

A Path Forward from Discovery: Emergency Pest Control Measures

Introduction

This guide outlines the pest eradication process for cultural heritage institutions following an infestation emergency. Pest infestations occur when Integrated Pest Management (IPM) prevention methods have failed or were never instituted. Quick, safe, and effective eradication measures are necessary to stabilize the emergency caused by the infestations; further conservation treatment might be needed during the recovery to repair any damage. Following the infestation, using IPM as mitigation and preparedness measure will help to prevent future outbreaks.

Pest infestation is listed as one of the 10 Agents of Deterioration most commonly found in cultural institutions. It is commonly categorized as a sporadic emergency with a medium to high impact on collections and historic structures. For some institutions, pest infestation can be a common emergency with low to medium impact. IPM programs can help with the identification and ultimately the mitigation of the cause of infestations. This guide focuses on how to handle outbreaks in the safest way possible, from discovery to resolution.

This information was compiled by the Association of Registrars and Collections Specialists (ARCS) Emergency Programming Sub-Committee as a resource for those seeking to improve their integrated pest management policies and as a tool for mapping out pest eradication plans.

1. Discovery

Some of the most common types of materials that pests in cultural heritage institutions feed on include:

- **Wood** (furniture beetles/woodworms and powderpost beetles)
- **Textiles, Hide, Fur, and Feathers** (webbing clothes moths and case bearing clothes moth)
- **Historic Books and Paper** (silverfish and firebrats)



Powderpost Beetle¹



Webbing Clothes Moth²



Silverfish³

¹ Image courtesy of Jim Kalisch, University of Nebraska Department of Entomology, Museumpests.net

² Image courtesy of Emily Kaplan, National Museum of the American Indian, Smithsonian, Museumpests.net

³ Image courtesy of Buffalo State College Program in Art Conservation, Museumpests.net

What does an active infestation look like? Evidence of an active infestation can present itself in several different forms. You might find insect casings, frass, or larvae. You might even find adult insects in your collection storage areas, or you may notice physical damage to an object (e.g., holes).

2. Isolation

If you find evidence of an active infestation in your collection the first step is to quarantine the infested objects. If the object is small enough, this can be done by sealing the objects in a polyethylene bag. While this will not eradicate the insects, it can act as a way to monitor and identify pests.

3. Eradication Options

There are a variety of pest eradication options available for cultural heritage institutions. While not every institution has the necessary resources readily available on-site, this is an opportunity to build-up a network of local cultural institutions who might be able to share resources, as well as an opportunity to consult with a local pest management company on a solution. Be sure to consult with a conservator if you are not sure of the best option for your materials. There are also several third-party vendors who provide these types of services. It is important to work with a vendor who is familiar with IPM and will pursue some non-chemical eradication options. The three main categories of eradication in cultural institutions are:

- a. **Temperature Treatment (both hot and cold)**
- b. **Anoxia Treatment**
- c. **Cleaning**

4. Post Eradication Clean-up

Once treatment is complete, discard the polyethylene bags used in the process, followed by conducting a careful and detailed vacuuming of the objects to remove insect debris. Objects should only be vacuumed with a HEPA filtered vacuum with an air flow control in order to control the amount of suction on the object. Take photographs of the objects before and after treatment and cleaning in order to document any damage that might have been caused by the infestation.

Before returning the objects to storage consider placing them in a polyethylene bag for storage, as this helps to create a barrier between the object and future potential pests.

5. Continue Monitoring

Conduct routine building walkthroughs with collections staff members, or even with an external IPM Service Provider, and utilize sticky traps to monitor pest activity.

6. Additional Resources

FUNdamentals of Museum IPM:

- <https://forms.illinois.edu/sec/6828287>

- National Park Service Conserv-O-Grams:
- [An Insect Pest Control Procedure: The Freezing Process](#)
- [Identifying Museum Insect Pest Damage](#)
- [Controlling Insect Pests: Alternatives to Pesticides](#)
- [Anoxic Microenvironments: A Treatment for Pest Control](#)
- [Identifying Mouse and Rat Damage in Museum Collections](#)

Smithsonian Museum Conservation Institute:

- [An IPM Checklist for Planning & Implementing Pest Control on Art & Artifact Collections](#)

MuseumPests.net:

- [Dealing with an Active Infestation](#)

Northeast Document Conservation Center:

- [3.10 Integrated Pest Management](#)

Process Flowchart:

