

APPROACHES TO PEST MANAGEMENT IN MUSEUMS (1998)

by

*Keith Story, M.A., F.R.S.H.**

PREFACE

The following text is the edited transcript of the presentation at the Museum Support Center of the Smithsonian Institution on July 24th, 1998. This presentation formed the core of a one day course (Preservation Fundamentals III: Pests #C98-17) aimed at conservators, collection managers, pest control operators and others involved in protection of museum collections and libraries against pests. The object of this presentation was to provide a verbal update of the book "Approaches to Pest Management in Museums" published by the Smithsonian Institution in 1985. That book pioneered the concept of integrated pest management (IPM) for museums, advocating the use of combinations of chemical and non-chemical methods in programs customized for the particular situation.

This presentation reviews the latest information on the biology and damage potential of key museum pests and for each pest outlines possible control measures. The scope of the original book is extended by including warehouse beetles, odd beetles and spider beetles. The various chemical and non-chemical measures are reviewed, with particular emphasis on new technologies, including the successful use of atmospheric gas fumigations and the more problematic role of pheromone traps.

The integrated pest management approach is considered in detail from its agricultural origins to its successful adaptation for urban pest management. The continuing pest problems in some museums are attributed not to any intrinsic flaws in the IPM approach, nor to lack of overall funding, but to unsatisfactory communication between departments and failure to use existing manpower resources. Pest management in museums and libraries should be seen as part of overall preventive conservation efforts involving all departments working in multi-disciplinary teams against pests and conditions which favor pests.

The author acknowledges the information provided by suppliers of pest management products and services and the dedication and candor of many conservators who were consulted when preparing this presentation.

Keith Story, 1998.

* *President of Winchester Consultants, "Freelands", 30 St. Cross Road, Winchester, SO23 9PR, England.*

CONTENTS

	<u>Page</u>
PREFACE	(i)
CONTENTS	(ii) & (iii)
A. INTRODUCTION	1
B. BIOLOGY, DAMAGE POTENTIAL AND OUTLINE CONTROL MEASURES FOR KEY INSECT PESTS OF MUSEUMS:	
Overview and Definition of Museum Pests	8
Clothes Moths	11
Anthrenus Carpet Beetles	16
Black Carpet Beetles	21
Warehouse Beetles	22
Odd Beetles	23
Larder Beetles	24
Drugstore Beetles	26
Cigarette Beetles	28
Spider Beetles	29
Furniture Beetles	30
Powderpost Beetles	32
Booklice or Psocids	34
Silverfish and Firebrats	36
Cockroaches	39
Crickets	42

CONTENTS continued

	<u>Page</u>
C. INDIVIDUAL PEST MANAGEMENT APPROACHES:	
Background and Overview	43
Use of Insect-Resistant Containers	44
Use of Heat	46
Use of Low Temperatures	48
Use of Parasites, Diseases and Predators ..	50
Miscellaneous Non-Chemical Methods	51
Use of Insecticides and Fumigants	53
Use of Atmospheric Gases	58
Use of Conventional Chemicals in non-conventional ways	63
Use of Pheromones	64
D. USE OF COMBINATIONS OF METHODS IN INTEGRATED PEST MANAGEMENT (IPM) PROGRAMS	
IPM Origins	69
Urban IPM	70
Elements of an IPM Program	73
The Teamwork Approach to IPM	78
E. LOOKING AHEAD - WHY WE MUST BE COMMITTED TO CONSERVATION	81

APPROACHES TO PEST MANAGEMENT IN MUSEUMS (1998)

A. INTRODUCTION

It gives me great pleasure to be back here at the Museum Support Center and to be part of a program of disseminating information to help protect collections in America and around the world. It is more than 12 years since I first lectured here at the MSC. In those days there were not many of us advocating preventive conservation through programs of integrated pest management. Instead, there was a preoccupation with seeking more effective or safer ways of killing pests after they had arrived. In particular, there was a search for better fumigants to replace ethylene oxide or dichlorvos (DDVP) and, following the Montreal Protocol, a search for alternatives to methyl bromide.

The search for better products to kill pests is ongoing, but most of these products are aimed at dealing with crises when they arise, and crisis management is not the best way forward. The best way forward is crisis avoidance and this involves integrated pest management or IPM.

I have been encouraged that, as a result of our efforts and the efforts of other individuals and organisations, the past 12 years have seen a massive growth in awareness of integrated pest management (IPM) in museums, libraries and private collections around the world. Wherever I go, I encounter people involved in conservation who not only have heard of IPM but have attended courses in America, Europe and Australia focusing on IPM in museums.

Today I am going to talk at length about common museum pests and about integrated pest management. I assume you are here because you want to learn more about this subject. Let me say at the outset that I may not tell you everything you

want to know. But you will have opportunities to ask questions, and if I don't know the answer I have little doubt there is enough expertise among you for someone else to suggest an answer. We are all here to learn.

While I may not tell you everything you want to know, I may well tell you things you don't want to know, but need to know. I am an independent consultant and, while this meeting is sponsored by the Smithsonian Institution, I am under no constraints about what I can say. I will of course try to be polite! I will use some case histories to illustrate certain points but, as a general rule, unless the information is in the public domain, I will not mention the names of any particular collection. While sharing information is vital in our field, we should respect confidentiality, and if any of you recognise any situations I mention, I would be grateful if you don't reveal the location.

Many of you don't know me, so I'll say something of my background! I have travelled in four continents and I have experienced a lot of pest problems first hand. I have been stung by African bees in Africa; I provided consultation at a well-known nightclub in Paris where cockroaches emerged when they dimmed the lights for the floorshow; and in Czechoslovakia the bugs in my hotel room were electronic! I have learned a lot from my travels - for instance I now know I am illiterate in at least 12 languages! Despite language problems, there is one thing which unites the people of all countries - a respect and love for art, literature and cultural items, and for natural history collections. My motivation is the desire to protect these collections, not merely for my own pleasure but for future generations, and I want to help you do your work more effectively.

I collect art and antiques myself, and one of my greatest pleasures is viewing the great public and private collections around the world. But when I visit museums and stately homes as a member of the public (not for a consultation), my pleasure is diminished because I can't help noticing some of the weaknesses in their defenses against pests. Over the years I have learned to notice pests, and conditions which favor pests. So when I approach a museum, my eyes stray to the roofline, the ledges and eaves, looking for perching or nesting birds. I then scan the building looking for open,

unscreened windows. As I get closer, I look at the landscaping and note foundation plantings that might encourage pests. As I get closer still, I look for unscreened wall vents or crevices around windows and doors. I also look at the exterior lighting to see if it might attract pests to the building. And as I enter the doors, I check the weatherstripping, sweeps or gaskets which might have gaps permitting pest entry.

When I get inside the building, my eyes stray from the pictures to the picture frames, looking for tell-tale holes. And from there I can't help checking the tops of dado rails or baseboards for signs of wood dust. When I walk around the museum I look at the lint in floor or wall registers. And I check the windowsills for emigrating dermestid beetles. When I look up I check the light diffusers for bodies of insects. I also note the shop areas and food areas, often surprised that there is no attempt to discourage pests from moving from these areas into the galleries. Up until this point I have just begun to arouse the interest of the gallery attendants or guards. When I start peering closely at flower arrangements to see if they are real flowers or silk flowers, the attendant starts to pay even closer attention. And when I kneel down and start looking at the floor of a display case, that's when I hear a voice saying "Can I help you, sir?" At which point I might ask if there is someone from the conservation department I might speak with.

Up until this time I have been in the "front-of-house" area accessible to the general public. When I go "backstage" with a conservator, I often see far more conditions conducive to pests, and I begin to wonder about the museum's commitment to pest management.

Again and again I ask myself the question: "Why is it that, despite high levels of knowledge about pest management and a wider choice of pest control materials than ever before, pest problems in museums are often at unnecessarily high levels? Many conservators I know have read much of the literature and attended pest management courses. But when I visit their museums I still see avoidable conditions which favor pests.

Should I conclude that the literature isn't providing good enough guidance? I don't think so. As long ago as 1985

