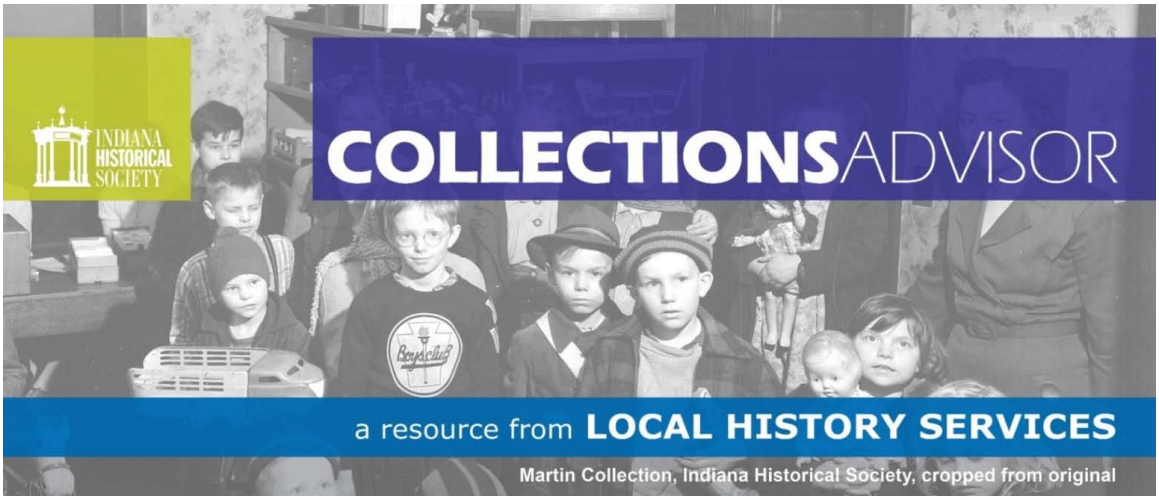
This publication is a service of the Hoosier Heritage Alliance *Connecting to Collections* project.



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Integrated Pest Management for Collections

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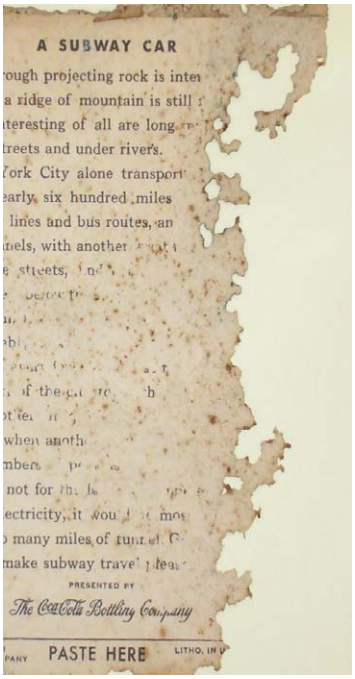
Infestation from pests or mold causes severe damage to museum and library collections. Any organic material in a collection such as wood, textiles, basketry, paper, photographs, books, leather and feathers can attract insect populations. Integrated Pest Management programs are prevention programs that take into account the possibility of infestation from a variety of sources. Involving staff and volunteers in reducing or preventing infestation helps preserve a collection long-term.



Paper damaged by silverfish

Segregation

Incoming collections – whether acquired, donated or loaned – come from a variety of environments and should be segregated from the rest of the collection. Removal of a collection to a separate area allows staff and volunteers to closely manage isolation activities away from existing collections. Any staff member or volunteer may find the source, but by the time of discovery, the infestation may have spread quietly into the surroundings; either via adult insect, larvae, insect eggs or contamination by mold spores.

The practice of isolation significantly contributes to the IPM methods required to keep pests from affecting other parts of the collection or compromising other spaces within the building. A dedicated space allows examination to take place away from areas reserved for other important collection activities.

Location

The location of the room is important to help reduce casual exposure from the path objects must travel inside the building. The location of an isolation room near a main entrance helps limit the number of pathways a collection must pass through upon its receipt and restricts the spread of possible infestation. Off-site locations for new collection

receipt activity can be helpful, but should take into consideration the overall environmental concerns for a collection, even for a temporary period of time, to avoid possible damage for fragile surfaces and materials.

Good Housekeeping and Preventive Maintenance
Good housekeeping and maintenance is another factor that contributes to IPM. Many times, a carton that holds a newly donated item may be soiled, damp or broken. Taking the time to re-box the donation while it's still off-site helps safeguard the collection from insects and mold that may be hidden in box corrugations. Using new or clean cartons for re-boxing helps prevent the infestation from following the collection to the museum.

Changing air filters often aids in keeping dust and debris from the storage and exhibit environment. Removing existing accumulations helps discourage minute insects that feed on proteins often found in dust and residues.

Inspecting areas of the building vulnerable to infiltration by insects, birds or rodents should be done on an annual basis. These include maintenance to exterior window and door openings, roofs, chimneys, attic spaces, and basement and foundation walls and sills.

Excluding an abundance of foundation plantings reduces the chance of harboring animals that dig and insects that may enter the building by chance or as cooler temperatures arrive.

Inspecting downspouts and gutters for accumulations of water and debris helps remove the possibility overflow which may contribute to water infiltration within the museum walls. Infiltration of moisture in walls can contribute to mold in the immediate area.

Food shouldn't be allowed in the collections processing or vault areas. A central location of staff food consumption should be located at a safe distance from the collection storage vault.

Because insects can be carried in on plants and similar materials, these should be kept out of all collection examination, processing and storage areas.

Only plastic pallets should be used to hold large objects in storage, as soft wood pallets frequently harbor powder-post beetles.

Regular Inspection
Regularly inspecting objects on display and in storage for signs of insect activity helps uncover existing problems. Evidence of insect activity includes adult insects, small juvenile pupae, insect casings, insect castings, eggs, powdery deposits and small holes or missing areas. If evidence is found, the object should be placed in an airtight plastic bag within an airtight plastic bin. A call to a regional collections conservator or collections manager for advice and care is the next right step.


Wood damaged by termites

When an insect is found, staff and volunteers should be directed to contain it, make note of where it was found and make good attempts to identify it by contacting an entymologist at Insects Ltd., a research company that develops insect pheromones and has been involved with IPM products for museums for over 25 years. They can provide information about the pest, its life cycle and how to eradicate it safely from the museum environment.

Dust and lint can harbor insects and provide them with a food supply; personal effects of staff (coats and purses) should not be allowed in the collection examination, processing or storage areas. An active cleaning policy should be established and maintained.

Areas should remain uncluttered so that any insect activity present may be detected. Shelving should be light in color or lined with white paper to allow easy detection of pests.

Trapping
Because trapping and mapping (determining where pests may be in collections areas) are important in tracking an infestation, a selection of sticky traps and pheromone lures specific to insects commonly found in historic collections should be on hand.

Insects Ltd. has developed a Museum Pest Monitoring Kit that contains a variety of sticky traps and pheromone lures that can be helpful in starting a mapping program.

Treatment
To contribute to the level of good housekeeping, all incoming materials should be thoroughly and carefully vacuumed even if no evidence of infestation at any level is found. This helps eliminate unwanted soils and bacteria that may exist on the collection items and serve as a source of food for insects and keeping pests in check within the collection storage vault.

Freezers can be used to effectively kill most live insect populations found in collections and desiccate active mold. The process is carried out in any freezer unit that steadily holds a temperature of 20 to 30 degrees Fahrenheit below zero. Remote reading thermometers should be used to monitor the interior temperature of the chamber. Home chest freezers without a defrost cycle have been found to be effectively modified for use. A description of this procedure is found in the Society for the Preservation of Natural History Collections Newsletter, Vol. 7 #2 1993 by Ann Pinzl.

Management
Managing collections that enter the building assists the effort to halt infestation at the door. For the safety of collections, staff and library patrons, any evidence, suspicion or possibility of active, latent or previous infestation or fungus; active, latent or previous infestation of insects; or other conditions that may harbor conditions that cause harm to staff or existing collections, the following guidelines can be used to determine whether materials should be accessioned:

1) Questionable environments. Previous storage conditions that were unknown or known to be questionable:

- attic areas
- basement areas
- warehouse environment
- demolition or construction site

2) Humid environments. One or more of the following:

- aromatic, musty smell
- surface dampness evident by items feeling cool to the

touch (may harbor active yet unseen mildew/mold)
- appearance of mold (black, violet, red, orange, green or gold powdery substance on any part of the collection or collection container)
- appearance of active or inactive mildew (black or white/gray powdery substance on any part of the collection or collection container[s])
- items that have a known previous humid environment

3) Previous or active signs of infestation. One or more of the following:

- insect casings, skeletons
- large numbers of flyspecks
- holes, tracery or paper dust (indicate pupa trails which bore into the materials)
- any mobile mite, pupa or insect

4) Previous or active signs of vermin. One or more of the following:

- fecal matter, stains formed by liquid solute
- nesting material or unrelated vegetable matter
- live or dead rodents, skeletons
- signs of chewing, gnawing or shredding

5) Transferable soils. Charcoal soot and dust which transfer readily to fingers.

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