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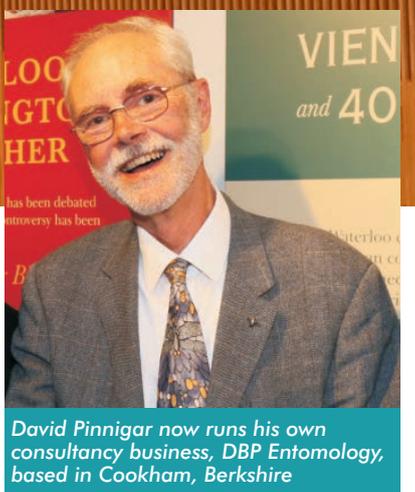
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# IPM

## Integrated, or is it International, Pest Management?



David Pinniger is invited to the platform by Lisa Nilsen, the main organiser of the 4th International Conference on Integrated Pest Management for Cultural Heritage. Lisa had found an old newspaper cutting from a visit David made to Sweden years ago!



David Pinniger now runs his own consultancy business, DBP Entomology, based in Cookham, Berkshire

Having been involved in pest management for well over 40 years, David Pinniger was delighted to be given the honour of presenting the opening paper at the 4th International Conference on Integrated Pest Management for Cultural Heritage held in May in Stockholm, Sweden earlier this year. It gave him the opportunity to give a personal view of his pest management journey through museums, galleries, libraries, archives and historic houses across the world – how things have changed.

### The quagga

My first encounter with pests in museums was the day I received a phone call telling me that a quagga was being eaten by insect pests and lumps of hair were falling out. A visit to Tring Museum (an outstation of the Natural History Museum in London) revealed that the quagga was an extinct type of zebra and the hair on this irreplaceable specimen was being damaged by larvae of *Anthrenus verbasci*, the varied carpet beetle. A survey of the collection showed that there was an extensive infestation in the building of both *A. verbasci* and *Attagenus pellio*. The solution in 1977 was to seal up the building and fumigate the whole museum with methyl bromide gas. Although the treatment was totally successful, the museum wanted to ensure that the collection was not re-infested and I was tasked with providing advice on preventing further problems.

### The birth of IPM

The Tring episode occurred when I was working at the Pest Infestation Control Laboratory in Slough which was part of the Ministry of Agriculture, Fisheries and Food. My main area of research was with insect pests in the food storage and processing industries and we had just

started to explore the then new concept of Integrated Pest Management (IPM). Instead of the previous regimes of regular treatment with insecticides and fumigants, we devised programmes using traps to find out where the pests were, targeted cleaning where the pests were living and then treatment only where and when, it was deemed appropriate.

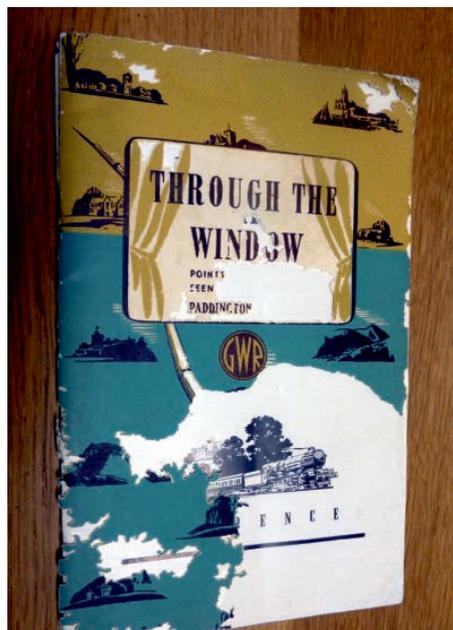
This sounds very familiar now, nearly 50 years later, but was a very new approach for flour mills and food factories. If such a programme could be successful in a food storage environment, then why not in a museum, such as the Natural History Museum?

I then was asked to lecture on IPM for conservation courses at the Institute of Archaeology in London. My first slim volume *Insect Pests in Museums*, published in 1989, was the result of Jim Black (course organiser) persuading me to write a book instead of giving out loose handouts on the courses. Running pest workshops gave me the opportunity to meet and work with people from many countries who were also interested in developing better methods to implement IPM. A participant in one of the first workshops in London in 1987 was Monika Akerlund from the Swedish Natural History Museum. She introduced me to PRE-MAL, probably the first national heritage IPM organisation, with members from Sweden and other Nordic countries.

### West Dean and international collaboration

One pivotal point for the international development of IPM was a five-day workshop in 1996 held at West Dean College and organised by the Getty Foundation in California and the UK Museums and Galleries Commission. Key sessions were given by specialists from the Getty Conservation Institute (GCI), The Canadian Conservation Institute (CCI), Spain and the UK.

Participants were from the UK and a number of other countries and many went on to spread the word on IPM in their own institutions. One of the tools to emerge as a result of Amber Xavier-Rowe's participation in the West Dean workshop was the English Heritage pest poster. First produced in 1998, a second revised version was produced in 2008 with input from Dee Lauder. Over



Silverfish (*Lepisma saccharina*) damage to a Great Western Railway book

16,000 copies of these posters have now been distributed in the UK and 20 other countries world-wide. We hope to produce a new and updated version of the poster in the near future.

We tend to forget that before 1990 museums worldwide relied heavily on toxic gas fumigation with methyl bromide or ethylene oxide to control insect infestations in collections. Because of concern over health issues, chemical residues and undesirable effects on objects there was then a large-scale switch to the use of freezing in Europe and North America. This was also accompanied by the development of controlled humidity high temperature treatment, nitrogen anoxia and the use of carbon dioxide as a replacement fumigant. For largely economic reasons this trend was not taken up so quickly in many other countries, but the inclusion of methyl bromide in the Montreal Protocol for reduction of ozone-depleting chemicals meant that it would no longer be permitted as a fumigant. A meeting in Japan 'Beyond methyl bromide – meeting the Montreal Protocol' in 2001 was an important turning point and led to more research and development into alternative control methods.

### Insect traps and pheromones

Insect behaviour has always fascinated me and led me to thinking about ways to detect insects. In the 1970s I was part of a team carrying out research for better storage of grain and other foodstuffs. We developed effective pitfall traps for bulk grain and then food-baited traps for detecting small numbers of beetles in storage buildings. When I became involved with museum pest problems, it was a natural step to modify these traps for use in museums and other buildings with collections. One of the early international collaborations was with Insects Limited in Indianapolis, USA and over the years we have worked on many projects with traps and pheromones. The most



This green sofa has been damaged by carpet beetle (*Anthrenus verbasci*) larvae

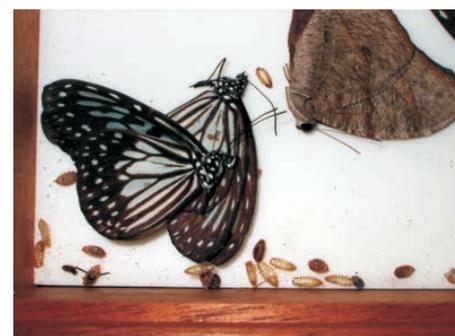
notable was the first UK trial in 1996 of the new sex pheromone lure for webbing clothes moth *Tineola bisselliella*. The performance of this lure exceeded all our expectations with baited traps catching over 20 times more moths than unbaited ones. Since then we have accepted moth pheromones as an invaluable IPM tool for monitoring spread and increase in populations.

Traps are not very effective for most woodboring beetles, but from Germany came the simple idea of pasting tissue over woodborer emergence holes in roof timbers so that you could record fresh adult emergence in the following spring. We have since refined this by using a different colour for each year emergence to build up a pattern of activity of furniture beetles *Anobium punctatum* and death watch beetles *Xestobium rufovillosum*.

A completely new version of my book, now called *Integrated Pest Management in Museums, Galleries and Archives* was published by Archetype in 2001 to coincide with the Pest Odyssey conference held in London.

The conference '2011: A Pest Odyssey, 10 years later' was held at the British Museum in London and showed how many topics had moved forward in the time since the first conference in 2001. There were two notable changes in pest status with the remarkable increase in problems with webbing clothes moth *Tineola bisselliella*, particularly in the UK, but also reflected in other countries. The other was the increasing spread of the brown carpet beetle *Anthrenus smirnovi* in the UK and Europe, possibly linked to climate change.

It was agreed at this meeting that the next international conference needed to be held outside the UK and Pascal Querner from Austria took up the challenge and organised an excellent conference in Vienna only two years later. A total of 31 papers were presented from 12 countries, with an even wider participation of delegates from many other countries, showing that heritage



Butterfly specimens damaged by the larvae of carpet beetles (*Anthrenus verbasci*)



Above and right animal fur can all too easily fall victim to voracious pests such as clothes moths and carpet beetles



IPM was on the map across the world. A result of the collaborative work set up in Vienna was that my new archetype book, *Integrated Pest Management for Cultural Heritage*, was translated in to German by Pascal Querner and Bill Landsberger and published in 2016.

#### Art for art's sake

We are well aware of the potential pest problems of caring for more 'traditional' collections such as costumes, furniture, books, ethnography and natural history. In recent years there has been a huge increase in pest problem challenges posed by art installations which frequently include materials which are not often encountered in museum collections. These include living trees, pasta, dried prawns, dead fish, pigs' heads and piles of rags. Awareness of the risks posed by such exhibitions is essential to avoid serious pest and fungal problems and communication between countries is even more important when such installations move across international boundaries.

#### Communication and the future

The development of the internet as a tool for communication and sharing data and images has been crucial to promote the low-cost exchange of IPM information between IPM practitioners.

The very useful USA-based website [www.museumpests.net](http://www.museumpests.net) was introduced to an international audience in 2011 and the UK website [www.whatseatingyourcollection.com](http://www.whatseatingyourcollection.com) (WEYC) in 2013.

It is hoped that the pest distribution database on the WEYC website can be expanded to include data from other countries. It was fitting that a conference poster on the first international collaborative project on pest distribution was with IPM practitioners in Sweden.

The use of communication technology has huge implications which can benefit the future of international IPM in cultural heritage. However, we have seen from the evidence of the past 25 years that there is no substitute for the stimulation and inspiration of meeting fellow IPM enthusiasts. It was very encouraging that so many people were able to participate in this 2019 conference in Stockholm either in person or by live streaming online. By exchange of information between our countries, we can demonstrate that IPM can preserve collections in a cost-effective and sustainable way and secure them for future generations.



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