Preamble

This SOP describes strategies to monitor for and eliminate pestiferous threats to the collection.

1 Types of potential pests

The pestiferous threats to natural history collections are well known [1]. The most commonly encountered threats in Headhouse III are carpet beetles (especially Anthrenus spp. (Dermestidae)), silverfish (Zygentoma), and cockroaches (Blattodea: Blattidae: Periplaneta). See Appendix for examples of damage and images of the pests themselves. Museum staff should also consult external resources—especially [http://museumpests.net/] and [http://www.whatseatingyourcollection.com/]—in order to familiarize themselves with common pests and signs of damage.

2 Prevention

2.1 Fumigants

The Museum does not currently use fumigants. Naphthalene, dichlorvos, and paradichlorobenzene have been used in the past, and one may still find small sources of these fumigants hidden in the collection. If fumigants are found please notify the Director or Collection Manager, so that they can be properly disposed of.

2.2 Hygiene

Food and drink are strictly prohibited in the collection room so that we can remove the possibility of creating attractants (crumbs, sugary residues) and eliminate the risk of spills and other accidents. Trash must be emptied every day, and we must strive to maintain a clean, clutter-free, and dust-free space. Good hygiene will go a long way towards reducing our risk of pests.

Areas where dust and debris has collected (top of slide cabinet, under cabinets, corners of rooms, around windows, etc.) should be vacuumed regularly to protect against pest species that might feed in these areas and subsequently in the collection.
3 Monitoring

3.1 Sticky traps

Sticky traps are strategically distributed across the collection by the Collection Manager or Director. Each one is dated (day it was set), numbered (see below) and is checked on a monthly basis by the Collection Manager. Each trap is imaged prior to analysis (and posted to our Flickr StickyTraps album), recording in the pest log spreadsheet (https://goo.gl/forms/GjIdF10txLi4EpLu2), and subsequent disposal. Detection of any pest (see [1]) will trigger a higher level of monitoring and/or treatment response (see Section 4).

Trap numbers are as follows:

1. Inside 134A, near prep room closet
2. Inside 134A, near exit door to restroom
3. Inside 131, under cabinet 56 (center of room)
4. Inside 131, under teaching collection near door to 102
5. Inside 131, under teaching collection near door to public space

We also have two UV + sticky card traps mounted on the walls. One is near the freezers and the other is near the teaching collection cabinets, near the public space.

3.2 Direct observation

Dry collections should also be directly examined at least annually for evidence of pest damage (Figure 1, for example). The pest log spreadsheet (https://goo.gl/forms/GjIdF10txLi4EpLu2) should be updated to reflect problem: location, taxon, date, how treated, etc.

4 Treatment

Infestations should be dealt with immediately by freezing the affected specimens for >48 hours in the -20°C freezer. Be sure to bag the container (insect drawer) prior to freezing!

All pest evidence should be cleaned up (removed) prior to the return of those specimens to the collection. The infestation should be noted in the pest log spreadsheet (accessible through the policies page on the website: https://sites.psu.edu/frost/policies/) —where it was, when it was found, how bad it was, and how it was treated— and a note should be associated with that storage unit.

5 Reminder

Here are photos (Figures 2–3) of a teaching collection left to the sands of time, with no management. This horror show is why we monitor for pests!
Figure 1: Example of dermestid damage. Circular hole in cuticle (big arrow) and pile of frass under specimen (small arrow, below). Photo (CC0 1.0) by Andy Deans.

Figure 2: Example of dermestid damage on unit tray of dipteran specimens. Not one specimen remains intact. Photo (CC0 1.0) by Andy Deans.
Figure 3: Example of dermestid damage on sphingid moths. One specimen (right) is totally destroyed. Photo (CC0 1.0) by Andy Deans.
References