

Association of Manitoba Museums

Pest Guide

Assess, Block, Control, Respond, Recover

February 2021



Introduction

Artefacts and heritage buildings are a wonderful source of food and housing for insects and rodents. Pests will take any opportunities we inadvertently provide and make themselves quickly at home. Effective pest control relies on early detection of pests before they can cause any damage to a collection. Monitoring can tell us what pests are in the building or collection, how they entered, where they are located, and whether our control strategies (if any) are effective.

How Do We Monitor?

Regular monitoring allows you to identify the pests so that improvements can be made to a room or a building to reduce or eliminate their numbers. Monitoring can continue over the course of a month, a season, the space of a year or even over several years. However, it is recommended that the traps be placed for a minimum of four weeks.

Monitoring for pests can be done with insect traps. The insect traps are coated with a sticky, smelly substance that attracts and then traps insects. The sticky traps come in sheets of three traps. To use, simply tear off a single trap, write the location and date on the side in the space provided, fold it along the scored lines to make a triangle, and remove the paper strip inside before placing it in the desired location for a minimum of 4 weeks.



Trapped insects can be identified using the magnifier and the links to information found in this guide. Mice will enter the trap but are usually strong enough to escape. They often leave fur and feces stuck to the trap. Please deal humanely with any mice that are still stuck in the trap. (Mineral oil will free mice).

Placement of the traps is key to gathering a good sampling of pests. Pests like dark, warm, and damp places and tend to move along walls. Place the trap so that the closed side is up against the wall. This way when pests move along the wall they will have to pass through the trap and get caught in the glue.



When insects become trapped, they often attract other insects that will prey on them. The insect trap can be left with insects in it as long as it is checked regularly and put back in the same spot for a number of times before needing replacement. Mark insects that you have already seen and identified by circling them in ink.

To examine a trap with the magnifier, open the trap and lay it flat over the base of the magnifier. Do not stand the magnifier on the trap! Move the trap around until you can clearly see any insects on the trap. Sometimes what appears to be a speck of dust can be a small insect, so checking closely is recommended.

How Do We Identify?

To identify an insect, first note the shape of its antennae, head, mouthparts, body, legs, feet and wings. If an egg, what colour, size and shape is it? If a larva, is it hairy, furry or horned? What colour, size and shape?

There are a number of good insect guides on the internet that can help you identify your insect:

- <https://bugguide.net>
- <https://museumpests.net/identification/identification-pest-fact-sheets>
- http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_pnotes/index-eng.php
- <http://pestcontrolcanada.com/>.
- <https://texasinsects.tamu.edu/>

The Canadian Conservation Institute (CCI) publishes a series of Notes on preventing, detecting and responding to infestations under the section, *The Museum Environment: Biological Factors*. They are available for free download at [CCI Notes](#). Technical Bulletins on combatting and controlling pests are available for free download at [Technical Bulletins](#)

For those who prefer an actual book, the following publication may be of assistance:

Common Sense Pest Control; William Olkowski; Sheila Daar, Helga Olkowski; 1991; The Taunton Press, 63 South Main Street, Box 5506, Newtown, Connecticut, USA 06740-5506

What If We Need More Help?

The Association of Manitoba Museums (AMM) can provide a Pest Kit that contains easy-to-use insect traps and a high-quality 6x Coil Hi-Power stand magnifier to assist you in identifying pests which may be living in your museum. Once the monitoring period is over, the Pest Control Kit can be returned to the AMM. The Cultural Stewardship conservator can also assist with identifying insects. Mail traps to the AMM, each trap in its own Ziploc bag, and all within a solid box. Do not flatten the traps or use a padded envelope!

What Do We Do with the Information?

Record the identified insects on a chart similar to the following:

TRAP LOCATION AND NUMBER	CONTENTS
#1 Window of pioneer house kitchen	Booklice; small spider.
#2 Inside wood storage cupboard in kitchen	Booklice
#3 South end of attic of pioneer house by window	Booklice; spider
#4 Staff workroom by radiator	A sowbug and 2 booklice
#5 Manager's Office	Booklice; carpet beetle larvae
#6 Child's bedroom	Empty; left in place for future verification
#7 South end of basement	Sowbugs

The type of insect and its location can provide clues to housekeeping, maintenance or building issues. If there are a lot of moisture-loving insects in one part of a building or exhibit space, there may be a moisture problem. Carpenter ants and other wood-boring insects could mean rotten wood in walls, beams, floors or siding. A lot of beneficial predators such as centipedes, spiders or ground beetles could mean that there are other, less beneficial insects – or rodents – finding ways inside the building. Remember, an adult mouse can squeeze through a 2-cm hole and a large adult beetle requires only 1.5 mm.

How Do We Get Rid of Pests?

It is not recommended to spray pesticides inside a museum. The primary reason is that you may damage the artifacts. Another reason is that it may not be effective. Carpenter ants have a central nest and many satellite nests. Unless you find and destroy the main nest, they will simply keep returning. A third reason is that insects evolve so rapidly that a pesticide may not always work. A fourth reason is that a pesticide can impact the health of staff, students, volunteers and visitors.

An **Integrated Pest Management** program (IPM) based on the principles of *Avoid, Block, Detect, Respond & Recover* is more effective in dealing with infestations than stand-alone pesticide treatments. A balance of prevention, good housekeeping, monitoring and non-chemical control can often eliminate or control pests with a minimum of pesticides and expense.

1. **Reduce the risk of pest infiltration for your building.** Seal all exterior cracks and holes around windows, door frames or light fixtures. Cover vents with fine copper mesh, sealed in place around the edges. Clean debris away from the exterior of your building and if possible, run an 18-inch wide path of pea gravel around it. Keep dumpsters tightly closed. Examine new acquisitions before they enter your building or isolate them until you can be sure that they are pest-free. Remove dead leaf or other organic material from around the building and ensure good drainage. Eliminate damp areas inside.
2. **Avoid providing a habitat for pests.** Maintain clean, orderly storage rooms, especially in attics and basements, and dispose of empty cardboard boxes. Maintain plumbing and line toilet tanks to reduce leaks and condensation. Avoid bringing firewood inside unless you're sure it is pest-free. Choose sheet flooring instead of floor tiles to avoid insects living in the cracks. Avoid false ceilings as they provide pathways to rodents. Store artifacts on shelves, and not in direct contact with the floor.
3. **Avoid providing food to pests.** Avoid storing food in desk drawers or eating at desks. Check the coils and insulation on fridges for insects. Keep foodstuffs in sealed containers. Store garbage and recycling in covered containers and empty them every day. Wash dirty dishes as they occur. Keep the cupboards under sinks clean and organized as they are close to a source of water and provide excellent hiding places.
4. **Implement regular housekeeping.** Fit a HEPA filter to your vacuum cleaner and use a crevice tool to vacuum up lint, hair and other organic debris in cracks, crevices and corners, behind radiators, under shelving units and in closets. Check the exterior of your building as birds' nests and dead rodents attract dermestids and clothes moths.
5. **Monitor.** If you suspect that there is a pest problem in your building, monitor with purchased or home-made traps so that you can identify the pests and where they are located. Inspect under sinks, to make sure there isn't a leaky pipe. Store natural history specimens such as stuffed animals on white paper and check regularly for larvae, frass (bug poop) or hair loss.

6. **Determine the source of the problem.** As well as dark spaces like closets or attics, insects could be occupying an abandoned bird's nest, or the carcass of a dead rodent. A large number of pillbugs, sowbugs, booklice and silverfish can indicate moisture problems which require evaluation by a contractor trained in moisture/mould remediation.
7. **Bag infested artifacts.** Freeze artifacts as per the Canadian Conservation Institute's Note 3/3 *Controlling Insect Pests with Low Temperature*. If a freezer is not available, winter conditions may provide a cold enough environment. Once all artifacts have been treated, store them in large Ziploc® bags or Rubbermaid® tubs to protect against future infestation.