworm control.

There would also be a need to help some people overcome the phobias associated with spiders. It is a myth that they like dirty or dusty environments and with *Pholcus phalangioides*, they actually dislike dust and will create a new web if the old one gets too dusty! The slow graceful movements of *Pholcus* are not as threatening as the rapid movements of the 'big hairy ones' and they may also help reduce the number of the latter.

On a slightly different note there may be potential for *Pholcus phalangioides* to become a predator of global significance ··· as another of their favourite victims are mosquitoes.

Charles Hippisley-Cox, BSc (Hons), BA Hons, IHBC, MBEng, FHEA

Further reading

Dalton, S. (2008) Spiders; the ultimate predators

Gilpin, R. (2007) Spiders

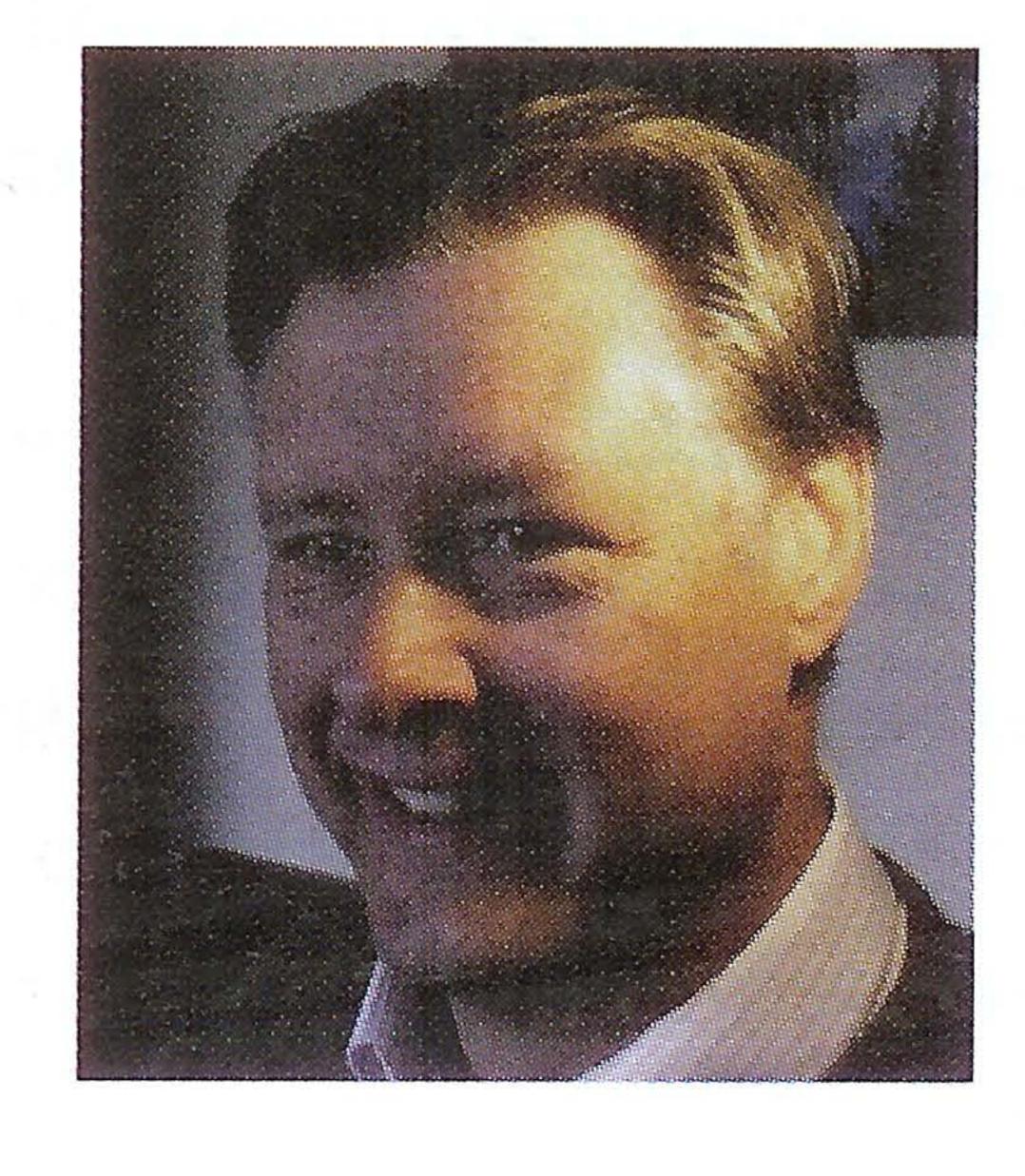
Harvey, P.R., Nellist, D.R. & Telfer, M.G. (eds) (2002) Provisional atlas of British spiders (Arachnida, Araneae), Volumes 1 & 2.

Hillyard, P. (2007) Private Lives of Spiders

Kelly, L. (2009) Spiders; Learning to Love Them

Lewington, R. (2002) A Guide to House and Garden Spiders

Roberst, M.J. (2001) Collins Field Guide to Spiders



Charles Hippisley-Cox studied geology before working as a historic building surveyor. He undertook architectural training as a mature student before working with the late John Ashurst at Bournemouth University. He is currently Senior Lecturer in Building Conservation in the Department of Architecture & 3d Design at Huddersfield University where he is also course director for Architectural Technology.

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