

Using a Freezer for Pest Control

Conservator Hack for April 20, 2021

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In the previous Hack, I discussed the uses of freezers in museums and considerations in choosing a freezer. In this Hack, let's look at how freezers can be used for safe and effective non-chemical pest control.

Low temperature insect control (freezing) is not a new development. It has been common practice in the fur and food industries for many years, which is why people sent their fur coats into cold storage for the summer. Although insects can acclimatize to cold temperatures without internal damage, this acclimatization takes time. If they are in an environment where the temperature drops quickly and remains low for long enough, insects are not able to adapt in time, and die.

Freezing has been used to stop the spread of insect activity in museum artifacts since the 1990s. Most artifacts can be frozen, with the exception of glass, paintings on canvas, and rubber. The Canadian Conservation Institute Note 3.3, *Controlling Insect Pests With Low Temperature* ([CCI Note 3.3](#)) has clear instructions on how to go about this. It recommends three basic principles for successful insect eradication. Cooling must occur quickly, reach and stay at a setpoint of -20°C, and continue long enough to eradicate adult insects and their eggs.

It is important to place artifacts into clear plastic bags prior to freezing, and seal them with packing tape. If it is fall and the insects have begun to acclimatize, CCI recommends keeping the bagged artifact at room temperature for about a month before putting it into the freezer. However, if your textile is being eaten by a horde of dermestids, freeze it right away and leave it in for a longer period of time. To make sure that both adult insects and eggs are killed, take out the bagged artifact, let it come up to room temperature for a week, and then freeze it again. The artifact will not be damaged by extended freezing, and the freeze-thaw cycle will eventually kill any cold-resistant insects and their eggs.

When you remove the bagged artifact, leave the artifact in the bag for several days. This allows condensation to form on the bag, and not your artifact. More importantly, you can check the artifact for any further signs of insect life while it is still in the bag. If you see any, then place the bag back in the freezer. Take care to avoid back strain when putting artifacts in and lifting them out of the bottom of the freezer!

The CCI Note recommends unfolding textiles as much as possible to increase the speed at which they freeze. Similarly, papers and photographs can be fanned out flat in a shallow box. Books can be laid side by side and not stacked. If you have an irregularly shaped artifact that needs support, sit it, bagged, in a shallow tray of sand or cat litter. To maximize air flow, artifacts should be up off the floor of the freezer. Metal screens such as the racks used for cooling baked goods will work for this. The egg crate covers for fluorescent light fixtures can also be cut to size and stacked. Extra freezer baskets can be used.

If you have any questions or need help with your low temperature insect eradication program, or would like a pdf copy of the CCI Note 3.3, feel free to contact me via phone at 204-223-3056 or email [conservator \(at\) museumsmanitoba \(dot\) com](mailto:conservator@ museumsmanitoba.com).