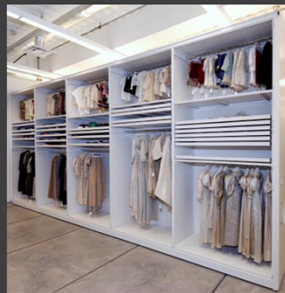


I've been the IPM coordinator for about 2 years, so I'm the interesting positioned of being the least experienced member of this otherwise esteemed panel, but I think I'll do a good job of representing those of us in the moth infested trenches who are learning as we go along.



Pest Monitoring

- Implementing a new system
- Storing data

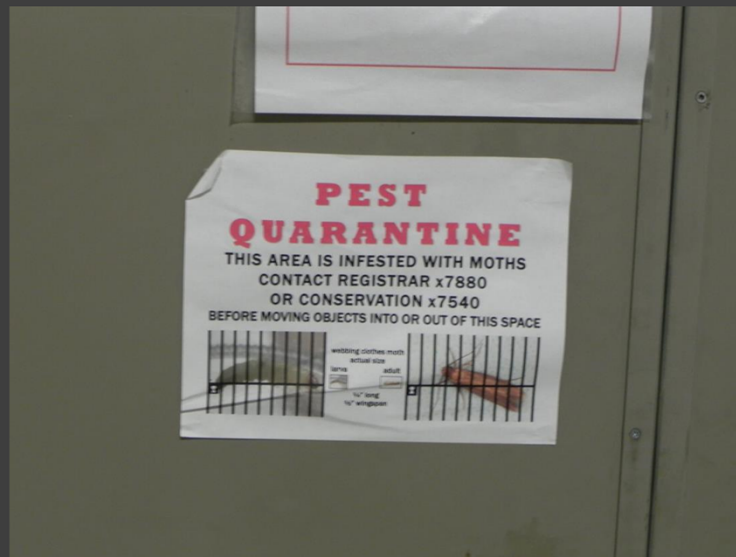


IPM and PMA's textile collection

- Protocols for moving textiles
- Low-temperature and anoxia treatment


This presentation will cover 2 areas:

- Implementing a new pest monitoring system, which employs the use of risk zones, barcodes and data capture with a mobile device
- And, since this is the Textile Specialty Group, the challenges presented by specifically textile collections, including systems we use for moving textiles in and out of the museum.



Like many (all?) institutions, the PMA has occasional pest problems, including incidents of webbing clothes moths infestations.

PESTS AT THE PMA



Carpet Beetle
Convicted for eating wool, silk, & horsehair upholstery



Webbing Clothes Moth
Convicted for eating wool & horsehair upholstery



Silverfish & Firebrat
Convicted for eating paper & starch adhesives


COLLECTION PESTS

These pests pose a severe threat to collection materials in the museum


Please report **ALL** pest sightings using the intranet [Pest Sighting Form](#) or call **x2847 (BUGS)**

OTHER PESTS


These pests may indirectly cause damage to collection materials, but primarily pose threats to people and structures



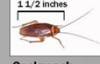
Ant
1/8 inch



Bird




Box elder beetle
3/4 inch



Cockroach
1 1/2 inches




Earwig
5/8 inch




Fruit fly
1/8 inch




Centipede
1 1/2 inches
Looks much longer because of the legs!



Millipede
1 inch



Rodent
3 inches plus tail



Spider
1/4 – 1/2 inches



Stink bug
5/8 inch

For more information refer to the intranet Announcements page for the [Pest Sightings Protocol](#) or email pmapest@philamuseum.org

Poster and pest reporting system were designed by Mellon Fellows Laura Mina and Eliza Spaulding.

IPM is taken seriously, and is constantly evolving.

A full understanding of where pests are present within the museum is essential to tackling problems we already have and preventing new ones, so our recent efforts have focused on raising staff awareness, and giving them a means to report sightings. Staff can report sightings on the intranet, or can call the BUGS hotline. Thanks to Laura Mina and Eliza Spaulding for their work.

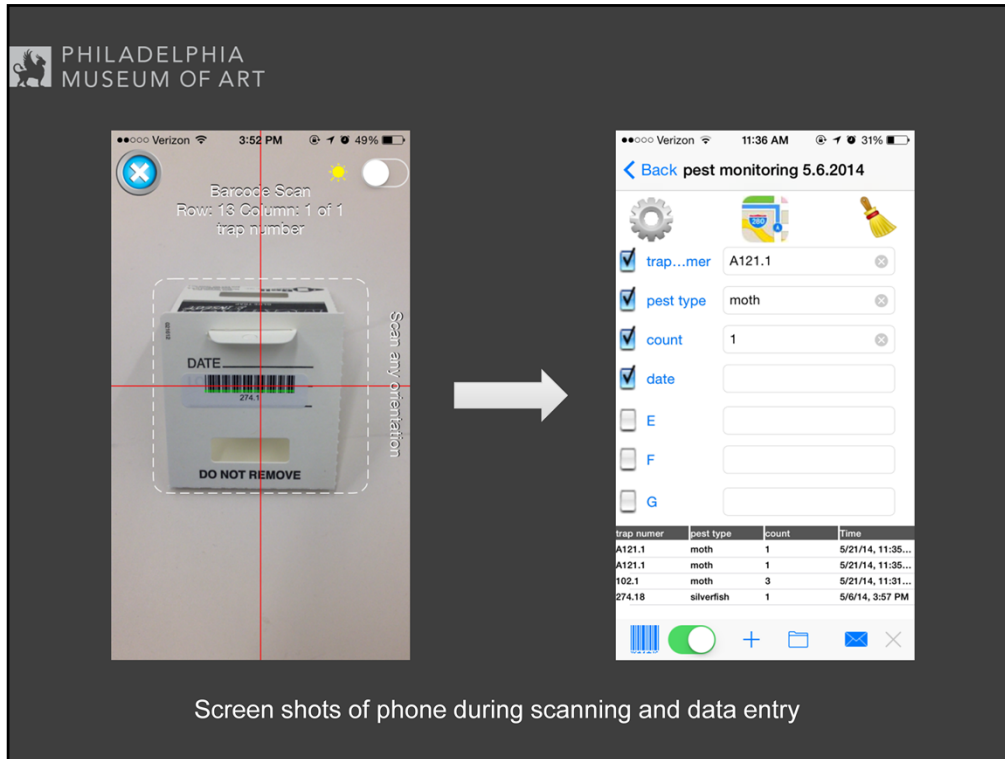
A desirable monitoring system should:

- be cost effective and time efficient
- involve little data input
- be easily learnt by new users
- be flexible so traps can be added and removed
- yield results that are searchable and accessible to all

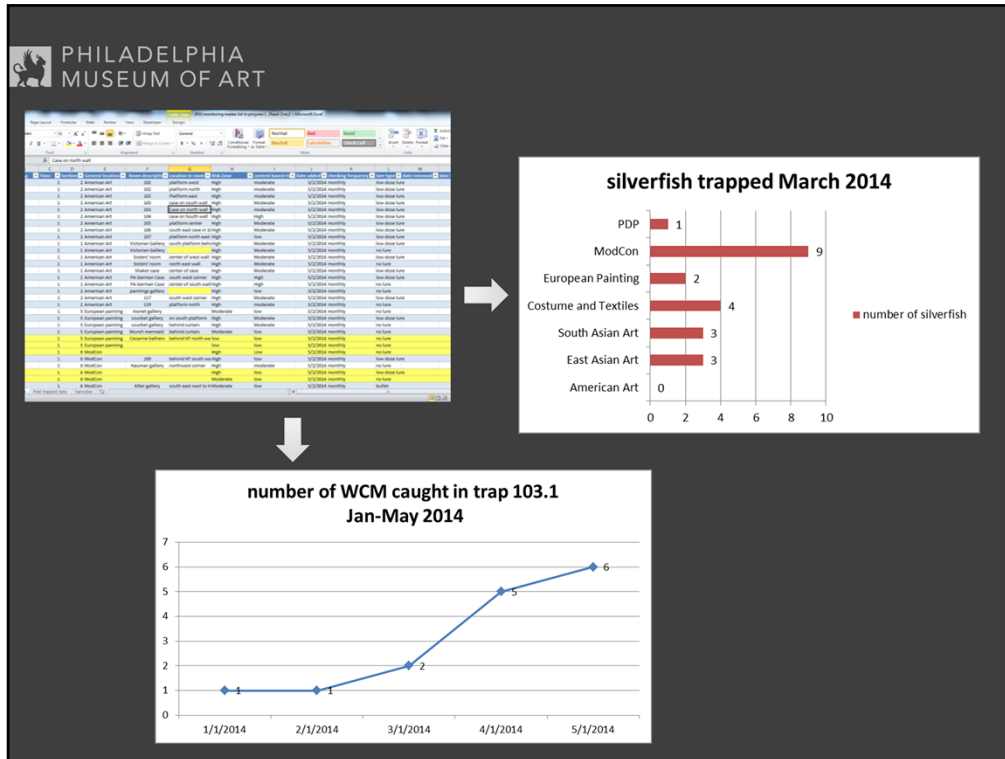
Pest monitoring began in earnest in the late 1990s at the PMA, and we have tried various systems to collect and manage data. We've varied how often we check, how many traps, who does it and how the information is disseminated. Most recently, we had a Pest Management company carrying out monthly checks, but now we are moving towards doing all the trapping, identification, data collection, analysis and responding ourselves. I designed the system to be essentially fool-proof and quick.



- All you need is a trap and an iPhone
- Blunder traps with unique barcode printed on sticky label
- Barcode is read by iPhone 5s



A “barcode to spreadsheet app” is used. It reads the unique barcode on the trap, and then takes you to a screen that is set up for entering the type and amount of each pest on the trap. The data can be sent to a computer in a single email at the end of each monitoring session and then uploaded into the master spreadsheet.



A pretty basic but comprehensive excel spreadsheet is stored on a shared drive. It's easy to extract information relating to patterns and areas of concern. I'm interested to hear how others store and present their data as this is a work-in-progress.



Galleries, art storage and most work spaces have been given a “Risk Zone” designation based on previous pest activity, vulnerability of contents and adjacencies to vulnerable areas. The number, type and checking frequencies of traps in these areas relates to the zone type.

COSTS (presuming you already have an iPhone...)

- Barcode reader app: \$2.99
- 300 labels for barcodes: \$7.99
- 300 sticky traps: \$50 (\$0.16 per trap)*
- Pheromone lures \$402 (\$6.70 per lure)*

*repeated annual cost

Once the system is set up, it is low cost. Equally, there is an initial spike in staff time spent on IPM, but once it is up and running we should see a significant reduction.

TEXTILES: EXITS AND ENTRANCES

Textile loan/acquisition/returning from open display:
Enters museum wrapped



Examined away from other textiles



Based on materials

- ➡ Low-temperature treatment
- ➡ Anoxia
- ➡ Examination only



We have found that infestations in textiles tend to occur as the result of moving objects around. For example, a new acquisition or loan is brought from outside in harboring an active infestation, which in turn infests adjacent objects. So, our IPM policy in relation to textiles focuses heavily on controlling what comes in.



Anoxia: $<0.1\%$ O_2 for 2 weeks

Low-temperature: 48 hours at $-30^{\circ}C$

- We use freezing and anoxia according to the generally accepted standards.
- We have a large walk-in freezer that is kept at $-30^{\circ}C$ degrees, as well as 2 chest freezers. We follow the rule of 48 hours in the freezer once the textile gets down to temperature. My colleague Sara Reiter has carried out research into how long it takes for different types of objects to get down to temperature.
- For textiles that cannot be frozen, we employ an anoxic chamber. We use nitrogen gas, and custom build the chambers with marvel seal. Once the bubble is at 0.1% oxygen we leave the objects in for 2 weeks. Sometimes we're pushed by schedules to leave them in for less time, and for certain objects a less than 100% kill is deemed acceptable.
- We try to be consistent with these rules. Even textiles that are unlikely to harbor infestations go through the freezer or anoxia: this helps to reinforce the importance of IPM and makes it everyone's concern and responsibility.

Thanks to:

- Past and present Andrew W. Mellon Fellows, especially Laura Mina, Eliza Spaulding, Raina Chao and Sarah Gowen